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UPOV

TC/XVIII/5
Date/Datum: 1982-09-13

INTERNATIONALER VERBAND ZUM SCHUTZ VON PFLANZENZÜCHTUNGEN | UNION INTERNATIONALE POUR LA PROTECTION DES OBTENTIONS VÉGÉTALES | INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

TECHNICAL COMMITTEE | **COMITE TECHNIQUE** | **TECHNISCHER AUSSCHUSS**

Eighteenth Session
Geneva, November 18 and 19, 1982

Dix-huitième session
Genève, 18 et 19 novembre 1982

Achtzehnte Tagung
Genf, 18. und 19. November 1982

HARMONIZATION OF AUTOMATION AND COMPUTER PROGRAMS
(Item 9 of the Draft Agenda)

Document prepared by the Office of the Union

HARMONIZATION DES SYSTEMES D'AUTOMATION ET DES PROGRAMMES D'INFORMATIQUE
(Point 9 du projet d'ordre du jour)

Document préparé par le Bureau de l'Union

HARMONISIERUNG DER AUTOMATISIERUNG UND DER DATENVERARBEITUNGSPROGRAMME
(Punkt 9 des Entwurfs einer Tagesordnung)

Vom Verbandsbüro ausgearbeitetes Dokument

[English]

1. At its last session, the Technical Committee decided that during its eighteenth session it would start discussing the possibilities for harmonizing automation and computer programs in order to facilitate the comparison and exchange of data. The Office of UPOV was asked to collect information which was not to be limited to technical programs but include also administrative ones (see document TC/XVII/5, paragraph 65).

2. Up to the date of the preparation of the present document, ten member States had answered the circular sent out by the Office of UPOV, namely Denmark, France, Ireland, Netherlands, New Zealand, South Africa, Spain, Sweden, United Kingdom and United States of America.

3. The information received is reproduced in its original language in the Annexes I (Denmark), II (France), III (Ireland), IV (Netherlands), V (New Zealand), VI (South Africa), VII (Spain), VIII (Sweden), IX (United Kingdom), X (United States of America, Plant Variety Protection Office), XI (United States of America, Patent and Trademark Office). As the information given by the Patent and Trademark Office of the United States of America was too voluminous to be included in full in the present document, Annex XI contains only a selection of certain parts of that information.

[français]

1. A sa dernière session, le Comité technique a décidé d'entamer au cours de sa dix-huitième session les discussions sur les possibilités d'harmonisation des systèmes d'automatisation et des programmes d'informatique en vue de faciliter les comparaisons et les échanges de données. Le Bureau de l'UPOV a été prié de réunir des renseignements qui ne se limitent pas aux programmes techniques mais qui portent également sur les programmes d'ordre administratif (voir le paragraphe 65 du document TC/XVII/5).

2. A la date d'établissement du présent document, dix Etats membres avaient répondu à la circulaire du Bureau de l'UPOV : Afrique du Sud, Danemark, Espagne, Etats-Unis d'Amérique, France, Irlande, Nouvelle-Zélande, Pays-Bas, Royaume-Uni et Suède.

3. Les renseignements recueillis sont reproduits, dans leur langue originale, dans les annexes I (Danemark), II (France), III (Irlande), IV (Pays-Bas), V (Nouvelle-Zélande), VI (Afrique du Sud), VII (Espagne), VIII (Suède), IX (Royaume-Uni), X (Etats-Unis d'Amérique, Office de la protection des obtentions végétales) et XI (Etats-Unis d'Amérique, Office des brevets et des marques). Les renseignements fournis par l'Office des brevets et des marques des Etats-Unis d'Amérique étant trop volumineux pour être entièrement repris dans le présent document, l'annexe XI ne comporte qu'une sélection de certaines parties de ces renseignements.

[deutsch]

1. Auf seiner letzten Tagung hat der Technische Ausschuss beschlossen, während seiner achtzehnten Tagung mit der Erörterung der Möglichkeiten einer Harmonisierung der Automatisierung und Datenverarbeitungsprogramme zu beginnen, um den Vergleich und den Austausch von Daten zu erleichtern. Das Verbandsbüro wurde gebeten, Informationen zu sammeln, die sich nicht nur auf technische Programme beschränken, sondern auch Verwaltungsprogramme umfassen sollten (siehe Dokument TC/XVII/5, Absatz 65).

2. Bis zum Erstellungstag des gegenwärtigen Dokuments haben zehn Verbandsstaaten das vom Verbandsbüro der UPOV versandte Rundschreiben beantwortet, nämlich Dänemark, Frankreich, Irland, Neuseeland, die Niederlande, Schweden, Spanien, Südafrika, das Vereinigte Königreich und die Vereinigten Staaten von Amerika.

3. Die eingegangenen Informationen sind in ihrer Originalsprache in den Anlagen I (Dänemark), II (Frankreich), III (Irland), IV (Niederlande), V (Neuseeland), VI (Südafrika), VII (Spanien), VIII (Schweden), IX (Vereinigtes Königreich), X (Vereinigte Staaten von Amerika, Sortenschutzamt), XI (Vereinigte Staaten von Amerika, Patent- und Warenzeichenamt) wiedergegeben. Da die vom Patent- und Warenzeichenamt der Vereinigten Staaten von Amerika eingereichten Informationen zu umfangreich waren, um sie in ihrer Gesamtheit in das gegenwärtige Dokument aufzunehmen, enthält die Anlage XI hiervon nur eine Auswahl.

[Annexes follow/
Les annexes suivent/
Anlagen folgen]

PLANTENYHEDSNÆVNET
Teglværksvej 10 – Tystofte
DK-4230 Skælskør
Telefon (03) 596141

TC/XVIII/5
ANNEX I/ANNEXE I/ANLAGE I

20. August 1982
PN/82 - 368

UPOV
34, chemin des Colombettes
1211 Genève 20

Att: Vice Secretary-General Dr. H. Mast

Dear Dr. Mast,

Re: Harmonization of automation and computer programs.
- Your circular No. U 660, dated November 25, 1981.
-08.1

With reference to my letter PN/82 - 284 of July 5, 1982 I forward you our contribution to the specific subject. As foreseen the holiday season has delayed the submitting of information from the experimental stations.

Since I have no knowledge of how you intend to draw up a document containing
./. all the received information I enclose a list of species for which computer systems are used for calculations and an explanation to the systems. The explanation is prepared by our Laboratory for Data Analysis and can be considered as a general explanation to the systems used not only at the specific experimental station Roskilde.

In addition to the explanation I can inform you that the programs have been worked out by the said laboratory and are at present being computerized on an IBM 3033.

The list of species shows that computer systems are used for calculations of VCU trials (Value for Cultivation and Use), which also applies to horticultural crops.
The list contains only information of agricultural crops, as no results from the DUS examination (Distinctness, Uniformity and Stability) of vegetables, fruit crops or ornamentals are being handled by computer.

Most of the computations are carried out centrally by our Laboratory for Data Analysis on the IBM 3033 computer, but more and more experimental stations are going to use micro computers for simpler calculations. As stated

in the said list the micro computer 'H.P. 85' (Hewlett-Packard) is used at present, but the micro computers obtained today are of the brand 'Pegasus III'. In the future we expect to use this micro computer in combination with the portable data terminal 'Micronic 445' in the examination work of cereals, grasses and legumes.

No computer facilities are available in the administration today, but we plan to procure a word processor system within this year. The system, however, has not yet been chosen, so further information concerning this aspect can not be added.

Yours sincerely,

P. n. v.

Flemming Espenhain

Two annexes follow

Ref. Circular No. U. 660.

Survey of computation methods in variety testing in Denmark.

Species or crops	DUS examination	VCU examination
Fodder beet	Micronic 445 + SAS progr.	program in Fortran
Sugar beet	" "	"
Swede	" "	table calculator
Fodder radish	" "	"
Marrow stem kale	" "	"
Stubble turnip	" "	"
Other green fodder crops	" "	"
Maize (Corn)	+)	SAS program
Winter rape	Micronic 445 + SAS progr.	Micro computer H.P. 85++)
Spring rape	" "	"
White mustard	" "	"
Poppy	" "	"
Flax	+)	"
Peas	Micronic 445 + "	"
Fiels beans	" "	"
Cereals	table calculator	table calculator
Grasses	program in Fortran	"
Legumes	"	"

+): Maize and Flax are DUS examined in the Fed. Rep. of Germany respectively France in accordance with bilateral agreements.

++): Statistical program for calculations of means, standard deviations and analysis of variances.

H.P.: Hewlett-Packard

Ref. Circular No. U. 660.

In the following is given a short description of the use of automation and computers at the experimental station at Roskilde.

Data registration.

The data registration is partly done on papersheets and partly by aid of a portable data terminal.

The papersheets used are pretyped with columns for each variable (character) to be registered. For some crops also plot- and plant-descriptions are pretyped on the sheets. Later on the data on the sheets are entered a computer either through punch cards or the portable data terminal.

The portable data terminal is a Micronic 445 (size 80 x 180 x 30 mm, weight approximately 500 g). The terminal is preprogrammed to insure that the operator does not forget to enter a number (e.g. date, trial and plot numbers or any variable). When using the portable data terminal each plot is identified by a single number - usually between 1 and the total number of plots in the trial. The contents of the terminal are transmitted to a central computer, ordinarily at the end of the day or at the end of the registration. When the data are received at the computer the variety- and block-descriptions - which are already stored in the computer - are added to the data. The data as well as a summary are then printed.

Computations.

For computation of descriptive statistics (e.g. means and standard deviations) and statistical tests different programs are used.

The calculations for the value-testing of beets are done in using 3 programs written in FORTRAN. The first program

carries out a validity-test of the data. The second program analyses the individual experiments and calculates means for each variety in each experiment. These means are stored and used by the third program, which does a combined analysis of all the experiments in a serie. This analysis includes an analysis of variance and calculations of least significant differences.

For corn all the computations are done by aid of programs from a statistical package called SAS (Statistical Analysis System). We use the procedures SUMMARY and GLM for calculations of means and analysis of variances respectively. When we have missing data the variety-means are adjusted.

Programs from SAS are also used for the DUS-testing. Here the procedure SUMMARY is used for calculation of means, standard deviations and coefficients of variance for each plot.

The calculated plot-means are then submitted to a T-SCORE-program written in the matrix-formulation-language of SAS.

This T-SCORE-program calculates the T-SCOREs for all combinations of candidate varieties and reference plus candidate varieties for a single year. The summation over years are done by desk-calculations.

The standard deviations are likewise submitted to a uniformity testing program written in the same language as the T-SCORE-program.

0128

TC/XVIII/5
ANNEX II/ANNEXE II/ANLAGE II

GROUPE D'ÉTUDE ET DE CONTRÔLE DES VARIÉTÉS ET DES SEMENCES

INRA - GEVES

G. L. S. M. - LA MINIÈRE
78280 GUYANCOURT - FRANCE

Tél. : 043.81-13

C. C. P. Paris 9062-33

Télex : INRAMIN 698.450 F
préciser GEVES-VAR

RÉPUBLIQUE FRANÇAISE
MINISTÈRE DE L'AGRICULTURE

INSTITUT NATIONAL DE LA RECHERCHE AGRONOMIQUE

Références à rappeler :
DS/EDC
LA MINIÈRE - G. E. V. E. S. 25.495

V/Réf. :

Objet :

Monsieur Thiele Wittig
U.P.O.V.
34 Chemin des Colombettes

1211 GENEVE

(Suisse)

La Minière, le 5 août 1982

Monsieur,

Veuillez trouver ci-joint le rapport demandé par l'UPOV.

J'espère qu'il répondra à vos besoins.

Je vous prie de m'excuser pour notre retard, j'ai été très surchargé aux mois de mai et juin.

Je me tiens à votre disposition pour tout renseignement complémentaire.

Veuillez agréer, Monsieur, l'expression de mes sentiments distingués.

p° Dominique Schmauch

FRANCE

Ministère de l'agriculture
Institut National de la Recherche Agronomique
Groupe d'Etude et de contrôle de Variétés Et des Semences
Unité de calcul automatique

LES APPLICATIONS INFORMATIQUES

DU

G . E . V . E . S .

Dominique SCHMAUCH
Ingénieur agronome
Responsable de l'unité
de calcul automatique
du G.E.V.E.S.

La Minière
le 4 août 1982

LES APPLICATIONS INFORMATIQUES

DU

G . E . V . E . S .

INTRODUCTION GENERALE

I . Description sommaire du Centre de Calcul automatique

A - Historique

B - L'équipe informatique

C - Le matériel et le logiciel

1 - Le matériel
2 - Le logiciel

D - Langages de programmation et logiciels généraux

E - Politique du Centre vis à vis de l'harmonisation des informations

II . Les applications

A - Les applications à caractère administratif et financier

1 - Gestion des demandes d'inscription
2 - Gestion des demandes de protection
3 - Gestion des droits d'inscription
4 - Gestion du "dictionnaire des variétés" et des comparaisons phonétiques

B - Les applications à caractère scientifique

1 - Gestion des collections de plantes autogames
2 - Gestion et interprétation des essais "plante à plante"
3 - Gestion et interprétation des essais "parcelle à parcelle"

C - Quelques applications diverses

III . Les développements à moyen terme

INTRODUCTION GENERALE

Ce rapport étant destiné à l'Union pour la Protection des Obtentions Végétales, il nous paraît inutile de décrire le Groupe d'Etude et de Contrôle des Variétés et des Semences (G.E.V.E.S.). Rappelons simplement que le G.E.V.E.S. est un département de l'Institut National de la Recherche Agronomique (I.N.R.A.) qui a la charge de réaliser les tâches techniques qui permettent:

1°) au Comité pour la Protection des Obtentions Végétales (C.P.O.V.) de décider de la protection éventuelle des variétés en France;
2°) au Comité Technique Permanent de la Sélection (C.T.P.S.) de décider de l'inscription éventuelle des variétés au catalogue français.
3°) au Service Officiel de Contrôle (S.O.C.) de juger de la conformité de lots de semences .

La Station Nationale d'Essais de Semences (S.N.E.S.) fait également partie du G.E.V.E.S. et a pour tâches les divers contrôles à effectuer sur des semences pour le compte d'organismes publics, semi-publics et privés.
Dans le cadre de ses missions, le G.E.V.E.S. tend à développer un centre de calcul automatique qui, à l'origine, réalisait l'interprétation statistique des essais de distinction-homogénéité-stabilité (DHS) et de valeur agronomique et technologique (VAT). Ce centre de calcul prend en charge aujourd'hui les activités de gestion financière du G.E.V.E.S. ainsi que l'automatisation des tâches administratives pour les secrétariats du C.T.P.S. et du C.P.O.V.

Aujourd'hui où les moyens informatiques, dans leurs aspects qualitatifs, augmentent considérablement, le centre informatique du G.E.V.E.S. essaie de produire non seulement des programmes pour les utilisateurs mais aussi une application cohérente gérant l'ensemble des travaux administratifs et scientifiques relatifs aux variétés.

Cela signifie que parallèlement au travail d'automatisation, le centre informatique constitue un ensemble de fichiers où l'on pourra retrouver l'ensemble des données relatives aux variétés que le G.E.V.E.S. a eu à expérimenter, soit dans le cadre de l'inscription et de la protection, soit dans un cadre parallèle (collections de référence). Ceci est déjà réalisé partiellement dans le cas des essais DHS et commence cette année pour les essais VAT.

Cette orientation politique suppose une stratégie qui pourrait s'accorder avec certains désirs de nos pays partenaires pour conduire à la réalisation de bases de données relatives au matériel végétal. Il paraît évident que la meilleure solution serait aujourd'hui d'organiser ces bases de données dans un réseau informatique permettant aux utilisateurs de chaque pays d'interroger les serveurs des autres pays. Cette décision politique impliquerait deux choses :

1°) Que le travail de codification et de nomenclature soit développé d'une manière cohérente non seulement entre les différents pays (par ex. membres de l'U.P.O.V.) mais aussi entre les diverses instances nationales ou supranationales qui font acte de décision dans le domaine variétal.

2°) Que l'on s'attache à faire des bases de données dans lesquelles on stockerait non pas des résultats moyens relatifs aux variétés, mais des résultats élémentaires qui devraient permettre de lancer des programmes scientifiques sur les pressions de sélection et les comportements des variétés produites dans les différentes conditions agro-météorologiques régionales.

Ces renseignements et ces développements cohérents devraient permettre une bonne utilisation des banques de gênes dans la mesure où une recherche d'informations devrait permettre de mieux cerner le matériel conservé. Nous pouvons déduire de ce qui précède qu'il faudra créer un groupe de travail constitué d'informaticiens mais aussi de pathologistes et d'agronomes.

Du point de vue technique, il existe aujourd'hui des réseaux (par ex. Euronet) qui permettraient de supporter les éventuels serveurs. Ces problèmes liés plus spécifiquement aux langages d'interrogation et à la gestion de ce réseau pourraient être confiés à une société de services de renommée internationale spécialiste des réseaux et des bases de données. Nous pensons bien évidemment à la Compagnie Internationale de Services en Informatique, la C.I.S.I. à titre d'exemple.

Les sommes à investir dans de tels projets ne sont pas forcément considérables, surtout si nous savons créer dans le domaine variétal une instance officielle chargée de l'information relative aux variétés, instance officielle qui aurait pour charge de gérer les aspects financiers de ce réseau d'information variétale.

Pour que cette instance officielle travaille, il faudrait aussi que des accords interviennent entre les organismes ayant autorité en matière d'inscription et de protection des variétés, accords qui délégueraient la gestion des résultats relatifs à l'inscription et à la protection à l'instance officielle dont nous avons parlé plus haut.

I. Description sommaire du Centre de Calcul automatique

A - Historique

Depuis de nombreuses années le G.E.V.E.S. disposait de quelques programmes pour interpréter les essais de valeur agronomique et de D.H.S. Ces programmes furent implantés sur un Bull puis sur un IBM 1130 puis sur un Mitra 15 du centre de Biométrie et Calcul Automatique du Centre National de la Recherche Agronomique à Versailles.

En 1977 le G.E.V.E.S. a commencé à réfléchir à une automatisation d'ensemble de ses applications et aux moyens que cela supposait. L'équipe comprenait alors deux ingénieurs, un programmeur, un technicien à mi-temps et une perforatrice vérificatrice.

Pour des raisons diverses le G.E.V.E.S a décidé en 1978 de fonder un centre de calcul automatique près de son administration centrale à La Minière. Depuis 1979, année d'implantation du matériel, le centre calcul a évolué d'année en année en reformant et étendant son domaine d'application.

B - L'Equipe Informatique et l'organisation du laboratoire

Particulièrement réduite en nombre elle comprend aujourd'hui :

Mr. SCHMAUCH - ingénieur 2A
Mme DHORNE & Mr. FOUCHARD - ingénieurs 1B à mi-temps
Mr. GAUTHIER - programmeur d'application 1B bis
Melle LEPECHEUR - technicien-programmeur 4B
Mme LECLERCQ - perforatrice-vérificatrice à mi-temps 5B
Mme BINOIST - technicien chargé du suivi des fichiers 5B

Un ingénieur supplémentaire doit être recruté prochainement ainsi qu'un programmeur d'application 1B bis à mi-temps.

Cette équipe assure tous les travaux d'analyse et de programmation du G.E.V.E.S. ainsi que l'exploitation des travaux. Elle assure en outre la mise en oeuvre des codifications des variétés et des nomenclatures de description des variétés. Dans l'organigramme qui suit nous avons situé cette équipe par rapport aux applications décrites dans ce document.

Il est clair que cette équipe assure quelques autres travaux notamment de gestion financière. Ces applications supplémentaires non négligeables sont confiées à Mr. GAUTHIER.

Il faut constater que Mr. FOUCHARD est au centre à titre de conseil puisqu'il est pathologiste. Les techniciens sont "d'anciens techniciens de terrains" formés à l'informatique.

L'Unité de Calcul du G.E.V.E.S.

Responsable : D. SCHMAUCH Ingénieur Agronome DAA.de Math. et Inf. Appliquées

Secrétariat Mme VANDAMME ACT 3B

Nomenclature, Codification
Mr FOUCHARD (mi-temps)
Mme DHORNE (mi-temps)
Mme BINOIST

Saisie
Mme LECLERCQ
Mme BINOIST

Application : les codes correspondent à ceux du sommaire II

	ANALYSE	PROGRAMMATION	MAINTENANCE	EXPLOITATION	LANGAGE
A - 1	D. SCHMAUCH	D. SCHMAUCH	A. LE PECHEUR	TRANSACTIONNELLE A. LE PECHEUR	BASIC FORTRAN/ ASM
A - 2	D. SCHMAUCH	D. SCHMAUCH	D. SCHMAUCH	TRANSACTIONNELLE	FORTRAN/ ASM
A - 3	Sous traitée	Sous traitée	Sous traitée	Sous traitée	P L 1
A - 4	D. SCHMAUCH P. GAUTHIER	P. GAUTHIER	P. GAUTHIER	P. GAUTHIER	P L 1
B - 1	B. DHORNE	B. DHORNE	B. DHORNE	B. DHORNE	FORTRAN
B - 2	D.SCHMAUCH	D. SCHMAUCH A. LE PECHEUR	D. SCHMAUCH A. LE PECHEUR	A. LE PECHEUR	FORTRAN
B - 3	D. SCHMAUCH	D. SCHMAUCH	D. SCHMAUCH	D. SCHMAUCH	FORTRAN/ASM

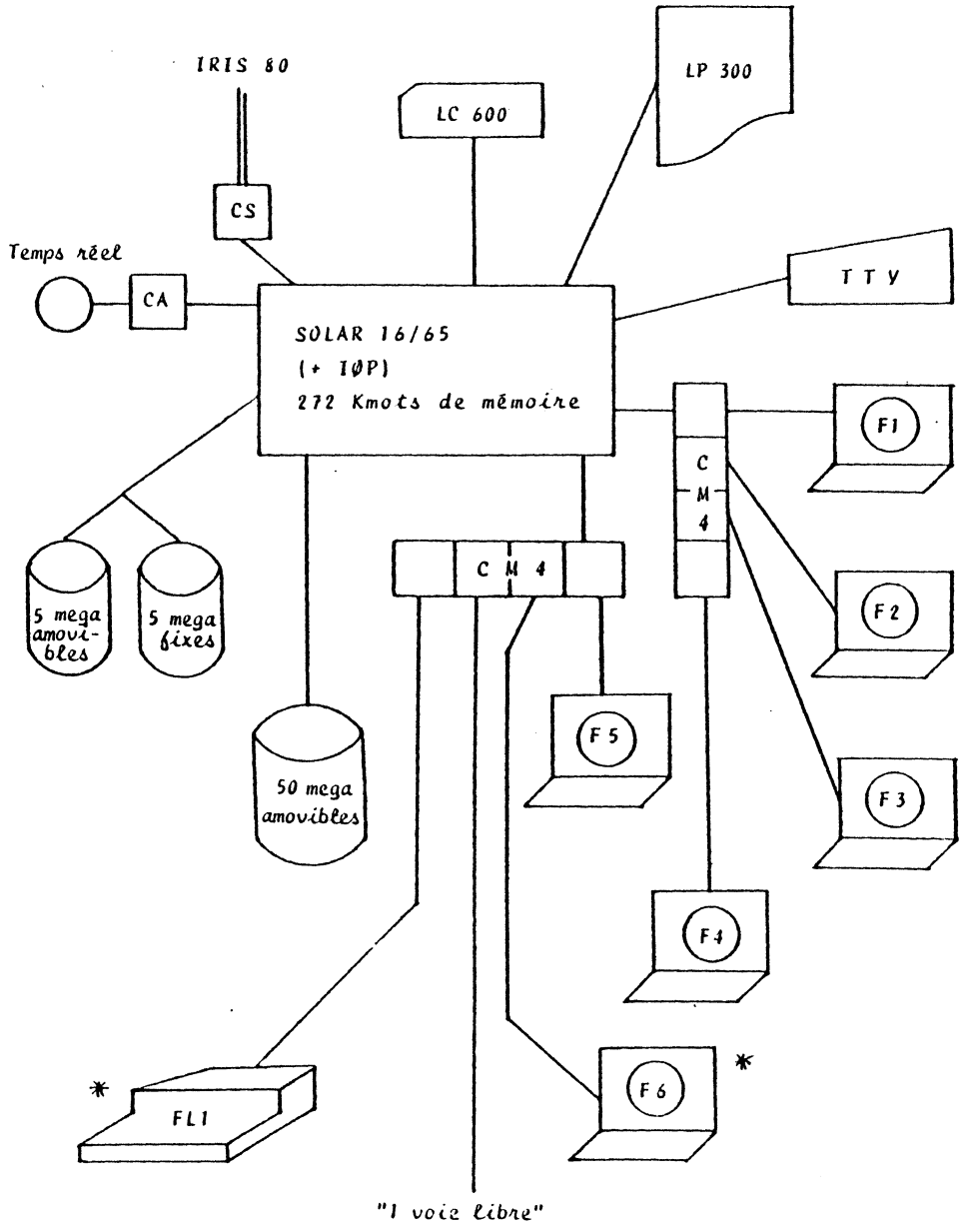
C - Le matériel et le logiciel de base.

1) Le matériel

Depuis 1979, le G.E.V.E.S. dispose d'un Solar 16-65, matériel commercialisé par la Société Européenne de Mini-informatique et de Systèmes(S.E.M.S.) qui est une filiale du groupe Thomson.

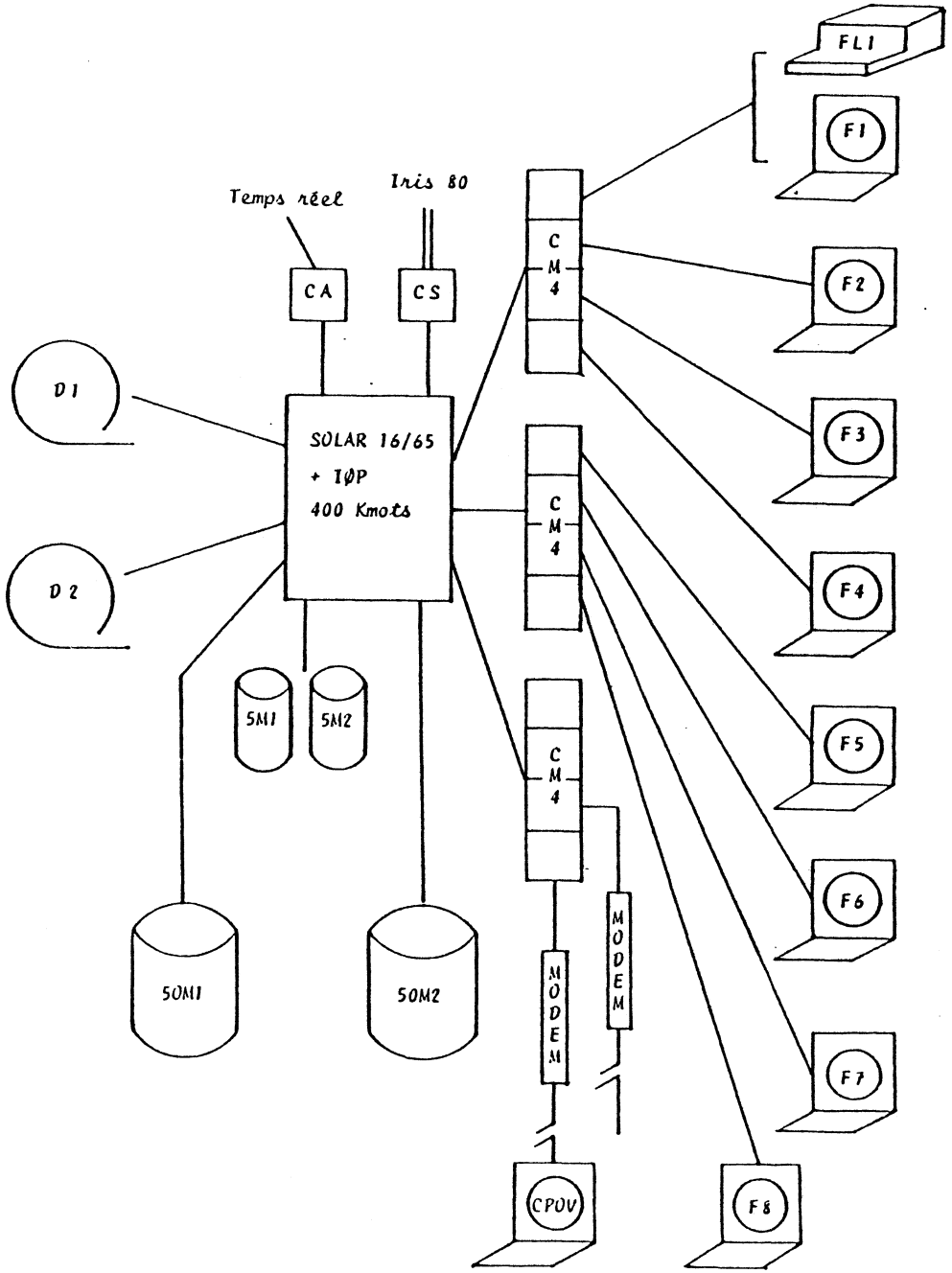
Actuellement, la configuration installée est la suivante :

LA CONFIGURATION EN JANVIER 1982



* alternativement utilisé sur coupleur asynchrone pour connections éloignées.

LA CONFIGURATION
EN 1983



Signalons que cette configuration installée au G.E.V.E.S. de La Minière est connectée"en remote batch"à l'IRIS 80 du Centre de Traitement de l'Information Scientifique de Jouy en Josas. Cet IRIS 80 est un matériel commercialisé par la C.I.I.H.B. et doit être remplacé prochainement par un matériel MULTICS.

La majorité des consoles sur SOLAR est à la disposition du centre de calcul du G.E.V.E.S. dans un but de production de programmes à l'exception:

- d'une console éloignée au secrétariat du C.P.O.V.

- d'une console à la disposition du secrétariat du C.T.P.S. à La Minière

- d'un terminal-imprimante à la disposition du service des affaire générales du G.E.V.E.S. à La Minière

- d'un matériel de bureautique (S.M.O. 80/3) à la disposition des secrétariats du G.E.V.E.S. à La Minière, matériel qui permet aussi de travailler sur SOLAR en qualité de terminal léger.

Un coupleur asynchrone permet d'étudier les différents appareils de saisie portables aux champs, sachant qu'actuellement le G.E.V.E.S. a renoncé à un tel mode de saisie pour des questions de rapport qualité-prix et surtout de sécurité en ce qui concerne les différents contrôles à effectuer au niveau d'une saisie directe dans ces conditions.

Le SOLAR 16/65 supporte l'ensemble des informations relatives à une campagne agricole tant du point de vue technique que du point de vue administratif.

L'IRIS 80 supporte le fichier de la description administrative de toutes les variétés qui ont fait l'objet d'une étude au G.E.V.E.S. ainsi que l'application de comparaisons phonétiques des dénominations variétales. Il supporte également une application de gestion des budgets des services du G.E.V.E.S.

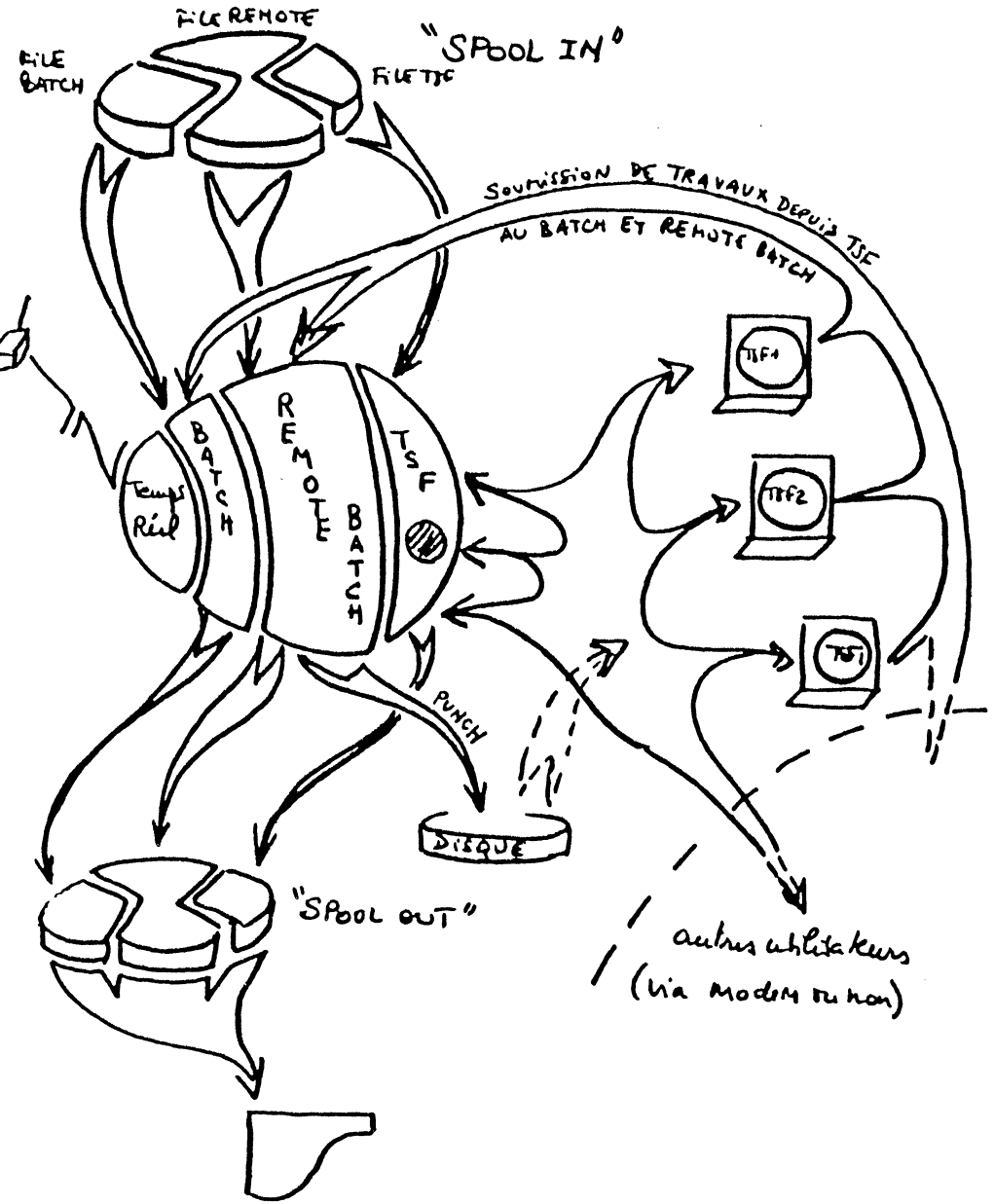
Terminons en signalant que le G.E.V.E.S. dispose aussi d'une console temps partagé sur l'IRIS 80.

2) Le logiciel

Le SOLAR fonctionne sous le système M.P.E.S. qui permet simultanément

- une activité batch local monoprogrammation
- une activité remote batch
- une activité temps partagé gérant tous les utilisateurs console
- une activité temps réel.

Ce système permet aujourd'hui de disposer d'une partition de 32 K-mots de 16 bits pour le batch local et de 8 partitions de 32 K-mots de 16 bits temps partagé, partitions qui sont gérées par un mécanisme de swapp.



LES FONCTIONS DE MPES

D - Langages de programmation et logiciels généraux

Pour des raisons historiques qui dépassent le G.E.V.E.S., les différents programmes sur SOLAR sont écrits en FORTRAN, langage roi du calcul scientifique.
En revanche, les applications sur IRIS 80 sont écrites en PL 1.

Pour gérer sur SOLAR les différents répertoires et catalogues concernant la campagne agricole en cours, le G.E.V.E.S. a dû étendre le FORTRAN en utilisant une bibliothèque de sous-programmes ASSEMBLEUR permettant le traitement des chaines de caractères et des différentes méthodes d'accès fichier disponibles sur SOLAR à savoir : l'indexé, le séquentiel indexé ; par souci d'homogénéisation, les accès aux fichiers de type séquentiel pur et de type direct au sens FORTRAN se font également à partir de l'ASSEMBLEUR.

Le G.E.V.E.S. disposant d'une application transactionnelle de saisie-mise à jour en BASIC, l'ASSEMBLEUR permet, en étant utilisé sous BASIC et sous FORTRAN, d'avoir des fichiers compatibles.
L'utilisation de BASIC pour l'application de gestion administrative des variétés en demande d'inscription est une erreur de jeunesse dûe au fait que l'on a utilisé un logiciel S.E.M.S. qui ne supporte que des transactions écrites en BASIC. Cette application en BASIC va être remplacée très prochainement par un logiciel écrit par le service informatique du G.E.V.E.S., logiciel de gestion de fichiers évolutifs. Ce logiciel permet de définir sans programmation particulière des applications de saisie, mise à jour, suppression avec masque d'écran et également d'interrogation logique complexe sur un fichier. Il permet de chainer les fichiers entre eux, ceci conduisant à une optimisation de la gestion de l'information.

Parmi les applications gérées par ce logiciel, citons : la gestion administrative des dossiers de demande de protection en France, la gestion des essais de valeur agronomique et technologique, la gestion des fournisseurs du G.E.V.E.S. ainsi que des applications d'ordre comptable.

Le G.E.V.E.S. a également développé un grand nombre d'utilitaires de gestion de fichiers qui se retrouvent dans toutes les applications.
On remarquera que le centre informatique du G.E.V.E.S. a pallié la trés grande faiblesse de ses effectifs en informatique par des méthodes de programmation qui peuvent apparaître comme normatives mais qui permettent une bien meilleure productivité.

On pourra constater que ces méthodes ont permis en 3 ans de ramener le pourcentage du temps consacré à la maintenance des programmes de plus de 90 % à moins de 20 % . Cette diminution du temps de travail inutile a permis un développement notable des applications à la disposition des services du G.E.V.E.S.

L - La politique du centre vis à vis de l'harmonisation et de la codification des informations.

Le traitement des informations relatives aux variétés suppose deux choses :

1/ Un système de codification unique des espèces et des variétés. La notion d'espèce est vue assez différement par les juristes et par les botanistes. Les systèmes de codification qui en découlent sont assez différents. Le G.E.V.E.S. a retenu un système de codification des espèces à base de 4 chiffres qui avait un certain sens au départ ; les codes en 4.000 représentaient par exemple les céréales.

En raison du nombre d'espèces faisant l'objet d'une protection ou d'une inscription, les sous-tables définies se sont trouvées saturées et le sens des codes perdu.

Ce système de codification ne satisfait pas les botanistes qui auraient souhaité une différenciation du genre et de l'espèce.

Etant donné la complexité de la codification des espèces notamment avec la création d'espèces nouvelles, le G.E.V.E.S. n'a pas remis en cause son système de codification. En ce qui concerne les variétés, entendons par là entité génétique homogène et stable, il n'existait aucun système général de codification.

Une fois encore, pour des questions juridiques, les variétés en demande de protection en France reçoivent un numéro de demande unique et un numéro de certificat dans le cas où elles sont protégées. Les variétés en demande d'inscription reçoivent également un code depuis quelques années, mais la situation est plus complexe dans le cas de l'inscription puisqu'une variété peut-être inscrite à deux catalogues différents ; par exemple : pois protéagineux et pois fourrager.

- Si la demande a lieu la même année elle sera retenue sous le même numéro;
- Si elle a lieu lors d'années différentes elle aura des codes différents (pour des questions comptables). De plus, étant donné qu'une variété en demande de protection ne donne pas lieu forcément à une demande d'inscription, le centre informatique du G.E.V.E.S. a codé toutes les variétés qui ont fait ou qui font l'objet d'une étude au G.E.V.E.S. Ce code est attribué à une entité génétique qui parallèlement pourra avoir plusieurs numéros d'inscription au catalogue Français.

Ceci représente actuellement environ 12 000 variétés puisque le G.E.V.E.S. dispose dans ses collections de variétés ni inscrites ni protégées en France.

2/ Deux problèmes se posent au sujet des observations faites sur les variétés.

Le premier concerne la description de l'observation ; dans le domaine pathologique, par exemple, une observation de maladie pourra avoir un énoncé très vague comme "notations de maladie en général " ou beaucoup plus précis comme "Oïdium (Erisiphe graminis-hordei) sur feuilles à la floraison - noté de 1 à 9 ".

Le Centre Informatique essaie actuellement d'harmoniser les différents libellés utilisés en faisant la chasse aux moins précis. Cette question a évidement moins d'importance dans le domaine D.H.S. où des efforts d'harmonisation ont été fait entre les différents pays.

Le second problème qui se pose porte sur les échelles de notation utilisées. L'U.P.O.V. a fixé des règles en matière de D.H.S. (échelle de 1 à 9) alors que dans le domaine de la valeur agronomique, il existe en Europe des échelles de 0 à 10 pour des notations visuelles : cependant la donnée quantitative quand elle existe est toujours préférable.

Il est clair qu'il faut souhaiter une harmonisation entre la D.H.S. et la V.A.T. Actuellement, le G.E.V.E.S., à la suite d'un effort d'harmonisation utilise une échelle de 1 à 9 pour tous les caractères qualitatifs.

II . Les applications .

A) Les applications à caractère administratif et financier

1 - La gestion des demandes d'inscription au catalogue français.

Le but de cette application est de gérer la situation en V.A.T. et en D.H.S. des variétés en demande d'inscription. Elle gère également les variétés qui font l'objet d'une décision de prolongation d'inscription ou de radiation du catalogue.

Cette application existait sur un micro-ordinateur. Elle est réécrite sur SOLAR depuis 3 ans. Exploitée entre juillet et janvier de chaque campagne agricole, elle produit in fine le"répertoire des variétés en demande d'inscription " . Le document produit par l'ordinateur est prêt à la distribution.

La saisie et la mise à jour des informations sont une application transactionnelle multi-consoles avec masque d'écran. Les informations saisies sont :

. le code de la variété,

. le code de l'obtenteur et éventuellement du coobtenteur,

. la liste à laquelle la variété prétend,

. la situation d'étude de la variété en V.A.T.et D.H.S.,

. quelques renseignements relatifs à l'origine de la variété dans le cas d'hybrides.

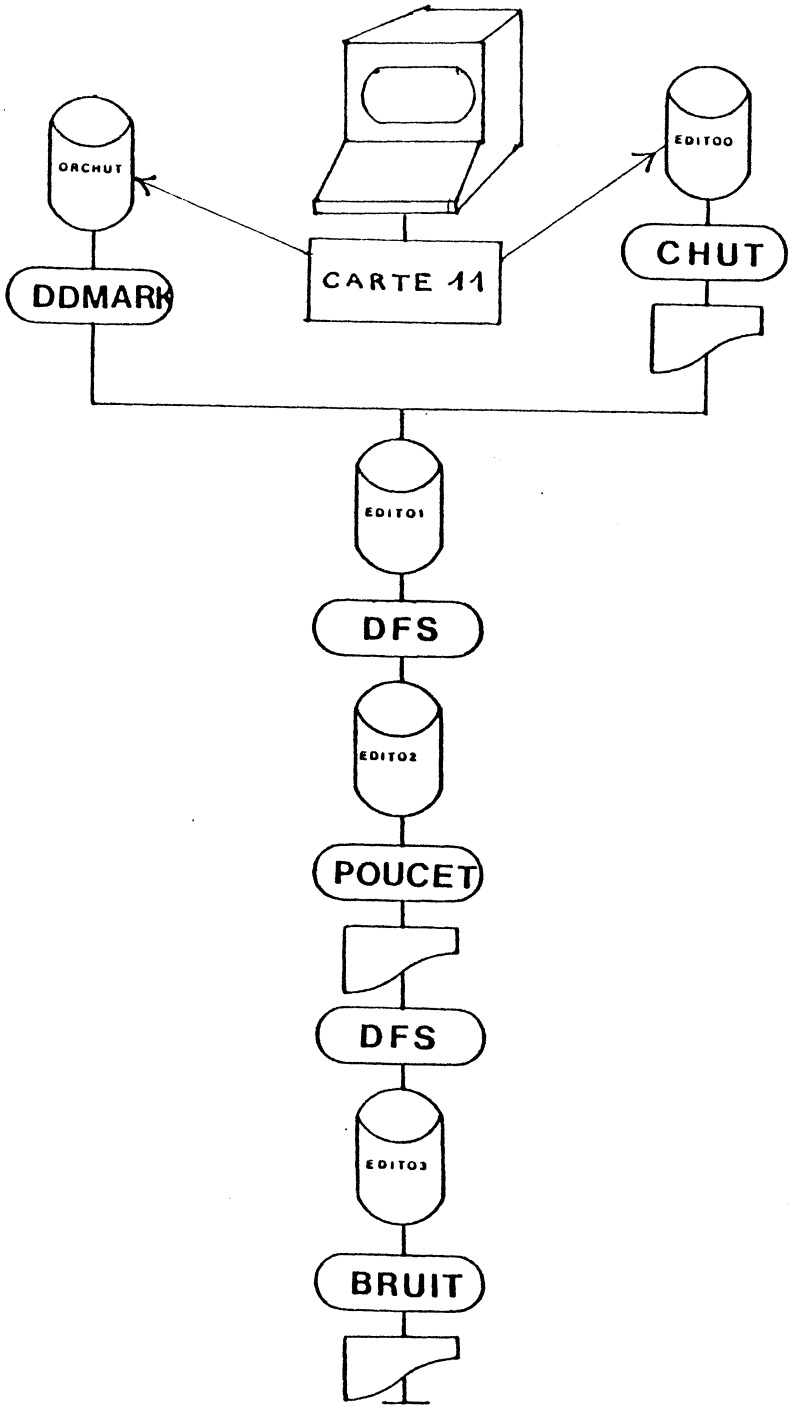
Le fichier ainsi produit subit divers contrôles d'ordre logique par un premier programme (CHUT). Ce programme prépare notamment un certain nombre de clés de tri en fonction de la situation de la variété et de l'espèce à laquelle elle appartient. Ce fichier produit est trié selon les codes d'inscription.

Un deuxième programme (POUCET) permet de contrôler les doubles (cas des variétés demandant la même année l'inscription dans deux espèces différentes)

Le fichier produit est trié en fonction des clés générées par " CHUT "

Un dernier programme assure l'édition du répertoire final.

On trouvera à la page suivante l'ordinogramme simplifié de la chaine complète.



0137
PAGE 1

- 16 -

COMITE TECHNIQUE PERMANENT
DE LA
SELECTION DES PLANTES CULTIVEES

ETAT RECAPITULATIF PAR ESPECE

DES VARIETES

EN DEMANDE D'INSCRIPTION AU CATALOGUE

(ANNEE 1981-1982)

SECTION C.T.P.S. : CEREALES

SOUS-SECTION: CEREALES D'HIVER

LA MINI... AVRIL 1982

- 15 -

Signalons que l'application transactionnelle génère non pas un, mais trois fichiers :

Un fichier de sauvegarde et deux fichiers de mouvement.

Cette chaine fonctionne ainsi en mise à jour sans que l'on ait à chaque fois à reconstituer l'ensemble des fichiers.

Un exemple de modèle d'état produit par cette chaine est donné aux deux pages suivantes.

Chaque année le fichier représentant le répertoire est chainé de matière cumulative au répertoire des années précédentes pour pouvoir sortir l'historique de la demande d'inscription d'une variété.

2 - la gestion des demandes de protection.

C'est une application nouvelle pour le centre de calcul. Elle a pour but de gérer la situation des variétés vis à vis de la protection avec en plus quelques renseignements d'ordre financier. Cette application ne fait pas appel à des programmes spécifiques mais à un logiciel général appelé " DESGRILLES " commun à plusieurs applications. (voir notre première partie).

Le logiciel DESGRILLES fonctionne à partir de quatre fichiers descriptifs de l'application.

PAGE 2

NUMERO		REFERENCE	DENOMINATION	OBTENTEUR	(DEMANDEUR OU *COOBTENTEUR	P A Y S	L I S T E	ANNEE D'ETUDE VAL CUL	DHS HYBR BASE	REMARQUE
		AVOINE D'HIVER (CODE 4001)								
50.565		B 2N 29		RINGOT		F		REFUSEE DHS ET VC		
55.175		C 2 N 1		RINGOT		F		REFUSEE DHS ET VC		
53.793		VL 24		VON LUCHOW-PETKUS (D)	(UCOPAC	D		REFUSEE VC		
55.176		OYSTER	*OYSTER	#PBS(ABERYSTWYTH) (GB)	(RINGOT	GB	A	2 2	2	ZONE 1
55.851		178-5-4-1-5		INRA	(INRA (MONTPELLIER)	F	A	1 1	1	ZONE 2
55.863		D-2309		RINGOT		F	A	1 1	1	ZONE 1
		BLE DUR D'HIVER (CODE 4101)								
90.631			*DURTAL	INRA		F		RADIEE LISTE A		
90.632			*MONTFERRIER	INRA		F		REINSCRITE EN LISTE A		
54.549		D 2 A	*ARCOUR	SEMENCES DE PROVENCE		F		INSCRITE EN LISTE A		
54.576	P	CALVIN (+PRINT.)	*CALVINOR	STAT NORTH DAKOTA(USA)	(GAE	USA		INSCRITE EN LISTE A		
54.544		TITO	*TITO	CNEH (I)	(CLAEYS-LUCK	I		REFUSEE DHS ET VC		
55.837		D 4611		SEMENCES DE PROVENCE		F		ANNULEE		
55.146		S 86		GAE		F	A	2 2	2	ZONE 2
55.194		646 (+PRINT)	*CLAIRDOC	INRA	(INRA (MONTPELLIER)	F	A	2 2	2	ZONE 2
55.800		CASOAR	*CASOAR	INRA	*UCOPAC	F	A	1 1	1	ZONE 2
55.814	P	(+PRINT)	*CANDO	STAT NORTH DAKOTA(USA)	(GAE	USA	A	1 1	1	ZONE 2
55.815		24		GAE		F	A	1 1	1	ZONE 2
55.816		97		GAE		F	A	1 1	1	ZONE 2
55.852		WA 6292	*WAID	UNIV. WASHINGTON (USA)	(LESGOURGUES GAV.CARGIL	USA	A	1 1	1	ZONE 2
		BLE TENDRE D'HIVER (CODE 4201)								
50.079			*RESO	DESPREZ		F		RADIEE LISTE A		
51.837			*VALMY	DESPREZ VEUVE & FILS		F		RADIEE LISTE A		

- le fichier des descripteurs

DOLP PAGE 2

INRA GEVES - UNITE DE CALCUL
LA MINIERE

extrait du fichier des descripteurs

```
D:12N27040602040FN    *     *  2EME OBTENTEUR                          0822GR01
D:13F2704060720GFA    *     *  LIBELLE 2EME OBTENTEUR                  082:GR01
D:14N31040702040FN    *     *  3EME OBTENTEUR                          0833GR01
D:15F31040707200FA    *     *  LIBELLE 3EME OBTENTEUR                  083:GR01
D:16N3504052R040ON    *     *  1ER DEMANDEUR                           DE11GR01
D:17F3504053320GOA    *     *  LIBELLE 1ER DEMANDEUR                   DE1:GR01
D:18N39040628040FN    *     *  2EME DEMANDEUR                          DE22GR01
D:19F3904063320GFA    *     *  LIBELLE 2EME DEMANDEUR                  DE2:GR01
D:20N43040728040FN    *     *  3EME DEMANDEUR                          DE33GR01
D:21F4304073320GFA    *     *  LIBELLE 3EME DEMANDEUR                  DE3:GR01
D:22N47040555040FN    *     *  MANDATAIRE                              MANDGR01
D:23F4704056020GFA    *     *  LIBELLE MANDATAIRE                      MAN:GR01
D:24N5105066905OFN    *     *  CODE HUTIN CTPS                         CTPSGR01
D:25N560607680601N    *     *  CODE MECANO UCGVS                       UCGVGR01
D:01N050401360400N    *     *  NUMERO DE DEMANDE                           GR02
D:02N090201460200N    0    32  JOUR DE DEMANDE                         JDEJGR02
D:03N110201490200N    0    13  MOIS DE DEMANDE                         MDEMGR02
D:04N130201520200N    *     *  ANNEE DE DEMANDE                        ADEAGR02
D:05N1502016602OFN    *     *  BULLETIN DE DEMANDE                     BUDEGR02
D:06N1702017402OFN    *     *  ANNEE BULLETIN DE DEMANDE               ANDEGR02
D:07N4901021701OFA    *     *  SITUATION                               SITUGR02
D:08N1902024602OFN    0    32  JOUR DERNIERE SITUATION                 JSIJGR02
D:09N2102024902OFN    0    13  MOIS DERNIERE SITUATION                 MSIMGR02
D:10N2302025202OFN    *     *  AN. DERNIERE SITUATION                  ASIAGR02
D:11N2502026602OFN    *     *  BUL. DERNIERE SITUATION (NUMERO)        BUSIGR02
D:12N2702027402OFN    *     *  BUL. DERNIERE SITUATION (ANNEE)         ANSIGR02
D:13N2902034602OFN    0    32  JOUR CERTIFICATION                      JCEJGR02
D:14N3102034902OFN    0    13  MOIS CERTIFICATION                      MCEMGR02
D:15N3302035202OFN    *     *  AN. CERTIFICATION                       ACEMGR02
D:16N3502036602OFN    *     *  BUL. CERTIFICATION                      BUCEGR02
D:17N3702037402OFN    *     *  BUL. CERTIFICATION (NUMERO)             ANCEGR02
D:18N5002041002OFN    *     *  DUREE CERTIFICATION (ANNEE)             DUREGR02
D:19N5202041602OFN    0    32  JOUR DEPART DUREE                       JDURGR02
D:20N5402041902OFN    0    13  MOIS DEPART DUREE                       MDURGR02
D:21N5602042202OFN    *     *  AN. DEPART DUREE                        ADURGR02
D:22N3902044602OFN    0    32  JOUR DEPOT DENOMINATION                 JNOJGR02
D:23N4102044902OFN    0    13  MOIS DEPOT DENOMINATION                 MNOMGR02
D:24N4302045202OFN    *     *  AN. DEPOT DENOMINATION                  ANOMGR02
D:25N4502046602OFN    *     *  BUL. DEPOT DENOMINATION (NUMERO)        BUNOGR02
D:26N4702047402OFN    *     *  BUL. DEPOT DENOMINATION (ANNEE)         ANNOGR02
D:27049010220200FA    *     *  LIBELLE DE LA SITUATION                 SIT:GR02
D:28N5804032504OFN    *     *  NUMERO DE CERTIFICAT                    CERTGR02
D:01N050401360400N    *     *  NUMERO DE DEMANDE                           GR03
D:02N090101620100N    *     *  REMARQUE DENOMINATION                   REDEGR03
D:03009010164160?N    *     *  LIBELLE REMA. DENOMINATION              RED:GR03
D:04N1071020371004    *     *  DENOMINATION                            DENOGR03
D:01N050401360400N    *     *  NUMERO DE DEMANDE                           GR04
D:02N0901017101004    *     *  CATEGORIE DE TAXE                       CATAGR04
D:03N100402120400N    *     *  TAXE DEMANDE                            TDEMGR04
D:04N340403120402N    *     *  TAXE DENOMINATION                       TNOMGR04
```

- le fichier des masques

```
CPOV/GR01      NUMERO DE DEMANDE:          GRILLE ORIGINE                        0101
 PAYS DE L'OBTENTEUR:                                ESPECE:                     0102
 ---- OU DEMANDEUR  :                                  TYPE:                     0103
   OBTENTEUR                     DEMANDEUR                   MANDATAIRE          0104
                                                                                 0105
                                                          NUMERO CTPS:           0106
                                                          ------ ICGV:           0107
CPOV/GR02      NUMERO DE DEMANDE:         DATE    /  /    BULLETIN:     DE 19    0201
   SITUATION ' '                          DATE    /  /    BULLETIN:     DE 19    0202
               NUMERO:       CERTIFICAT DATE    /  /    BULLETIN:     DE 19    0203
DUREE:    OU    /  /    DENOMINATION DATE    /  /    BULLETIN:     DE 19    0204
CPOV/GR03      NUMERO DE DEMANDE:          GRILLE DENOMINATION                   0301
                                                                                 0302
CPOV/GR04      NUMERO DE DEMANDE:          GRILLE TAXE(1/2)  CATEGORIE:          0401
DEMANDE                                   ( X           XXXX    X          /     0402
D.V.                                EXAMEN( X           XXXX    X          /     0403
PRIORITE                                  ( X           XXXX    X          /     0404



ODLP PAGE  2

 INRA GEVES - UNITE DE CALCUL
      LA MINIERE


TOUTE AUTRE MENTION:           COPIE OFFICIELLE:        PROVISION:               0405
CPOV/GR05      NUMERO DE DEMANDE:          GRILLE TAXE(2/2)                      0501
DELIVRANCE CERTIFICAT                              -----------ANNUITES-----------0502
CUMUL SURTAXE :           RELF.DECHE.:            1ERE       2EME       3EME     0503
CESSION/LICENCE:          AUTRES :                4EME       5EME       CUM.     0504


NOMBRE D'ENREGISTREMENT IMPRIMES:    56
CELA A DURE:          5.SECONDES

FIN NOMALE DE ODLP

/TIME

03/08/82         09 :10 :48 :720      00 :00 :19 :400
/EOJ
COMPTE RENDU STEP PRECEDENT : 00
```

- Les deux autres fichiers comportent des informations d'ordre système.

Le premier module du logiciel DESGRILLES permet la saisie, la mise à jour, la suppression, la consultation des différentes informations contenues dans les fichiers en y accédant par le numéro de demande de protection.

Le deuxième module permet d'extraire les numéros de demande qui répondent à une question logique (par exemple : toutes les demandes concernant des variétés françaises déposées après telle date et qui appartiennent à une espèce contenant le nom blé). Le sous-fichier ainsi constitué sera trié selon les critères que l'on veut.

Le troisième module permet d'éditer un état des numéros de demande ainsi sélectionnés, selon l'ordre demandé, et en faisant le bilan d'informations relatives à ces données.

On trouvera ci-aprés des exemples de sorties du deuxième et du troisième module.

Comme pour l'application "inscription" chaque année le fichier produit sera chainé au fichier des années précédentes pour garder l'historique des informations.

- Exemples de sorties du deuxième module

```
>/U1 EF
>/U2 EF
>/U3 EF
>/U4 EF
>/U5 EC
>/U6 EA
>/SO REPGEN-TT,EF
>/DELE SO
>/SO RUPTUR-TT,EF
>/DELE SO
>/CREATE REPGEN-TT,EF,D(5500,80)
>/SO RUPTUR-TT,EF
>/CLOSE SO
>/RUN SELEC1-DS,EF,'1000

    BONJOUR L'UCCVS TE SOUHAITE UN BON EXEC!!
    FRAPPE TON NOM DE BASE ET DE BASE SOCUR !

CPOVOREF
CPOV
CPOVOREF

  VOTRE EXPRESSION LOGIQUE OU RUPT ?

?PAOB>!F!)@(PADE2!F!)

          TABLE LOGIC1
          *************
          CODE NIVEAU
             0      1
             1      1
             0      1
             1      2
             0      1

             1      2
             0      1

          INDIRECTION-RESOLUTION
          **********************
          MOT CLE  OPERATEUR  DEPA   ARR
          PAOB         2        9     9
          PADE         2       19    19

          LES MOTS CLES DE LOGIC1
          ***********************
          PAOB GR01 OBTENTEUR                     PAOBGR01  1
          PADE GR01 MANDEUR                       PADEGR01  1

          LES RUPTURES
          ************
  RUPTURE ? SI FIN FRAPPER /*

RUPTOB11 PAGE

  RUPTURE ? SI FIN FRAPPER /*

RUPTDE11

  RUPTURE ? SI FIN FRAPPER /*

RUPTMAN;

  RUPTURE ? SI FIN FRAPPER /*

/*
  J'OUVRE LES FICHIERS. PATIENCE!
  MERCI,J'AI TOUT OUVERT ALORS JE LIS !

          POSITION DE CHARGE
          ******************
          PAOB     1  0
          PADE     1  0

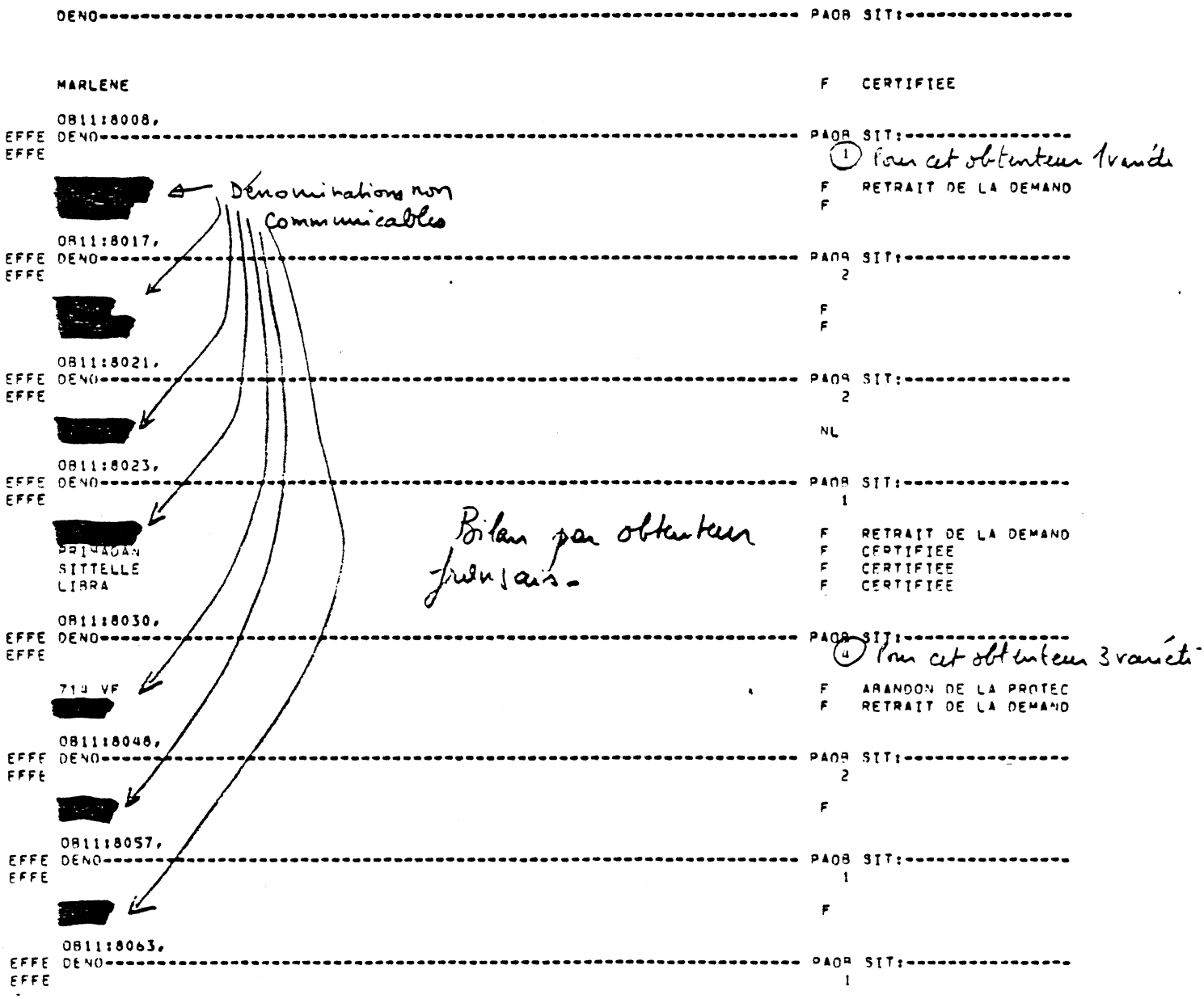
          MOTCLE LONGUEUR POSDEB POSFIN
          *****************************
           OB11      4      1     4     -1     0
           DE11      4      5     8      0     0
           MAN;     20      9    28      0     0

20678067                                                         0011
00210021                                                         0012
00210021                                                         0013
01070107                                                         0014
02260300                                                         0015
02260300                                                         0016
02260300                                                         0018
02260300                                                         0019
02250225                                                         0020
02250225                                                         0021
02250225                                                         0022
```

question on veut toutes le demandes de protection dont les obtenteur ou les demandeurs sont français

clé de tri pour l'édition du 3ième module

- Exemples de sorties du troisième module



3 - La gestion des indemnités de demandes d'inscription .

Cette application est sous-traitée au Centre du Traitement de l'Information- Gestion de l'Institut National de la Recherche Agronomique à Jouy-en-Josas.

Ce que l'on peut dire c'est qu'à chaque échantillon (semence ou variété) traité par le GEVES, on associe le code espèce, le code demandeur (au sens large), le code payeur ainsi qu'un code de facturation qui associé à l'espèce génèrera les facturations de droits (administratifs, DHS, VAT) pour la totalité des années concernées par la perception de ces droits.

Ce programme fonctionne en mise à jour et permet chaque année de sortir les factures générées. On dispose d'un certain nombre de listes de contrôle ainsi que de procédures qui vérifient l'encaissement des factures par nos soins ou par l'agence comptable de l'INRA.

Les entrées de ce programme batch se font par cartes.

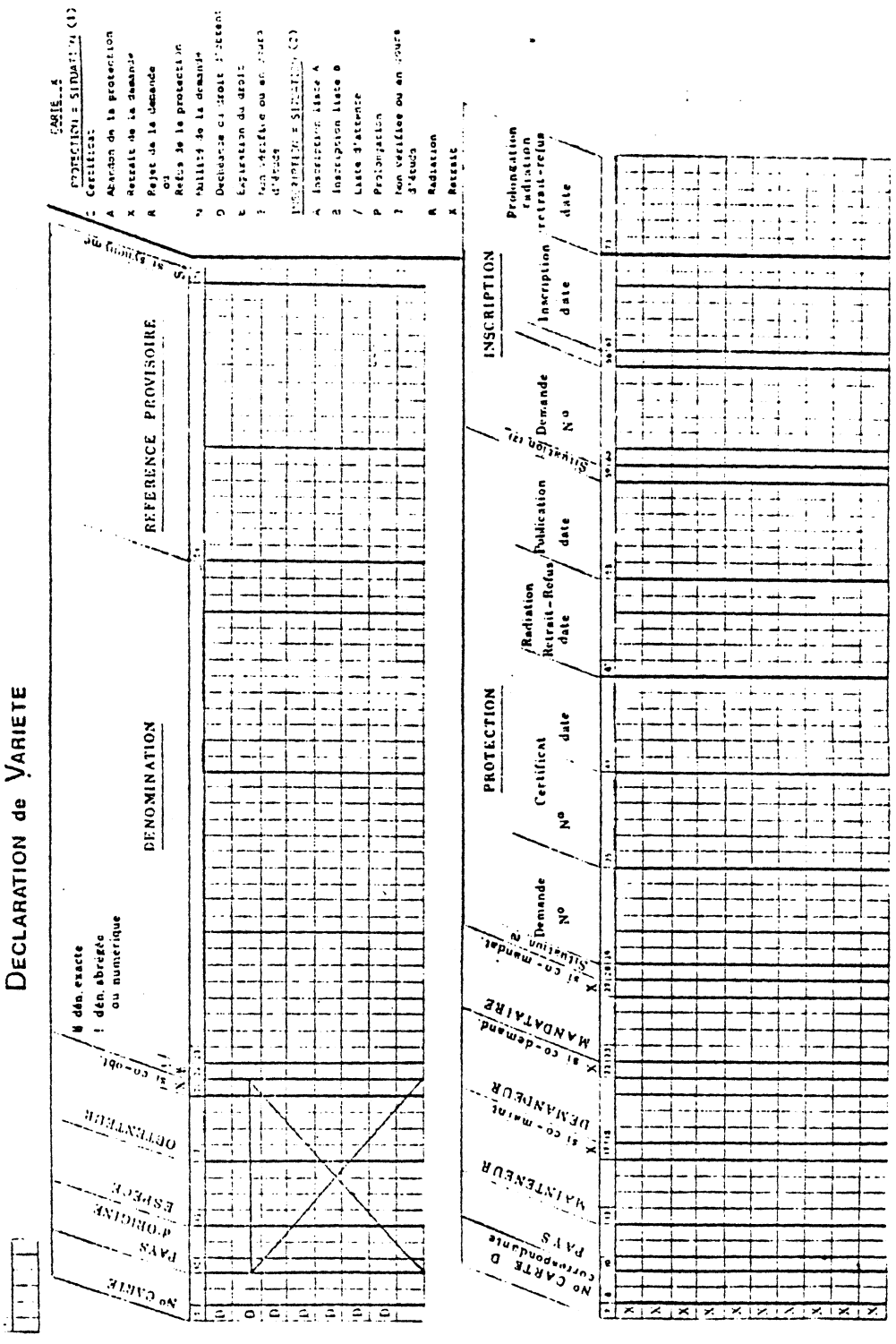
4 - La gestion du dictionnaire des variétés et des comparaisons phonétiques.

Le centre informatique récupère les informations issues des applications précédentes et les complète d'une manière non systématique par d'autres informations provenant d'autres catalogues(C.E.E, O.C.D.E, etc) ou d'autres sources. Il rajoute d'autre part des informations administratives relatives aux variétés expérimentées par le GEVES qui ne font l'objet ni d'une demande d'inscription ni d'une demande de protection.

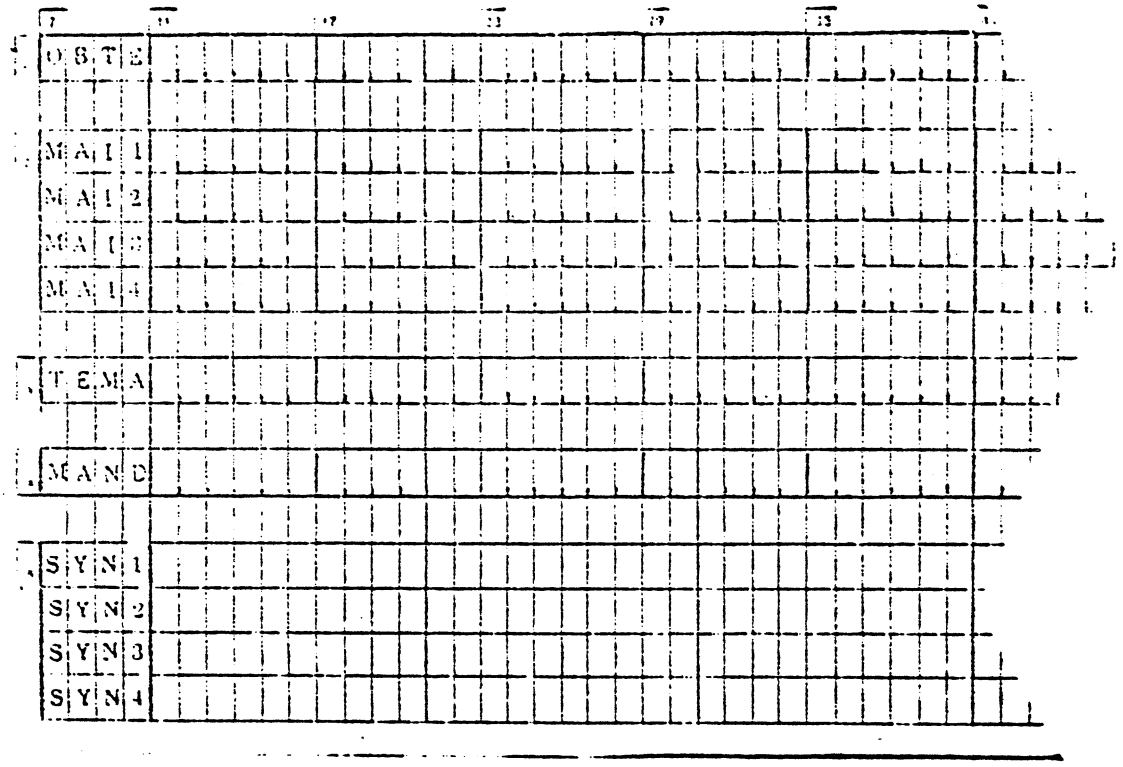
Les renseignements sont consignés dans un modèle d'état que l'on trouvera aux deux pages suivantes.

Ces informations sont saisies et contrôlées par un premier programme qui assure leur stockage dans différents fichiers. Une série de programmes permet d'obtenir soit l'ensemble des informations soit des listes triées d'une partie de ces informations.

Déclaration de variété (recto).



Déclaration de variété (verso)



1 OBTE Si co-obtenteurs

2 MAI Si co-mainteneurs

S sélection conservatrice

P production

R si principal

3 TEMA Si co-demandeurs

4 MAND Si co-mandataires

5 SYNI Si synonymes

Synonyme (PAYS 1) (PAYS 2) ; synonyme ..... en continuant éventuellement sur la carte SYN2 .....

Une page dictionnaire

UCOVS/GEVES DICTIONNAIRE DES VARIETES INSCRITES (ET/OU) PROTEGEES

001610	NL	6400	8149	JOLANCO					
	F	8149	8149	8484	REJET/REFUS	1101		210280	0580
	NL	8149	8149	8149					
001611	NL	6400	8149	ROBERT					
	F	8149	8149	8484	RETRAIT DEM.	1987		020180	0380
	NL	8149	8149	8149					
001612	NL	6400	8085	MONTY			AOAL		
	F	8085	8085	8048	RETRAIT DEM.	855	628 041077	251079	0180
	NL	8085	8085	8085					
001613	USA	6400	8330	MIDAS					
	F	8330	8103	8103	RETRAIT DEM.	393		100376	0376
	GB	8330	8330	8330					
	I	8330	8330	8330					
001614	USA	6400	8330	STRIKE					
	F	8330	8103	8103	NON VERIFIEE	2019			1178
	I	8330	8330	8330					
001615	USA	6400	8330	PICO					
	F	8330	8103	8103	RETRAIT DEM.	395		100376	0376
	I	8330	8330	8330					
001616	NL	6400	8149	RESCOLA					
	F	8149	8149	8484	RETRAIT DEM.	1100		300180	0380
	NL	8149	8149	8149					
001617	NL	6400	8085	STRATEGO			PRODESSE		
	F	8085	8085	8048	CERTIFICAT	1065	805 310779		1178
	NL	8085	8085	8085					
001618	NL	6400	8149	SILVARES					
	F	8149	8149	8484	RETRAIT DEM.	1098		020378	0378
	NL	8149	8149	8149					

Une page de liste plus simple

0113230103	91038157	MULTIHILL		10	F	X01			B	50355	73	
0113390103	91038157	MONATONNO	AUMONO	10	F	X01			B	50357	73	
0113100103	91038157	HILLESHOG AU POLY		10	F	X01			B	50360	73	
0111740103	91038157	HILLESHOG STANDARD POLYPLOIDE		10	F	X018159			A	50361	73	
0111750103	91038157	HILLESHOG R POLYPLOIDE		10	F	X018157			A	50362	73	
0113470103	91038157	ZUMO		10	F	X019055			B	50363	73	
0113070103	91038157	PRIMAHILL		10	F	X018159			A	50364	74	
0112840103	91038745	MONODANIA		10	F	X018856			A	50366	74	
0113010103	91038157	MONOSVALOF		10	F	X018157			A	50369	73	
0113400103	91038157	MONOSTAR		10	F	X018157			A	50370	73	
0112230103	91038157	TRIHILL		10	F	X018159			A	50371	73	
0112210103	91038157	TRISVALOF		10	F	X018126			A	50372	73	
0112080DF	91038108	MENNESSON P22		10	F	X01			R	50373	73	81
0112070DF	91038108	MENNESSON P33		10	F	X018108			A	50374	73	
0112060DF	91038108	MENESSON P44		10	F	X018108			A	50375	73	
0112050DF	91038108	MENNESSON T55		10	F	X018108			A	50376	73	
0112710DF	91038108	MENESSON MONO		10	F	X018108			A	50377	73	
0112890DF	91038108	MONOMARCOM		10	F	X018108			A	50378	73	
0111800DF	91038112	LEGLAND POLYPLOIDE		10	F	X018108			R	50379	73	81
0112930DF	91038112	MONOGLAND		10	F	X018108			R	50380	73	81
0112130DD	91038217	KAWESACCHAPOLY		10	F	X01			R	50383	74	81
0111830DD	91038217	KAWEPOLY		10	F	X01			A	50384	73	
0111850DD	91038217	KAWEMEGAPOLY		10	F	X01			A	50385	73	
0111870DD	91038217	KAWEGIGAPOLY		10	F	X01			A	50386	73	
0112600DD	91038217	KAWEMONO		10	F	X01			A	50389	73	
0112620DD	91038217	KAWEMEGAMONO		10	F	X01			A	50390	73	
0112530DD	91038217	KAWEGIGAMONO		10	F	X01			A	50391	73	
0112190DF	91038160	POLYSAY		10	F	X01			R	50393	73	81
0111710DF	91038161	CERES POLY 1		10	F	X01			R	50394	73	81
0111700DF	91038161	CERES POLY 2		10	F	X018161			A	50395	73	
0111690DF	91038161	CERES POLY 3		10	F	X018161			A	50396	73	
0112520DF	91038161	CERES TRIMONOMER	TRIMONOMER	10	F	X018161			A	50397	73	
0111680DF	91038161	CERES TR 4		10	F	X018161			A	50398	73	
0112350DF	91038161	CERES MONOMER	MONOMER	10	F	X018161			A	50399	73	
0111790DF	91038161	CERES TRAJANE		10	F	X018161			A	50400	74	
0113120DF	91038161	CERES TR.4 GRECE		10	F	X01			B	50401	73	
0111820DD	91038217X	KAWEPOLY DESPREZ		10	F	X018020			A	50402	73	
0111840DF	91038020X	KAWEMEGAPOLY DESPREZ		10	F	X018020			A	50403	73	
0111860DD	91038217X	KAWEGIGAPOLY DESPREZ		10	F	X018020			R	50404	73	81
0111810DD	91038217X	KAWEPRECOPOLY DESPREZ		10	F	X01			R	50405	73	81
0112630DF	91038020X	KAWEGIGAMONO DESPREZ		10	F	X018020			A	50406	73	
0112610DD	91038217X	KAWEMEGAMONO DESPREZ		10	F	X018020			A	50407	73	
0112700DD	91038217	KAWEMONO DESPREZ		10	F	X018020			R	50408	73	82
0111780DF	91038020	DESPREZ POLY E		10	F	X018020			A	50412	73	
0111770DF	91038020	DESPREZ POLY N		10	F	X018020			A	50413	73	
0111760DF	91038020	DESPREZ POLY R.C.		10	F	X018020			A	50414	73	
0112470DF	91038020	DESPREZ MONO R.C.		10	F	X018020			A	50415	74	
0112490DF	91038020	DESPREZ MONO E	MONO DESPREZ	10	F	X018020			A	50416	73	
00325701DUSA	41028448	WELLS		1	F	X018122	8122		R	50419	74	82
0044270IDF	51018235	PRIMOR		6	F	X018235	8235		A	50420	73	
01220801DUSA	82508341	NECTARINE ANDACAS		8250	F	X01				50423	79	
01210301DUSA	82508341	NECTARINE ANDAMI		8250	F	X01				50424	77	
0123460IDF	82648088	DELFRAP		20	F	X01				50425	79	
00360701DNL	40028033	LEANDA		1	F	X018063	8033		A	50428	74	
0045390IDB	44028575	HEBE		1	F	X018017X			A	50429	73	
0037350IDF	44028020	MAZURKA		1	F	X018020	8020		A	50432	73	
00373601DNL	44028033	ARAMIR		1	F	X018063	8033		A	50434	74	
0045640IDD	44028220	VANESSA		1	F	X018063			R	50435	75	81
0037380IDD	44028252X	LOLA		1	F	X01		8027	R	50437	73	81
0045700IDD	44028252X	COSMOS		1	F	X01		8027	R	50438	73	81

Dans cette chaîne dont on trouvera l'ordinogramme en fin de paragraphe, on peut faire une comparaison phonétique entre une dénomination variétale et un sous-ensemble de dénominations du dictionnaire (un sous-ensemble = une classe U.P.O.V.).

Le programme qui assure la comparaison phonétique recherche dans la dénomination les groupes de lettres qui peuvent constituer un phonème et, par un mécanisme de décomposition puis de recomposition, produit, pour cette dénomination, un ensemble d'équivalents phonétiques, ensemble qui est affiné par les extensions dues aux différentes phonétisations possibles du groupement qui donne lieu à phonème.

Le produit de la comparaison qui in fine se fait entre deux séries de chiffres apparaît sous forme de trois coefficients qui sont des maxima observés lors des comparaisons des équivalents phonétiques de deux dénominations.

Le premier coefficient donne le rapport de longueur le plus avantageux des équivalents des deux dénominations.

Le deuxième coefficient est le nombre de phonèmes communs sur la longueur de l'équivalent phonétique le plus court.

Le troisième coefficient est un genre de coefficient de corrélation sur les ordres des phonèmes communs.

Les deux premiers coefficients sont ramenés à 100. Le dernier coefficient prend ses valeurs entre 0 et 200.

Voici quelques exemples de comparaisons phonétiques.

Le programme ne donne la liste que des dénominations qui lui semblent les plus proches.

L'expérience nous montre que le programme voit plus de ressemblances qu'il n'y en a réèllement, ce qui est infiniment moins grave que le contraire.

Exemples de comparaisons phonétiques

4700 MAIS

COEF CORRELATION
L1 NB PHONEMES COMMUNS / LONGUEUR+PETIT
L2 LONGUEUR+PETIT / LONGUEUR+GRAND

ETUDE	REFERENCE	COEF	L1	L2	ESPECE		
CRESOR	CAESAR	200	066	100	4700	MAIS	011578
CRESOR	CRESUS	200	066	100	4700	MAIS	011595
CRESOR	KER	200	066	050	4700	MAIS	011504
CRESOR	EGO	200	066	050	4700	MAIS	011602
CRESOR	ERY	200	066	050	4700	MAIS	011607
CRESOR	BOREE	200	059	083	4700	MAIS	011563
CRESOR	CISTRON	199	066	100	4700	MAIS	011581
CRESOR	CARGILL JUNIOR 160	199	066	039	4700	MAIS	007118
CRESOR	PRIOR	199	059	083	4700	MAIS	011580
CRESOR	SANORA	198	059	100	4700	MAIS	011510
CRESOR	CANTALESO	197	066	075	4700	MAIS	011577
CRESOR	CASTOR 220	197	066	066	4700	MAIS	008630
CRESOR	CORNER	194	083	100	4700	MAIS	011618
CRESOR	CORAIL	194	059	100	4700	MAIS	007022
CRESOR	COBRA	186	059	083	4700	MAIS	011586
CRESOR	CARGILL-PRIMEUR	185	066	046	4700	MAIS	011576
CRESOR	CARGILL-PRIMEUR 170	185	066	037	4700	MAIS	011576
CRESOR	ECLAIR	182	059	100	4700	MAIS	011605
CRESOR	CARGILL RECORD 206	180	083	039	4700	MAIS	011575
CRESOR	CARGILL-AIRE 504	177	066	050	4700	MAIS	007013
CRESOR	CARGILL REAL 350	175	066	046	4700	MAIS	007121
CRESOR	EUROS	152	079	083	4700	MAIS	011638
CRESOR	EOS	150	100	050	4700	MAIS	011609
CRESOR	CONCORDE	140	066	085	4700	MAIS	011585
CRESOR	SCORE 348	124	083	085	4700	MAIS	011518
CRESOR	AUROCAS	121	066	100	4700	MAIS	011542
CRESOR	GAVROCHE	114	066	085	4700	MAIS	011507

Exemples de comparaisons phonétiques

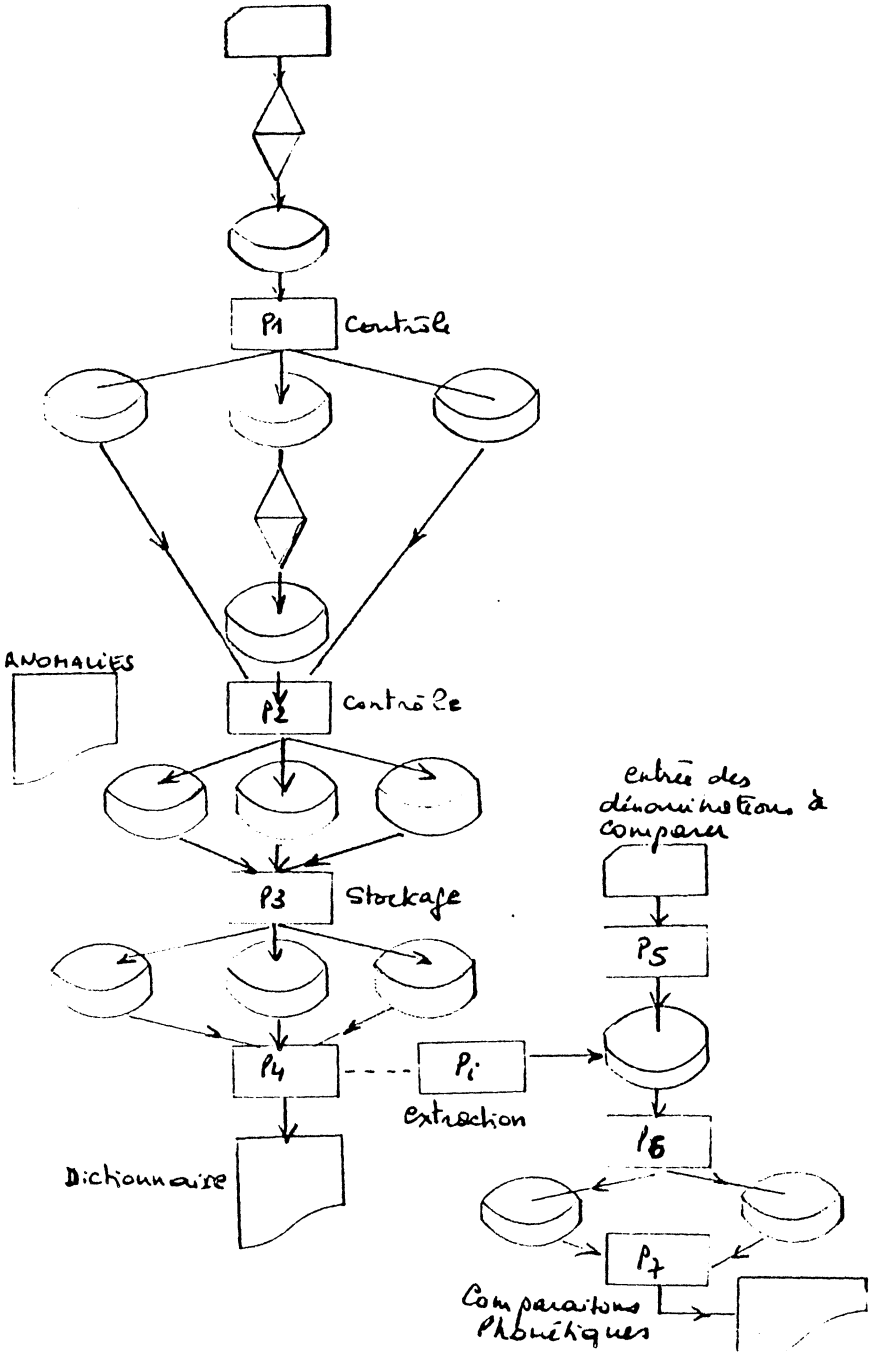
4700 MAIS

identique ?

COEF CORRELATION
L1 NB PHONEMES COMMUNS / LONGUEUR+PETIT
L2 LONGUEUR+PETIT / LONGUEUR+GRAND

ETUDE	REFERENCE	COEF	L1	L2	ESPECE		
ANJOU 210	ANJOU 21	200	100	100	4700	MAIS	006258
ANJOU 210	ANJOU 210	200	100	100	4700	MAIS	006258
ANJOU 210	CARGILL JUNIOR 160	200	087	053	4700	MAIS	007118
ANJOU 210	ANJOU 259	200	075	100	4700	MAIS	007120
ANJOU 210	ANJOU 196	200	075	100	4700	MAIS	006383
ANJOU 210	ANJOU 306	200	075	100	4700	MAIS	011533
ANJOU 210	ANJOU 360	200	075	100	4700	MAIS	011532
ANJOU 210	ANJOU 500	200	075	100	4700	MAIS	011531
ANJOU 210	ANJOU 166	200	075	100	4700	MAIS	011517
ANJOU 210	ANJOU 256	200	075	100	4700	MAIS	011566
ANJOU 210	ANKU	200	075	066	4700	MAIS	011614
ANJOU 210	NK 110 A	200	066	100	4801	SORGHO GRAIN	004514
ANJOU 210	NK 130	200	059	083	4801	SORGHO GRAIN	004245
ANJOU 210	NK 121	200	059	083	4801	SORGHO GRAIN	004244
ANJOU 210	NK 108	200	059	083	4801	SORGHO GRAIN	004242
ANJOU 210	NK 101	200	059	083	4801	SORGHO GRAIN	004241
ANJOU 210	ARLON	200	059	083	4700	MAIS	011527
ANJOU 210	BARUN	200	059	083	4700	MAIS	011546
ANJOU 210	BANCO	200	059	083	4700	MAIS	011548
ANJOU 210	EPONA	200	059	083	4700	MAIS	011608
ANJOU 210	ROTAN	200	059	083	4700	MAIS	011562
ANJOU 210	CUZCO 251	200	057	100	4700	MAIS	011594
ANJOU 210	INRA 321 (BLANC)	200	057	072	4700	MAIS	006319
ANJOU 210	JOURDAIN 610	199	087	088	4801	SORGHO GRAIN	004505
ANJOU 210	KATAN NK 129	191	057	079	4801	SORGHO GRAIN	004501
ANJOU 210	NK 120	190	079	083	4801	SORGHO GRAIN	004513
ANJOU 210	NK 123	186	059	083	4801	SORGHO GRAIN	004512
ANJOU 210	NK 125	186	059	083	4801	SORGHO GRAIN	004511

Entrée des descriptions administratives des variétés.



B) Les applications à caractère scientifique.

Il s'agit là de trois groupes d'applications qui gèrent trois groupes de dispositifs expérimentaux. Nous entendons par dispositif expérimental une succession de parcelles de terrain représentant une série variétale, succession répétée ou non en un lieu donné.

Le service informatique n'avait pas les moyens de faire une application par espèce.

D'autre part, la faiblesse numérique de son équipe l'a obligé à concentrer les applications avec pour chacune d'elles un degré d'automatisation maximum assurant le plus grand nombre possible de contrôles et évitant toute manipulation superfétatoire en exploitation.

Ceci explique que nous ayons trois applications d'interprétation des essais de comparaisons des variétés :

- Pour les collections de plantes autogames où l'on a une seule description par variété.

- Pour les collections de plantes allogames où l'on a une description pour chaque plante de chaque répétition de l'essai.

- Pour les essais de V.A.T. où l'on a une description par parcelle.

1 - Gestion des collections de plantes autogames.

C'est la seule chaîne "ancienne" du centre calcul,chaîne pour laquelle des projets de réécriture sérieux sont en cours.
Cette chaîne permet d'exploiter les essais de plantes autogames et pourra être utilisée pour des comparaisons rapides entre des descriptions annuelles de plantes allogames si cela devenait nécéssaire.

Pour chaque variété on observe pendant plusieurs années (jusqu'à cinq années), en un ou deux lieux chaque année, un certain nombre de caractères, qui sont :

- soit des caractères dont on note la présence ou l'absence, ou la plus ou moins grande expression, selon une échelle de 1 à 9, ceci sur l'ensemble de la variété.

- soit des caractères mesurés : on dispose dans ce cas de plusieurs mesures pour une même variété, mais ce que l'on retient ensuite c'est le rapport de ces mesures à celles d'un témoin théorique.

Pour des raisons de" calendrier d'observations" on regroupe ces caractères en :
- caractères" morphologiques"
observés sur épi ou panicule, au laboratoire, et notés de 1 à 9.

- caractères" végétatifs"
observés sur la plante en végétation, soit notés de 1 à 9, soit mesurés.

On utilise la masse d'informations dont on dispose à deux fins :

1/ Pour la description d'une variété.

Pour chaque caractère de la variété, on donne :
. le libellé "en clair"du caractère.
. la légende correspondant à la note moyenne du caractère.
. le nombre d'observations faîtes à chaque note de l'échelle.

2/ Pour la comparaison des variétés.

On cherche à savoir si telle variété est semblable ou non à celles dont on possède les descriptions.
Chaque variété est représentée par une "observation moyenne", qui est la moyenne de toutes les observations faîtes pour cette variété.
On compare une variété à une autre : pour chaque caractère, on cherche si la variété à comparer peut être ou non jugée différente de la variété de référence, ceci en tenant compte de la fluctuation retenue pour le caractère considéré.
On arrête la comparaison dès que la variété a été jugée différente pour un caractère.
L'ordre des caractères dont on se sert pour la comparaison tient compte de leur" fiabilité " plus ou moins importante.

Actuellement les observations de l'année en cours se trouvent sous forme de cartes perforées.

Les observations des années antérieures constituent plusieurs fichiers:

1-fichier 1ESP-in dans lequel sont stockés les caractères notés de 1 à 9 sur un épi ou une panicule.

2-fichier 3ESP-in dans lequel sont stockés les caractéres de 1 à 9 sur la plante en végétation.

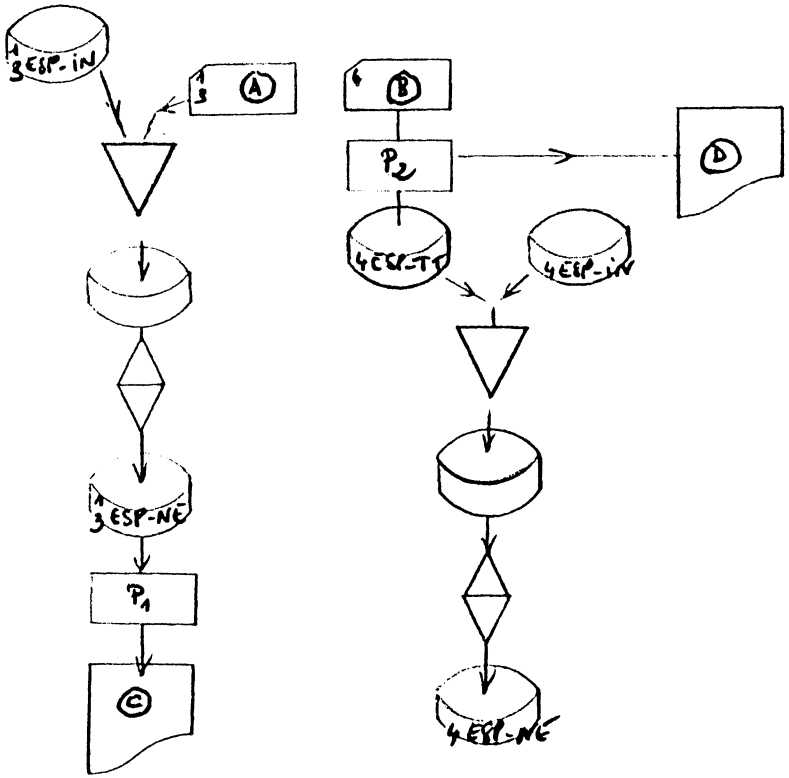
3-fichier 4ESP-in dans lequel sont stockés les caractéres mesurés sur la plante en végétation, ceci sous la forme d'un pourcentage par rapport à un témoin théorique, constitué par plusieurs variétés connues.

Dans chacun de ces fichiers un enregistrement représente la description d'une variété pour une année et un lieu donné. Cet ensemble de trois fichiers est propre à chaque espèce.

On trouvera dans les pages qui suivent un descriptif du déroulement de la chaîne.

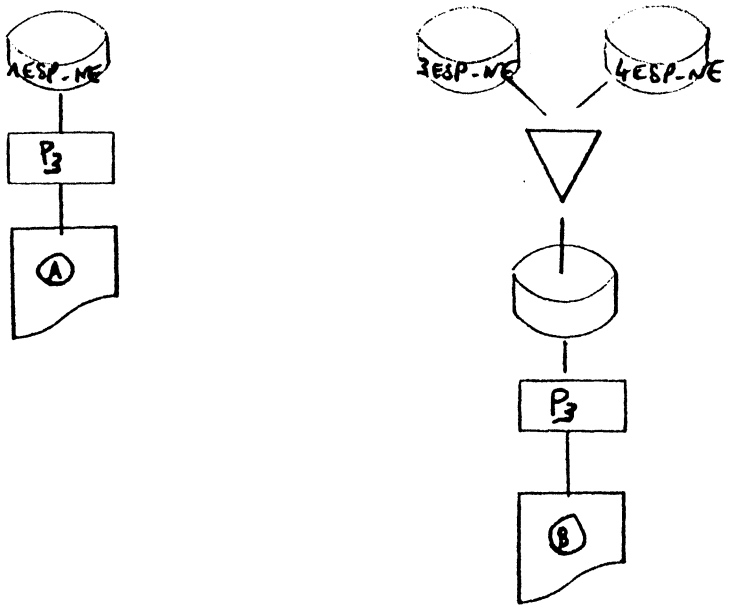
-Déroulement de la chaîne-

£1-Introduction des données de l'année en cours.



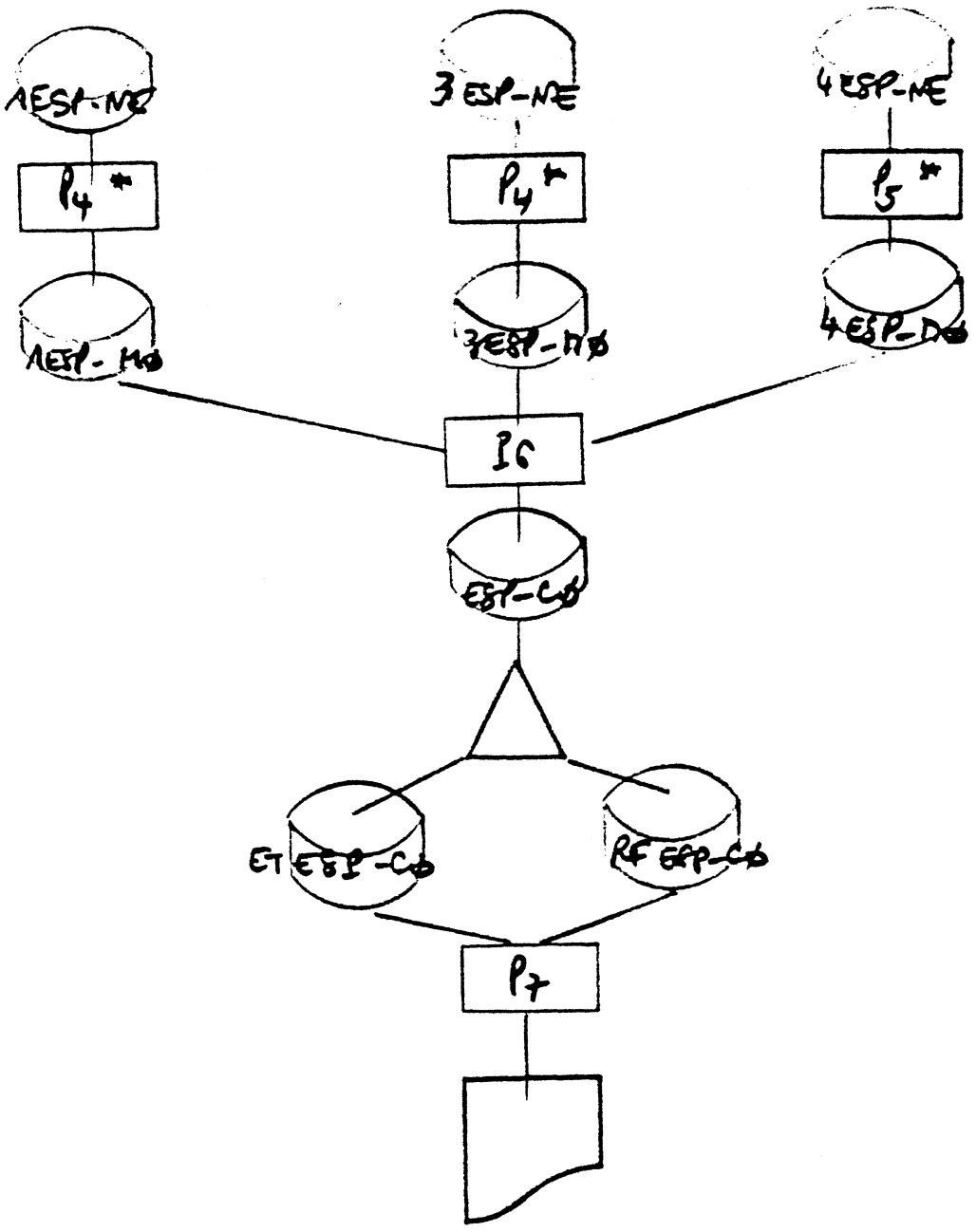
(A) Ensemble des descriptions individuelles de l'année en cours.
(B) Ensemble des mesures individuelles de l'année en cours.
(C) Liste des descriptions individuelles pour chaque variétés.
(D) Liste ordonnée des variétés pour chaque caractére étudié l'année en cours, par lieu.

£2- Traitement des fichiers.
a)Description de tout ou partie des variétés d'une espèce.



(A) Description "en clair" de l'épi ou de la panicule de chaque variété.
(B) Description "en clair" de chaque variété en végétation.

b)Comparaison de chaque variété d'un fichier "étude" à chaque variété d'un fichier "référence".



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* Calcul de la "description moyenne" d'une variété. Cette description est constituée de caractéres notés de 1 à 9.

-Exemple de sortie de description de variété-

ORGE VARIETE VIVA ANNEE 1979 CODE 489

VARIETE INSCRITE 9 OBSERVATIONS - 77 78 78 79 79 79 79 79 79
PAYS D'ORIGINE -FRANCE

CARACTERES EN VEGETATION	LIBELLE MOYEN	NOMBRE DE NOTES 1 2 3 4 5 6 7 8 9	MOYENNE *FRA*EUR
LEVEE			
VASCULARISATION DU COLEOPTILE (FREQ.FX BURNUMER)			
PIGMENTATION ANTHOCYANIQUE DE LA 1ERE FEUILLE	TRES FAIBLE A FAIBLE	0 5 0 0 0 0 0 0 0	* 2 *
PILOSITE DE LA GAINE DE LA TROISIEME FEUILLE	FAIBLE	0 0 4 1 0 0 0 0 0	* 3 *
REACTION AU DDT	RESISTANT	3 0 0 0 0 0 0 0 0	* 1 *
REACTION AU BARBANE			
REACTION AU PARATHION-METHYL			
TALLAGE			
PORT DES CINQUIEME OU SIXIEME FEUILLE	DEMI ETALE	0 0 0 0 0 1 8 0 0	* 7 *
FEUILLAGE - COULEUR DOMINANTE	VERT FRANC	0 0 0 0 0 1 7 0 0	* 7 *
- COULEUR SECONDAIRE	VERT FRANC	0 0 0 0 0 0 8 0 0	* 7 *
PILOSITE DES GAINES DES 4EME ET 5EME FEUILLES	FORTE	0 0 0 0 0 1 8 0 0	* 7 *
MONTEE			
PORT DE LA DERNIERE FEUILLE A SORTIE DES BARBES	1/2 DRESSE-1/2 RETOMBANT A 1/2 RETOMBANT	0 0 0 0 1 7 0 0 0	* 6 *
EPIAISON-FLORAISON * DERNIERE FEUILLE			
RUGOSITE DU LIMBE	MOYENNE A FORTE	0 (1) 0 0 0 4 1 0 0	* 6 *
GLAUCESCENCE DU LIMBE			
LONGUEUR DU LIMBE		MOY= 1.01 MIN= 0.89 MAX= 1.12	
LARGEUR DU LIMBE		MOY= 0.93 MIN= 0.84 MAX= 1.02	
GLAUCESCENCE DE LA GAINE	MOYENNE	0 0 0 0 5 2 0 0 0	* 5 *
DECALAGE DES OREILLETTES	FAIBLE	0 2 6 0 0 0 0 0 0	* 3 *
PIGMENTATION ANTHOCYANIQUE DES OREILLETTES	FORTE	0 0 0 0 0 1 4 3 0	* 7 *
PIGMENTATION ANTHOCYANIQUE DES POINTES DE BARBES	MOYENNE A FORTE	0 0 0 0 2 3 3 0 0	* 6 *
FORME DU DERNIER NOEUD	INTERMEDIAIRE	0 0 0 0 9 0 0 0 0	* 5 *
GLAUCESCENCE DE L'EPI	MOYENNE	0 0 0 1 4 4 0 0 0	* 5 *
HAUTEUR DE LA PLANTE (% DU TEMOIN THEORIQUE)		MOY= 0.99 MIN= 0.96 MAX= 1.03	
PORT DE L'EPI	LEGEREMENT INCURVE	0 1 4 3 1 0 0 0 0	* 3 *
LONGUEUR DU COL DE L'EPI	MOYEN	0 0 0 3 4 0 2 0 0	* 5 *
PIGMENTATION ANTHOCYANIQUE DU COL DE L'EPI	FAIBLE	5 0 1 0 0 3 0 0 0	* 3 *
FREQUENCE DE LA DEFORMATION DU COL DE L'EPI	NULLE OU TRES FAIBLE	9 0 0 0 0 0 0 0 0	* 1 *
SINUOSITE DU COL DE L'EPI	FAIBLE	0 0 9 0 0 0 0 0 0	* 3 *

VARIETES BARBUES - BARBES -

-exemple de sortie de comparaisons de variétés

54542. 5 9 4 6 3 3 1 1 5 9 4 4 4 3 5 3 2 2 2 1 9 7 7 5 4 2 1 6 1 1 4 4 7 7 4 4 5 5 5 8 5 4 7 0 0 0 0 0 0 0
0 0 0 0 3 6 0 0 7 7 6 4 3 6 0 6 5 6 6 5 5 4 7 1 2 5 5 0 0 5 6 5 0 8 0 0 1 6 5 0 0 0 0 0 0 0 0 0 0 0

VARIETE A COMPARER - CODE 54542. - 386 @F 1981

LE CARACTERE 44 EST ABSENT POSITION DES EPILLETS
LE CARACTERE 45 EST ABSENT LONGUEUR DE LA GLUME DE L'EPILLET STERILE
LE CARACTERE 46 EST ABSENT PILOSITE DE LA GLUME DE L'EPILLET STERILE
LE CARACTERE 47 EST ABSENT LONGUEUR DE LA GLUMELLE INFERIEURE DE L'EPILLET STERILE
LE CARACTERE 48 EST ABSENT FORME DE LA GLUMELLE INFERIEURE DE L'EPILLET STERILE
LE CARACTERE 49 EST ABSENT PILOSITE DE LA GLUMELLE INFERIEURE DE L'EPILLET STERILE
LE CARACTERE 50 EST ABSENT LONGUEUR DE LA GLUMELLE SUP./GLUMELLE INF.-EPILLET STERILE
LE CARACTERE 51 EST ABSENT COULEUR DU RACHILLET DE L'EPILLET STERILE
LE CARACTERE 52 EST ABSENT COLORATION DU GRAIN NU DECORTIQUE A L'ACIDE PHENIQUE
LE CARACTERE 53 EST ABSENT VASCULARISATION DU COLEOPTILE (FREQ.FAISCEAUX SURNUMERAIRES)
LE CARACTERE 54 EST ABSENT PIGMENTATION ANTHOCYANIQUE DE LA PREMIERE FEUILLE
LE CARACTERE 57 EST ABSENT SENSIBILITE AU BARBANE
LE CARACTERE 58 EST ABSENT SENSIBILITE AU PARATHION-METHYL
LE CARACTERE 65 EST ABSENT GLAUCESCENCE DU LIMBE DE LA DERNIERE FEUILLE
LE CARACTERE 78 EST ABSENT ALTERNATIVITE -TYPE
LE CARACTERE 79 EST ABSENT ALTERNATIVITE -DEGRE
LE CARACTERE 83 EST ABSENT HAUTEUR DANS LES VARIETES COURTES
LE CARACTERE 85 EST ABSENT HAUTEUR DANS LES VARIETES HAUTES
LE CARACTERE 86 EST ABSENT EPIAISON DANS LES VARIETES PRECOCES

CODE	VARIETEE		NO ORDRE	NO	CARACTERE	NOTE POUR CE CARACTERE VARIETE EN ETUDE	* VARIETE DE * REFERENCE
55198.	FCS 3	@F	90	90	* *	0	0

54591.	61/67 (MERCEDES)	@F	29	89	EPIAISON	5	8
53755.	SES 67-1-5	@F	15	68	PIGMENTATION ANTHOCYANIQUE DES OREILLETTES	6	1
54558.	FL 7316 (PROLIX)	@F	14	62	PILOSITE DES GAINES DES QUATRE ET CINQUIEME FEUILLES	4	1
53837.	FDE 338-88	@F	4	27	PILOSITE DU SILLON DE LA GLUMELLE SUPERIEURE	1	5
54501.	68 C 41.9	@F	3	30	TYPE DE PILOSITE DE LA BAGUETTE	1	9
54502.	67 B 28	@F	3	30	TYPE DE PILOSITE DE LA BAGUETTE	1	9
54536.	BL 388	@F	3	30	TYPE DE PILOSITE DE LA BAGUETTE	1	9
54553.	U 76197	@F	3	30	TYPE DE PILOSITE DE LA BAGUETTE	1	9
54554.	21	@F	3	30	TYPE DE PILOSITE DE LA BAGUETTE	1	9
54556.	527	@F	3	30	TYPE DE PILOSITE DE LA BAGUETTE	1	9
54557.	640	@F	3	30	TYPE DE PILOSITE DE LA BAGUETTE	1	9
53824.	723 SECOCE (H)	@F	3	30	TYPE DE PILOSITE DE LA BAGUETTE	1	9
54564.	B 70	@F	3	30	TYPE DE PILOSITE DE LA BAGUETTE	1	9
53842.	BL 69-68	@F	3	30	TYPE DE PILOSITE DE LA BAGUETTE	1	9
55138.	BL 7205-187	@F	3	30	TYPE DE PILOSITE DE LA BAGUETTE	1	9
55152.	U2-1323	@F	3	30	TYPE DE PILOSITE DE LA BAGUETTE	1	9
55158.	RPB 5042-77	@F	3	30	TYPE DE PILOSITE DE LA BAGUETTE	1	9
55166.	NC 106-77	@F	3	30	TYPE DE PILOSITE DE LA BAGUETTE	1	9
55169.	LP 4570	@F	3	30	TYPE DE PILOSITE DE LA BAGUETTE		9
55195.	25	@F	3	30	TYPE DE P[illegible] LA BAGUETTE		[illegible]
54147.	[illegible]		3	30	TYPE [illegible] BAGUETTE		
545[illegible]							

2 - Gestion et interprétation des essais "plante à plante".

Il s'agit d'une chaîne qui a été réécrite à 50% en 1979 afin de rendre automatique la gestion des fichiers.

Cette gestion permet de gérer au mieux l'espace disque et de mémoriser les descriptions faites sur les essais.

Cette chaîne nécessite que l'utilisateur déclare avant ou juste aprés le semis, l'essai qu'il veut ou a mis en place.

A la fourniture de la liste des codes variétés-échantillons (une variété peut avoir des provenances différentes) une racine de nom de fichier est automatiquement générée à partir de la description géographique du lieu d'implantation. A ce moment l'utilisateur peut demander que son plan de semis lui soit automatiquement fourni (programme PLATON); si ce n'est pas le cas, l'utilisateur doit fournir le plan de semis qu'il a mis en place.

Ces différentes informations conduisent à initialiser les trois fichiers descriptifs d'un essai, fichiers qui contiendront aprés la campagne agricole les descriptions élémentaires de chaque plante de l'essai.

L'initialisation de ces trois fichiers est faite par les programmes DJOB et CRESUS. Ces fichiers sont compatibles avec une méthode de saisie portable conversationnelle. Le G.E.V.E.S. qui a testé une telle méthode, y a renoncé pour le moment en raison des coûts de fonctionnement que cela entrainait.

Le service informatique édite ensuite les modèles d'état B1 et B2 qui pour chaque essai représentent le programme exact de notations à réaliser.

Une fois les notations effectuées, les bordereaux sont remis à une societé de services* en vue de leur perforation. Le programme ULYSSE assure le stockage de l'information et son contrôle. Une liste d'anomalies est fournie aux utilisateurs avant de poursuivre l'exploitation.

On peut à tout moment avoir une liste totale ou partielle des fichiers d'un essai par le programme CYCLOP.

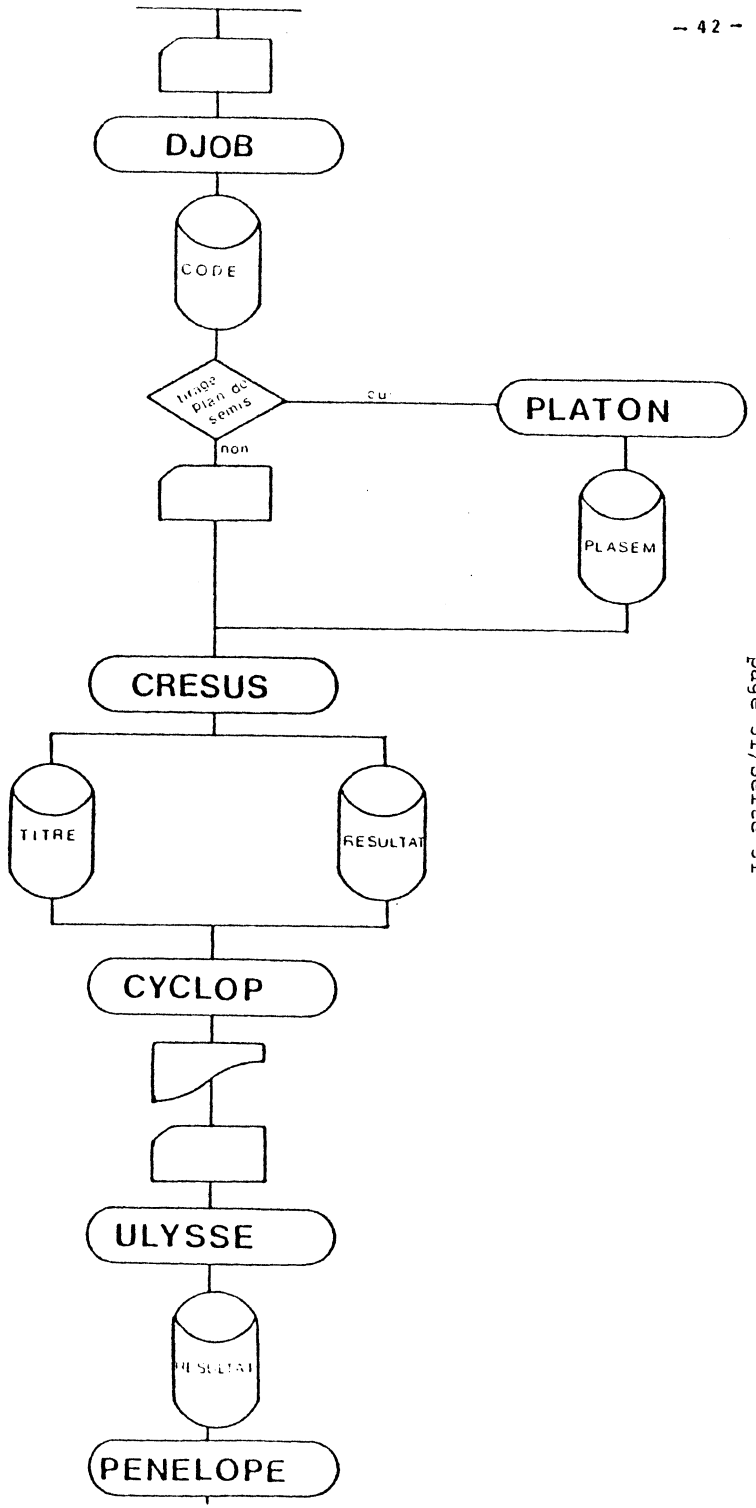
On trouvera dans les pages qui suivent :

-l'ordinogramme de cette première partie.
-les exemples de sortie des programmes.

---

* L'unité de calcul du G.E.V.E.S. ne dispose que d'un poste de perforation-vérification à mis temps ce qui explique qu'au moment des pointes saisonnières une bonne partie de la saisie soit sous-traitée.

ENTREE DES DONNEES



-Exemple de sortie de DJOB -

```
  INRA GEVES - UNITE DE CALCUL
       LA MINIERE

0001DJOB  DELET DEMANDE

FICHIER DES CODES VARIETES-ECHANTILLONS
**************************************

ESPECE NO  4700 DATE DE CREATION: 21/ 6/82
0002DJOB  LENOFI A TROUVE LE FICHIER

DELETE DU FICHIER: AL0252C0

CREATION DU FICHIER: AL0252C0

FICHIER CODIFICATION      NOM DISQ TART(OCT)NBART(/*)
                     AL0252C0   138         12       564

LISTE DES CODES
***************

VARIETES ECHANTILLONS  LIBELLE DE LA VARIETE
105915.    920.     F7*F2                        4700
106284.    921.     F7*EP1                    F  4700
106516.    922.     W64A*W182E                   4700
 51281.    923.     DROP 588=ACG544=A632*V       4700
105103.    924.     F2                           4700
105108.    925.     F7                        F  4700
105772.    926.     CM7                          4700
106563.    927.     C0125                        4700
105235.    928.     C0158                        4700
105324.    929.     W117                      USA4700
105371.    930      EP1                          4700
106298.    -        F131                      F  --
106286.
1057
1
```

-Exemple de sortie de CRESUS -

```
INRA GEVES - UNITE DE CALCUL
     LA MINIERE

                                        ================================================================
                                        = 2806030179CIV0280 ESSAI POUR CRESU4
                                        ================================================================

   DECODAGE DE LA CARTE DEDI:
   **************************
      DISPOSITIF           =     BLOC
      NOMBRE DE BLOC       =        3
      NOMBRE DE PLANTES    =        5

INITIALISATION FICHIER RESULTATS
********************************

FICHIER   TITRE     RESULTAT  CODES
        AL0120TI AL0120RE  AL0120CO

ESSAI POUR CRESU4

ESPE  STAT  NSTA  ANSE  RESP  TYPE  ANOB
2806  03    01    79    CIV0  2     80

CODE DES CARACTERES
               1             0/ 0/ 0        1      I1  ALTERNATIVITE
               6             0/ 0/ 0       10      I3  PRECOCITE A L'EPIAISON

 FICHIER RESULTAT         NOM  DISQ TART(UCI)NBART(/*)
                   AL0120RE   139         18       331

LISTE DES GROUPES
GROUPE NO  1 NSEC   5
               1   2   3   5   6
               3   2   1   5   6
               6   5   1   2   3
GROUPE NO  2 NSEC  17
              10  11  12  13  14  15  16  17  18  19  20  21  22  24  25  26  27
              20  21  22  24  25  26  27  10  11  12  13  14  15  16  17  18  19
              15  16  17  18  19  20  21  22  24  25  26  27  10  11  12  13  14

VERIFICATION DU PLAN

  BLOC NO. :   1
  BLOC NO. :   2
  BLOC NO. :   3

FIN CORRECTE DE L'INIT-MERCI.

FINI POUR AUJOURD'HUI

/EOJ
COMPTE RENDU STEP PRECEDENT : 00
```

Fin de l'essai

Fin générale

-Exemple de sortie de PLATON-

LOI (GROUPE), DE JUMENU 1

NO DE PARCELLE	BLOC 1	BLOC 2	BLOC 3	BLOC 4	
1	24	6	69	6	
2	7	20	5	5	
3	6	24	7	4	
4	69	7	65	69	
5	20	44	20	20	
6	5	69	4	7	
7	44	3	6	44	
8	65	65	44	65	
9	4	4	24	24	

4	FLUNEAL	6	7	PHAINIAL	69	9	BANAULA = BAREN	6	7	PHAINIAL
5	DAPHNE	20	10	HULSTENKAMP	5	13	LUCIFER	5	13	LUCIFER
7	PHAINIAL	24	4	FLUNEAL	7	6	DAPHNE	4	18	LUCYLE = HV
9	BANAULA = BAREN	7	6	DAPHNE	65	15	SOUCHE 3.3	69	9	BANAULA = BAREN
10	HULSTENKAMP	44	14	TELLUS	20	10	HULSTENKAMP	20	10	HULSTENKAMP
13	LUCIFER	69	9	BANAULA = BAREN	4	18	LUCYLE = HV	7	6	DAPHNE
14	TELLUS	5	15	LUCIFER	6	7	PHAINIAL	44	14	TELLUS
15	SOUCHE 3.3	65	15	SOUCHE 3.3	44	14	TELLUS	65	15	SOUCHE 3.3
18	LUCYLE = HV	4	18	LUCYLE = HV	24	4	FLUNEAL	24	4	FLUNEAL

-Exemple de sortie de ULYSSE-

```
STOCKAGE DE DONNEES DANS LE FICHIER : AL0073II
**********************************************

      (3X,I4,4I2,I2,I5,I1,I3,I3,5I3,4I2,2811)

      CARAFI  4700100480CIV0380007 1  1020 10 20                    8012 881 126 4CARA<BDAL0073
      CARAFI  4700100480CIV0380007 2  1120  2  6                    8012 881 126 4CARA<BDAL0073
      CARAFI  4700100480CIV0380007 3  1230 55195                    8012 881 126 4CARA<BDAL0073
      CARAFI  4700100480CIV0380007 4  1330  5100                    8012 881 126 4CARA<BDAL0073
      CARAFI  4700100480CIV0380007 5  3830 50250                    8012 881 126 4CARA<BDAL0073
      CARAFI  4700100480CIV0380007 6  3920 20 50                    8012 881 126 4CARA<BDAL0073
      CARAFI  4700100480CIV0380007 7  1720  8 22                    8012 881 126 4CARA<BDAL0073
      CARALU  4700100480CIV0380007 1  1020 10 20        *                        CARA<BDAL0073
      CARAVA  4700100480CIV0380007 1  1020 10 20                    8012 881 126 4CARA<BDAL0073
      CARALU  4700100480CIV0380007 2  1120  2  6        *                        CARA<BDAL0073
      CARAVA  4700100480CIV0380007 2  1120  2  6                    8012 881 126 4CARA<BDAL0073
      CARALU  4700100480CIV0380007 3  1230 55195        *                        CARA<BDAL0073
      CARAVA  4700100480CIV0380007 3  1230 55195                    8012 881 126 4CARA<BDAL0073
      CARALU  4700100480CIV0380007 4  1330  5100        *                        CARA<BDAL0073
      CARAVA  4700100480CIV0380007 4  1330  5100                    8012 881 126 4CARA<BDAL0073
      CARALU  4700100480CIV0380007 5  3830 50250        *                        CARA<BDAL0073
      CARAVA  4700100480CIV0380007 5  3830 50250                    8012 881 126 4CARA<BDAL0073
      CARALU  4700100480CIV0380  7 6  3920 20 50        *                        CARA<BDAL0073
      CARAVA  4700100480CIV0380007 6  3920 20 50                    8012 881 126 4CARA<BDAL0073
      CARALU  4700100480CIV038   7 7  1720  8 22        *                        CARA<BDAL0073
      CARAVA  4700100480CIV0380007 7  1720  8 22                    8012 881 126 4CARA<BDAL0073
      IPOIN 5541    1 5551    6 5561   11 5571   16 5581   21 5591   26 5601   31 5611   36
      IPOIN 5621   41 5631   46 5641   51 5651   56 5661   61 5671   66 5681   71 5691   76
      IPOIN 5701   81 5711   86 5721   91 5731   96 5741  101 5751  106 5761  111 5771  116
      IPOIN 5781  121 5791  126 5801  131 5811  136 5821  141 5831  146 5841  151 5771  116
      IPOIN/5781  121 5791  126 5801  131 5811  136 5821  141 5831  146 5841  151 5771  116
      TITR     1   72057   1   5

   4700100480CIV03802SMH CAT ANGLAIS LIGNEES M.S.CARACT.MESURES      TITR<BDAL0073
 ************************************************************************************
      MANQUANT :    0  HORS FOURCHETTES :    1 1 5601  2
```

→ ANOMALIE(S)

```
NOMBRE D'ENREGISTREMENTS ECRITS:    155
NOMBRE D'ENREGISTREMENTS NON NUTES:     0

FIN CORRECTE DE L'INIT
```

Fin d'une essai

```
C'EST FINI POUR AUJOURD'HUI
```

Fin générale du JOB

```
CELA A DURE:       67.2SECONDES

  INRA GEVES - UNITE DE CALCUL
       LA MINIERE
```

LES CALCULS

Les calculs se déroulent ensuite selon les ordinogrammes des pages suivantes.

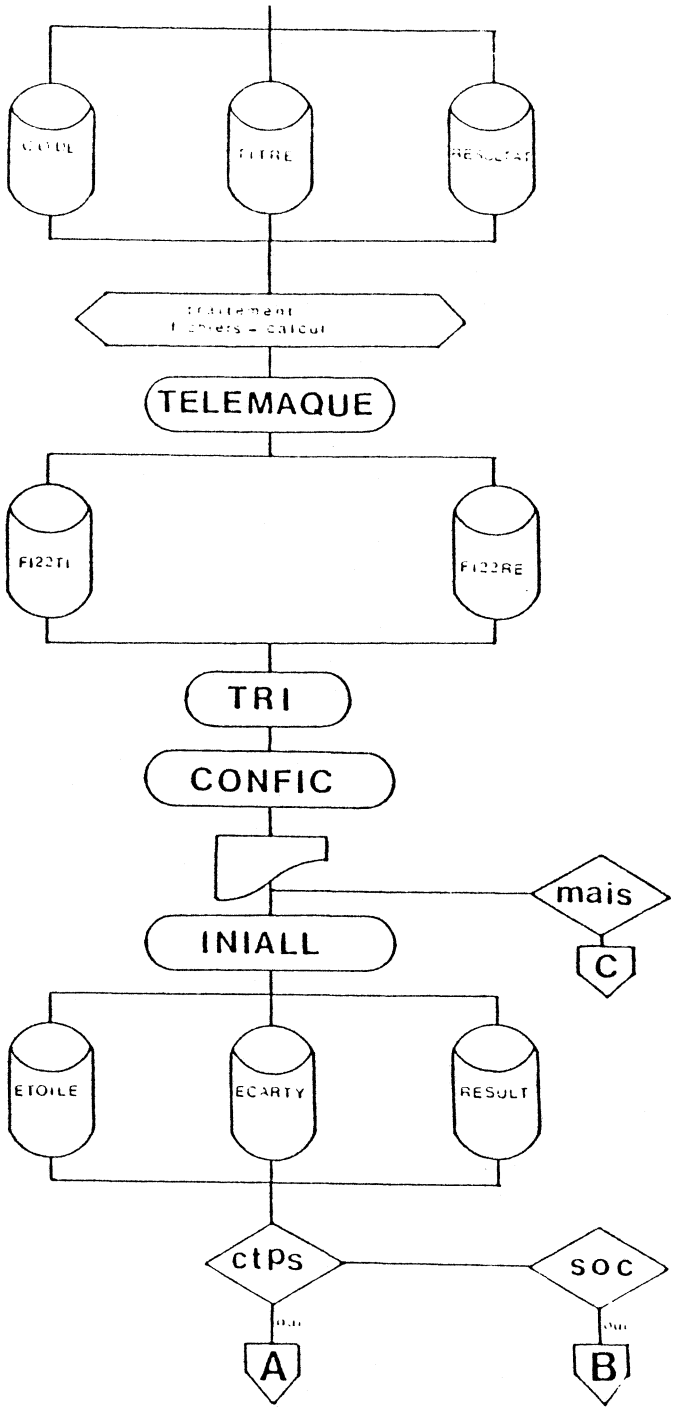
Aprés une séquence générale qui permet d'effectuer les ultimes contrôles, il y a trois options possibles non exclusives d'interprétation des essais:

-L'option "MAIS" qui n'effectue aucune comparaison entre les variétés; cette option ne permet d'obtenir que des statistiques élémentaires descriptives des échantillons mis en essais ainsi que des récapitulations pluriannuelles très simples. Les moyennes obtenues sont stockées dans des fichiers qui permettent de traiter les informations des lignées par la chaine des autogames.

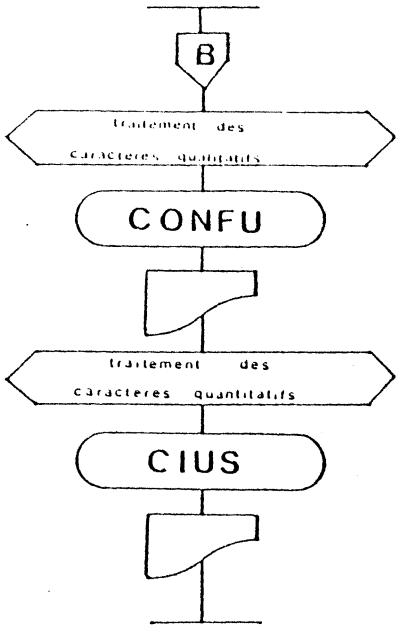
-L'option "SOC" sert à faire des comparaisons entre des échantillons pour voir s'ils sont conformes à des échantillons de référence. Dans cette option il n'y a pas de comparaisons entre les variétés.

-L'option "CTPS" permet de faire des comparaisons entre les descriptions des variétés. Cette option ne travaille que sur les descriptions de l'année; un ensemble de programmes permettant de faire des comparaisons sur des descriptions faites plusieurs années de suite est prévu.

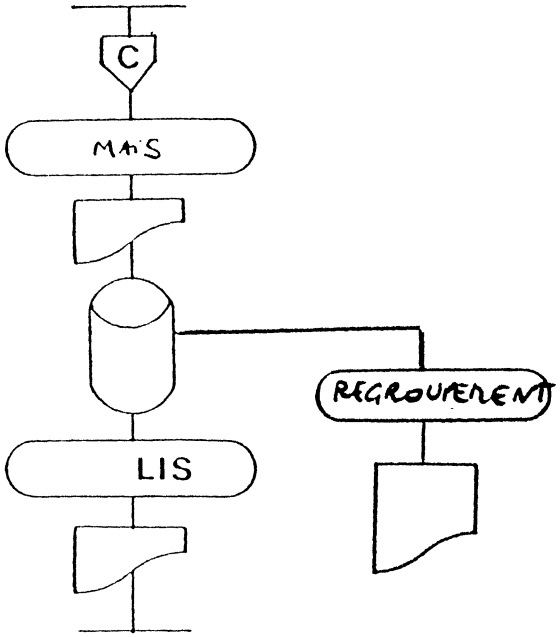
Dans l'ensemble les programmes de calcul scientifique sont plutôt vétustes et demandent une maintenance intense.



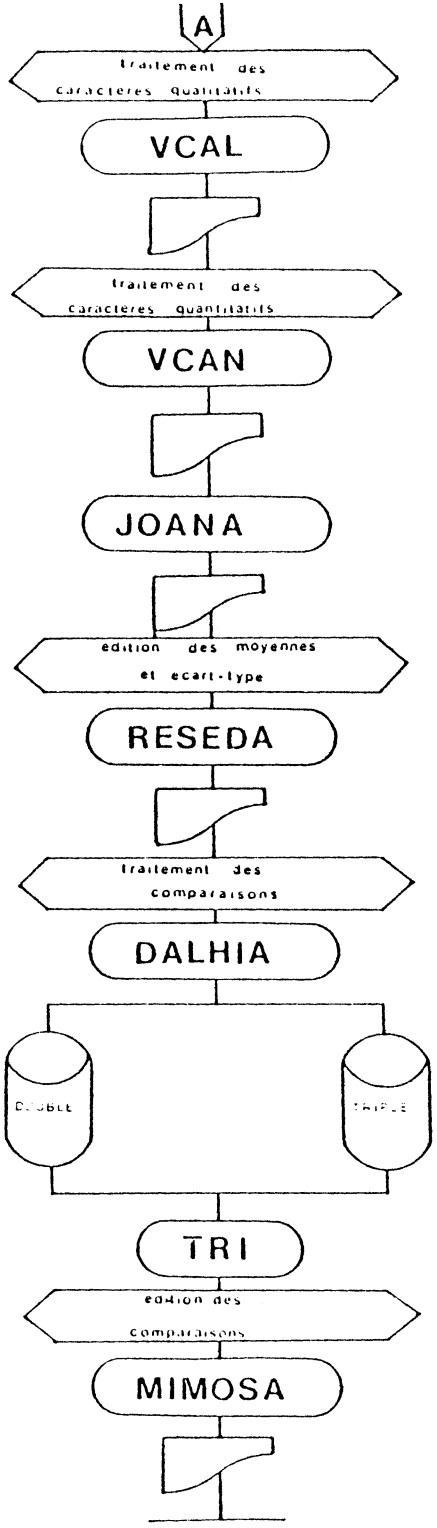
PTION SOC



PTION MAÏS



OPTION CTPS



-Exemple de sortie de l'option "MAIS"-

INRA GEVES - UNITE DE CALCUL
LA MINIERE

NUMERO DE AL:AL0073
NUMERO DE PG: 177
TITRE EXEC : TEST KG84 OPTION OUI

```
=========================================================================================
=  4700100480C1V0380Z5MM CAT ANGLAIS LIGNEES M.J.CARACT.MESURES     TITR<80AL0073=
=========================================================================================
```

VALEURS PILOTES DU FI
****

ES	AN	EC	RE	PL	C1	C3	CR	LA	
4700	80	31	1	5	0	7	0	14	155

description de l'étude

CARACTERES PRESENTS
****

NATURE	CODE	POSITION	LIBELLE
QUAN	10	1	NOMBRE TOTAL DE FE
QUAN	11	2	NOMBRE DE FEUILLES
QUAN	12	3	HAUTEUR DE LA PLAN
QUAN	13	4	HAUTEUR DE L'EPI L
QUAN	38	5	LONGUEUR DE L'EPI
QUAN	39	6	DIAMETRE DE L'EPI
QUAN	17	7	NOMBRE DE RANGS

VOUS AVEZ DEMANDE L'ETUDE DES CARACTERES SUIVANTS: 10 11 12 13 17 38 39

POSI22	10	1
POSI22	11	2
POSI22	12	3
POSI22	13	4
POSI22	17	7
POSI22	38	5
POSI22	39	6

LISTE DES CARACTERES TRAITES: 10 11 12 13 17 38 39

TRAVAIL NO 177 SUR AL0073 PAR KG8, PAGE 1

Etude d'un échantillon

VARIETE DE NO 109 ECHANTILLON NO=569
ELLE S'APPELLE F66

CARACTERE NO			10	11	12	13	17	38	39
569	1	1	12	4	85	10	8	130	33
569	1	2	12	3	97	30	8	130	32
569	1	3	13	4	102	28	10	130	33
569	1	4	11	2	80	31	8	120	32
569	1	5	12	3	80	25	10	120	31

	10	11	12	13	17	38	39
EFFE	5.0	5.0	5.0	5.0	5.0	5.0	5.0
MIN	11.0	2.0	80.0	10.0	8.0	120.0	31.0
MAX	13.0	4.0	102.0	31.0	10.0	130.0	33.0
ETEN	2.0	2.0	22.0	21.0	2.0	10.0	2.0
MOY	12.0	3.2	88.8	24.8	8.8	126.0	32.2
ECAR	0.7	0.8	10.1	8.6	1.1	5.5	0.8

-Exemple de sortie de l'option "SCC"-

-Comparaison entre des échantillons pour un caractère quantitatif-

GROUPE 1 POLYETUM FIC/9 3

NE	VAR	ECH DEBSU
1	49	285
2	49	286
3	49	287
4	49	288
5	49	289
6	49	290
7	49	291
8	49	292

CARACTERE 10 PRECOCITE A L'EPIAISON VARIETE 49

TABLEAU DES NOMBRES DE PLANTES CONSERVEES POUR LE CARACTERE 10 = PRECOCITE A L'EPIAISON

	GENERAUX	REP 1	REP 2	REP 3	REP 4	REP 5	REP 6	REP
VAR. 49,ECH.285,CAI. 0	60	10	10	10	10	10	10	
VAR. 49,ECH.286,CAI. 0	60	10	10	10	10	10	10	
VAR. 49,ECH.287,CAI. 1	60	10	10	10	10	10	10	
VAR. 49,ECH.288,CAI. 0	60	10	10	10	10	10	10	
VAR. 49,ECH.289,CAI. 1	60	10	10	10	10	10	10	
VAR. 49,ECH.290,CAI. 0	60	10	10	10	10	10	10	
VAR. 49,ECH.291,CAI. 0	60	10	10	10	10	10	10	
VAR. 49,ECH.292,CAI. 0	60	10	10	10	10	10	10	

TABLEAU DES MOYENNES POUR LE CARACTERE 10 = PRECOCITE A L'EPIAISON

	GENERAUX	REP 1	REP 2	REP 3	REP 4	REP 5	REP 6	REP
VAR. 49,ECH.285,CAI. 0	134.15	132.30	134.60	135.40	136.70	131.30	134.60	
VAR. 49,ECH.286,CAI. 0	133.58	133.30	132.50	135.50	131.70	135.30	132.00	MEIE
VAR. 49,ECH.287,CAI. 1	133.20	135.10	133.50	131.70	133.90	132.90	132.60	MEIE
VAR. 49,ECH.288,CAI. 0	133.77	134.20	134.50	131.70	135.80	135.10	135.30	MEIE
VAR. 49,ECH.289,CAI. 1	135.25	134.20	136.20	134.50	136.20	133.90	136.40	MEIE
VAR. 49,ECH.290,CAI. 0	132.20	131.30	133.20	129.60	135.40	135.40	132.30	MEIE
VAR. 49,ECH.291,CAI. 0	131.45	132.50	130.40	135.80	132.70	127.10	132.40	
VAR. 49,ECH.292,CAI. 0	133.98	134.30	135.60	133.10	134.70	135.10	133.10	MEIE

TABLEAU DES VARIANCES POUR LE CARACTERE 10 = PRECOCITE A L'EPIAISON

	RESIDUELLES	GLOBALES	REP 1	REP 2	REP 3	REP 4	REP 5	REP 6	
VAR. 49,ECH.285	15.29	17.39	15.57	7.82	4.27	19.12	20.45	24.49	MEIE
VAR. 49,ECH.286	29.02	26.89	36.25	53.61	22.06	21.57	20.61	20.67	
VAR. 49,ECH.287	20.59	20.00	12.99	14.06	25.12	15.21	36.55	19.60	
VAR. 49,ECH.288	21.03	21.30	27.51	13.61	23.57	30.62	28.99	6.68	
VAR. 49,ECH.289	13.56	13.54	7.29	6.40	28.28	13.73	15.21	10.49	
VAR. 49,ECH.290	27.24	26.87	22.01	30.84	59.60	25.16	12.27	15.57	
VAR. 49,ECH 291	29.31	31.88	19.12	29.10	6.40	23.57	47.21	51.66	MEIE
VAR. 49,ECH.292	16.73	16.25	12.45	19.60	19.66	16.45	16.10	16.10	

CLASSEMENT DES MOYENNES VARIETALES

ECH.	VARIETES		NB.PLANTES	MINI	MOYENNES	MAXI	V.RESID.	V.GLOBALE	ECART.RESID.
291	49	LUBRYDE = DH /6	60	112	131.45	140	29.51	31.88	5.43
290	49	LUBRYDE = DH /6	60	112	132.20	140	27.24	26.87	5.22
287	49	LUBRYDE = DH /6	60	123	133.28	140	20.59	20.00	4.54
286	49	LUBRYDE = DH /6	60	115	133.38	144	29.02	28.89	5.39
288	49	LUBRYDE = DH /6	60	123	133.77	144	21.83	21.30	4.67
292	49	LUBRYDE = DH /6	60	126	133.98	140	16.73	16.25	4.09
285	49	LUBRYDE = DH /6	60	123	134.15	140	15.29	17.39	3.91
289	49	LUBRYDE = DH /6	60	123	135.23	140	13.56	13.54	3.68

COMPARAISONS FINALES ENTRE VARIETES , CARACTERE ANALYSE 10 = PRECOCITE A L'EPIAISON

GROUPE NUMERO 1 DE 1 A 8 VARIETE 49LUBRYDE = DH /6

	2	2	2	2	2	2	2	2	
	8	8	8	8	8	9	9	9	
	5	6	7	8	9	0	1	2	
	0	0	1	0	1	0	0	0	
DDL	118	118	0	118	118	118	118	118	
TST	1.12	0.11	0.00	0.57	2.58	1.21	2.01	0.89	
E 287 ST	==	==	ID	==	*	==	*	==	
N1,N2	54	54	54	54	0	0	54	54	54	54	54	54	54	54	54	54
F	1.35	1.41	0.00	1.06	1.52	1.32	1.43	1.23								
E 287 F/	==	==	ID	==	==	==	==	==								

DDL	118	118	118	118	0	118	118	118
TST	1.56	2.20	2.58	1.91	0.00	3.68	4.47	1.76
E 289 ST	==	*	**	==	ID	**	**	==
N1,N2	54	54	54	54	54	54	54	54	0	0	54	54	54	54	54	54
F	1.13	2.14	1.52	1.61	0.00	2.01	2.18	1.23								
E 289 F/	==	**	==	*	ID	**	**	==								

-Exemple de sortie "SOC" (suite)-

-Comparaison pour un caractère qualitatif-

MATRICE DES POURCENTAGES DU CARACTERE 11 = PORT DE LA PLANTE

VAR.	ECH.	CAT.	POURCENTAGES DE 0	1	2	3	4	5	6	7	8	9
49	285	0	0.1	51.7	0.1	38.4	0.1	8.4	0.1	1.7	0.1	0.1
49	286	0	0.1	31.7	0.1	43.4	0.1	25.1	0.1	0.1	0.1	0.1
49	287	1	0.1	16.7	0.1	60.1	0.1	23.4	0.1	0.1	0.1	0.1
49	288	0	0.1	25.1	0.1	56.7	0.1	18.4	0.1	0.1	0.1	0.1
49	289	1	0.1	35.1	0.1	56.7	0.1	8.4	0.1	0.1	0.1	0.1
49	290	0	0.1	26.7	0.1	51.7	0.1	21.7	0.1	0.1	0.1	0.1
49	291	0	0.1	30.1	1.7	50.1	0.1	16.7	0.1	1.7	0.1	0.1
49	292	0	0.1	48.4	0.1	45.1	0.1	6.7	0.1	0.1	0.1	0.1

COMPARAISONS FINALES ENTRE VARIETES EN CONTROLE

CARACTERE 11 = PORT DE LA PLANTE

VARIETE CODE 49 = GROUPE NUMERO 1 DE 1 A 8

```
285    49LUBRYDE = OH 76
        2 2 2 2 2 2 2 2
        8 8 8 8 8 9 9 9
        5 6 7 8 9 0 1 2

        0 0 1 0 1 0 0 0

E 2879T 1 *   /   /       *
E 2899T 1     /   /
```

-Exemple de sortie "CTPS"-

-Comparaison entre variétés pour un caractère quantitatif-

Le premier listing est identique à celui fourni par l'option "SOC" mais sans le tableau de comparaison final.

LISTE DES VARIETES

ECHANTILLON REF	ECHANTILLON LU	VARIETE	LIBELLE
1	114	88	LUCIANE
2	115	88	LUCIANE
3	116	89	MOM FRR 42-11 = ARTIST
4	117	89	MOM FRR 42-11 = ARTIST
5	120	91	CORONA
6	121	91	CORONA
7	122	92	SO 75
8	123	92	SO 75
9	124	102	CL 6
10	125	103	CL 11
11	126	5	DAWSON
12	127	11	OASIS = OASE
13	128	53	MANOIR = CL1
14	129	73	BALLADE
15	130	54	BASTIDE = CL2
16	131	78	MERLIN
17	132	39	CHAMBORD
18	133	46	CHAUMONT

CARACTERE 10 PRECOCITE A L'EPIAISON

MOYENNES DES REPETITIONS

125,129 124,814 124,200 125,321 124,229 125,479

MOYENNES DES ECHANTILLONS

VAR.	ECH.	MOYENNE
88	114	0,000
88	115	0,000
89	116	122,783
89	117	123,717
91	120	0,000
91	121	0,000
92	122	112,833
92	123	113,233
102	124	128,333
103	125	123,517
5	126	121,367
11	127	116,233
53	128	126,950
73	129	129,717
54	130	126,150
78	131	131,717
39	132	135,283
46	133	134,233

VARIABLE 10 PRECOCITE A L'EPIAISON

MOYENNE GENERALE = 124,862

SOURCE DE VARIATION	SOMME DES CARRES	VARIANCE	DL	F.CAL	PROB	SIGN	C.VAR	E.TYPE
ERREUR	237.250	3.650	65				1.550	1.910
REPETITIONS	21.250	4.250	5	1.164	33.596			
VARIETES	4009.500	308.423	13	84.499	0.000	***		

↑ analyse de variance pour ce caractère

TEST DE DUNCAN
AU SEUIL DE 0.05

LIBELLES	VAR	ECH	VALEURS	
SO 75	92	122	112.833	I
SO 75	92	123	113.233	I
OASIS = OASE	11	127	116.233	
DAMSON	5	126	121.367	I
MOM FRR 42-11 = ARTI	89	116	122.783	I
CL 11	103	125	123.517	I
MOM FRR 42-11 = ARTI	89	117	123.717	I
MANOIR = CL1	53	128	126.950	I
BASTIDE = CL2	54	130	128.150	II
CL 6	102	124	128.333	II
BALLADE	73	129	129.717	II
MERLIN	78	131	131.717	I
CHAUMONT	48	133	134.233	I
CHAMBORD	39	132	135.283	I

TEST DE DUNCAN
AU SEUIL DE 0.01

LIBELLES	VAR	ECH	VALEURS	
SO 75	92	122	112.833	I
SO 75	92	123	113.233	I
OASIS = OASE	11	127	116.233	
DAMSON	5	126	121.367	I
MOM FRR 42-11 = ARTI	89	116	122.783	I
CL 11	103	125	123.517	I
MOM FRR 42-11 = ARTI	89	117	123.717	I
MANOIR = CL1	53	128	126.950	I
BASTIDE = CL2	54	130	128.150	I
CL 6	102	124	128.333	I
BALLADE	73	129	129.717	II
MERLIN	78	131	131.717	II
CHAUMONT	48	133	134.233	II
CHAMBORD	39	132	135.283	I

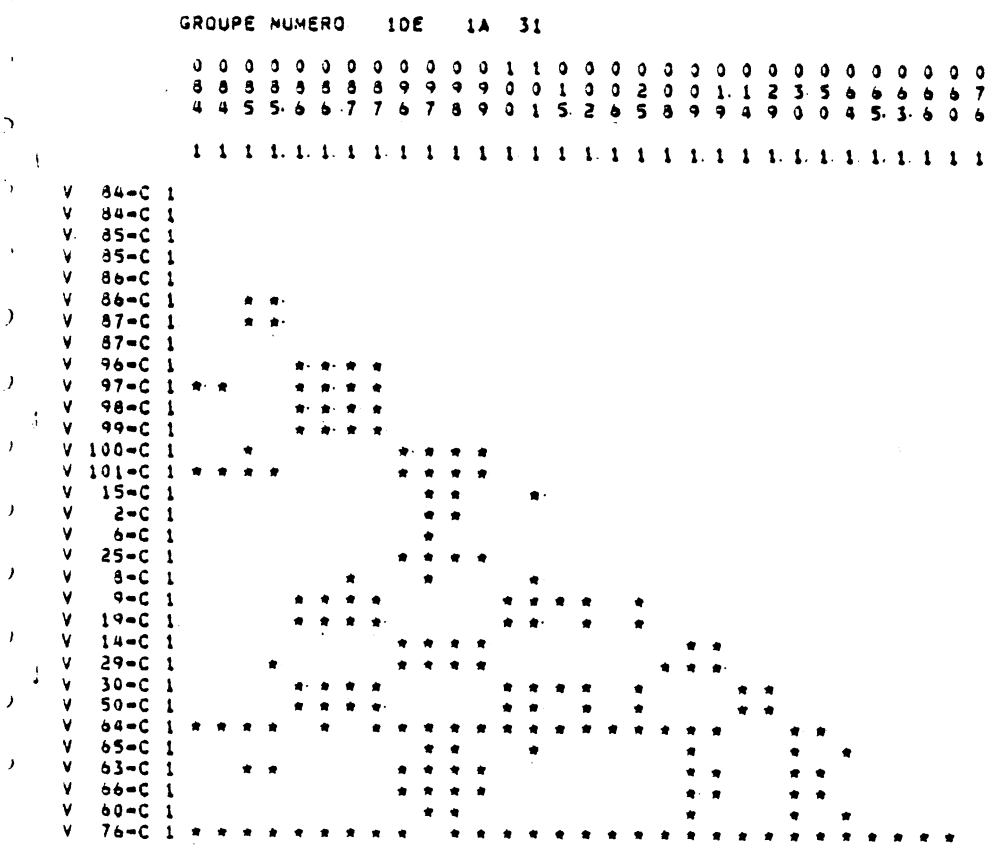
-Exemple de sortie "CTPS" (suite)-

-Comparaisons entre variétés pour un caractère qualitatif-

Dans ce cas le premier listing est identique à celui fourni par l'option "SOC", seul le tableau des comparaisons finales diffère.

COMPARAISONS FINALES ENTRE VARIETES EN CONTROLE

CARACTERE 11 = PORT DE LA PLANTE



-Exemple de sortie de l'option "CTPS" (suite)-

-Une des récapitulations générales possibles-

Comparaison d'une variété
Contre les autres

ECH	VAR	NOM DE LA VARIETE	ECH	VAR	NOM DE LA VARIETE	CARACTERE NO	10	70	44	13	11	15
131		78MERLIN	114	88	LUCIANE		.	.	.	.	/	/
			115	88	LUCIANE		.	.	.	.	/	/
			116	89	MUM FRH 42-11 = ARTIST		*	*				
			117	89	MUM FRH 42-11 = ARTIST		*	*		*		
			120	91	CORONA		.	.	.	.	/	/
			121	91	CORONA		.	.	.	.	/	/
			122	92	SO 75		*	*	*	*		*
			123	92	SO 75		*	*	*	*		*
			124	102	CL 6		*			*		
			125	103	CL II		*					*
			126	5	DAWSON		*					
			127	11	OASIS = OASE		*	*		*		*
			128	53	MANOIR = CL1		*		*	*		
			129	73	BALLADE							
			130	54	BASTIDE = CL2		*			*		
			132	39	CHAMBORD		*	*	*	*	*	*
			133	48	CHAUMONT			*		*		

Remarques sur la chaîne d'interprétation des essais "plante à plante".

Il y a environ 70 essais ou collections qui sont implantés chaque année au G.E.V.E.S.; le volume des informations ainsi traitées chaque ann représente entre 3 et 6 millions d'octets en ligne. La moitié de ce volume concerne les maïs. Le traitement de ces informations représente entre 40 et 50% de l'utilisation des ressources machine. La maintenance et l'exploitation de cette chaîne occupent 70% du temps d'un programmeur.

3 - Gestion et interprétation des essais "parcelle à parcelle".

En nombre de programmes et en complexité cette chaîne est de loin la plus importante du centre calcul, bien que son exploitation ne représente que 30% environ de l'utilisation des ressources machine.

Cette chaine a été totalement réécrite en 1982. L'ancienne chaîne était devenue, à la suite de trop nombreuses modifications, impossible à maintenir. De plus les contraintes d'exploitation étaient telles que son fonctionnement immobilisait beaucoup trop de personnes sans pour autant que les résultats soient très fiables.

La grande difficulté de cette application réside dans le fait que le G.E.V.E.S. gère 1300 essais environ chaque année et ce avec un nombre de personnes plutôt réduit. C'est pourquoi la nouvelle chaîne a été conçue dans une optique d'automatisation maximale tout en multipliant les contrôles.

Cette chaîne est constituée de trois parties:

-La gestion du répertoire des essais .
-Le bilan comptable de l'expérimentation.
-L'interprétation aprés contrôle des essais.

3.1 - La gestion du répertoire des essais.

C'est une application à la fois BATCH et conversationnelle étant donné qu'elle est compatible avec le logiciel DESGRILLES (voir notre première partie). Cette application produit un répertoire des essais, répertoire organisé en chapitre, le chapitre étant un ensemble d'essais ayant la même liste variétale (ou presque) et formant une entité agronomique logique.

Chaque essai est décrit par deux enregistrements GR01 et GR02 qui permettent:
-de localiser l'essai,
-de décrire le dispositif expérimental.
Ces renseignements seront complétés automatiquement par le nombre exact de variétés expérimentées.

Trois programmes principaux dans la version BATCH constituent l'ossature de cette application:

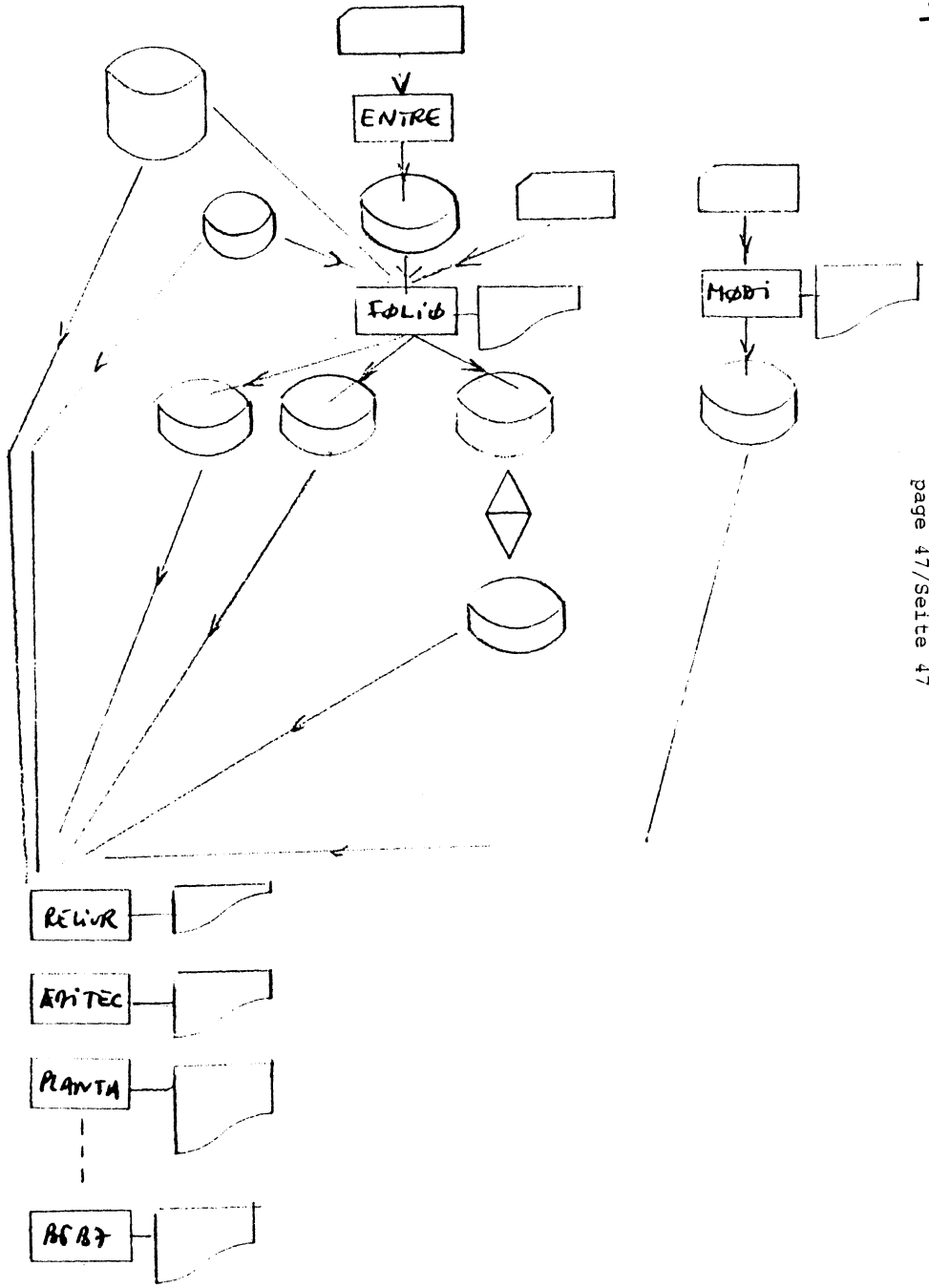
-le programme ENTRE qui contrôle les enregistrements GR01 et GR02 et assure leur stockage,
-le programme FOLIO qui, à partir d'une définition en compréhension, structure le répertoire en chapitre,
-le programme MODI qui permet ,pour un essai, de modifier la liste variétale si un expérimentateur a semé plus ou moins de variétés que ce qui était prévu.

Parallélement à ces programmes qui structurent les fichiers disque en vue de la campagne agricole, un certain nombre de programme assurent des services:
-RELIUR édite un programme provisoire,
-REPERT élite le répertoire définitif,
-PLANTA génère les plans de semis des essais déclarés en bloc complet,
-EDITEC édite les étiquettes autocollantes destinées à marquer les sachets de semences avant le semis et les sachets à la récolte,
-CARA et B6B7 éditent les bordereaux de notation destinés aux expérimentateurs.

En plus de ces programmes BATCH les programmes du logiciel DESGRILLES permettent d'interroger les informations relatives à un ou plusieurs essais de manière conversationnelle.

Dans les pages qui suivent nous ne donnons que très peu d'exemples de sortie des programmes mais notre but est plutôt de montrer le type de renseignements qui sont traités.

-Ordinogramme de l'application "gestion du répertoire des essais".



-Renseignements relatifs à un essai accessibles en conversationnel.-

```
GR0100015403818201017835021 8XXXXNX1COMSO  VAXX  MINIERE          1FELIX
GR020001011           048L                                                 001

  ESSAI 0001 NAVETTE FOUR. HIVER      (5403) SEMIS:1981 RECOLTE:1982
      REGION BAS. PAR.                 01  RESP.GVS. FORET                  35
      DEPAR. YVELINES             01   78  ENT.COMP. FELIX MINIERE          02
      COMMU. MINIERE                       AGENT EX. FELIX                 108
      CHEZ : INRA FELIX              1     REMARQUE
      .-------------------.-------------------.-------------------.
      :XX FRANCE          :XX PREC.RAS        :0  ANNEES MELANGEE  :
      :N  NORMALE         :X  MODE CULT RAS   :1  REC.PREC.        :
      :CO COMMUNAUTAIRE   :HS HORS SERIE      :                    :
      :VA VAL.AGRO.       :XX CF OR.ACT.      :                    :
      .-------------------.-------------------.-------------------.

  ESSAI 0001 DISPOSITIF:(BL) BLOC          A 01 FACTEUR= ET 04 REPETITIONS
       TYPE D'ANALYSE:                                 VARIETE
            INDEMNITE:GRATUIT
             CHAPITRE:
 !1 AN=   !2 AN=   !3 AN=   !TEM.=   !H.CY=   !SE.B=   !COMM=   !AUTR=   !
        ---      ---      ---      ---      ---      ---      ---      ---
==========================================================================
GR0100015403818201017835021 8XXXXNX1COMSO  VAXX  MINIERE          1FELIX
GR020001011           048L                                                 001
==========================================================================
```

-Les informations contenues dans le programme des essais.-

Pour un chapitre, liste des essais de ce chapitre.

LISTE DES 32 ESSAIS CHAPITRE: 0000H010 COLZA OLEAGINEUX (PAGE 1)

CODE MECANO	ANNEE SEMIS	REGION GEOGR.	NO. ESSAI	DEPARTEMENT	COMMUNE	CLES 1 2 -3- 4 5 6 7 8 9	DIRECTEUR ESSAIS	RESPONSABLE GEVES	ENTITE COMPTABLE	AGENT	EXPERIMEN.
*0039*81	82*01	01	78	MINIERE	*XX XX NXX CA AA 0	AT XX *BL 06*35	FORET	*02 FELIX	*108 FELIX	*INRA FELIX
*0040*81	82*01	01	28	SOURS	*XX XX NXX CA AA 0	AT XX *BL 06*35	FORET	*24 AGP-L	*401 PINGUENET	*AGRI PINGUENET
*0041*81	82*01	01	37	SEMBLENCAY	*XX XX NXX CA AA 0	AT XX *BL 06*35	FORET	*24 AGP-L	*402 DERUET	*AGRI DERUET
*0042*81	82*01	01	89	MOLOTS	*XX XX NXX CA AA 0	AT XX *BL 06*35	FORET	*24 AGP-L	*403 TREMBLAY	*AGRI TREMBLAY
*0043*81	82*02	01	59	PREMESQUE C--VS	*XX XX NXX CA AA 0	AT XX *BL 06*15	DE FONTANGE	*26 DA-CO	*E01 DARROZES	*ETS. RINGOT
*0044*81	82*03	01	35	RENNES C--VS	*XX XX NXX CA AA 0	AT XX *BL 06*02	LECLERC	*05 RENNE	*102 LECLERC	*INRA RENNES
*0045*81	82*04	01	46	LUSIGNAN	*XX XX NXX CA AA 0	AT XX *BL 06*10	BERTIN	*12 LUSIG	*110 BERTIN	*INRA LUSIGNAN
*0046*81	82*07	01	68	COLMAR	*XX XX NXX CA AA 0	AT XX *BL 06*09	MAGINEAU	*10 COLMA	*109 MAGINEAU	*INRA COLMAR
*0047*81	82*06	01	21	CHEVIGNY	*XX XX NXX CA AA 0	AT XX *BL 06*03	SCHIEX	*07 DIJON	*103 SCHEIX	*INRA DIJON
*0048*81	82*09	01	31	LAVAUR	*XX XX NXX CA AA 0	AT XX *BL 06*11	DUMAIL	*09 ONDES	*111 DUMAIL	*INRA ONDES
*0049*81	82*09	02	31	ONDES	*XX XX NXX CA AA 0	AT XX *BL 06*11	DUMAIL	*09 ONDES	*111 DUMAIL	*INRA ONDES
*0050*81	82*01	02	28	JANVILLE C--VS	*XX XX NXX CA AA 0	AT XX *BL 06*35	FORET	*24 DA-CO	*E03 ARNAULT	*ETS. CARGILL
*0051*81	82*01	01	51	VAUAULT	*XX XX NXX CA AA 0	AT XX *BL 06*35	FORET	*24 AGP-L	*404 BOUNAL	*AGRI CETA-BONNAL
*0052*81	82*04	01	79	PASAY-TORTC21VP	*XX XX NXX CA AA 0	AT XX *BL 06*10	BERTIN	*30 CETIO	*689 ARJAURE	*CETI GAEC-ORAC
*0053*81	82*04	02	86	CHATELLER C23VP	*XX XX NXX CA AA 0	AT XX *BL 06*10	BERTIN	*30 CETIO	*689 ARJAURE	*CETI LYCEEAGRTHU
*0054*81	82*09	01	82	BOURG VISAC37VP	*XX XX NXX CA AA 0	AT XX *BL 06*11	DUMAIL	*30 CETIO	*690 GILLY	*CETI CHANUT
*0055*81	82*05	01	36	FRANCILLONC51VP	*XX XX NXX CA AA 0	AT XX *BL 06*04	VIDAL	*30 CETIO	*683 DEVINEAU	*CETI BRUN
*0056*81	82*07	01	55	DIEUEC65VP	*XX XX NXX CA AA 0	AT XX *BL 06*09	MAGINEAU	*30 CETIO	*691 ESTRAGNAT	*CETI NANTY
*0057*81	82*09	01	46	LIPOSTHEYC75VP	*XX XX NXX CA AA 0	AT XX *BL 06*11	DUMAIL	*30 CETIO	*692 PEUGNET	*CETI GRANVEAU
*0058*81	82*05	01	16	LUPIERY C95VP	*XX XX NXX CA AA 0	AT XX *BL 06*04	VIDAL	*30 CETIO	*693 PALLEAU	*CETI SIRET
*0059*81	82*05	02	18	JUCY CHAUC90VP	*XX XX NXX CA AA 0	AT XX *BL 06*04	VIDAL	*30 CETIO	*687 MARABY	*CETI MALLERON
*0060*81	82*05	03	18	SOULANGISC91VP	*XX XX NXX CA AA 0	AT XX *BL 06*04	VIDAL	*30 CETIO	*687 MARABY	*CETI BESNARD
*0061*81	82*06	01	69	SIPIERRE C11VS	*XX XX NXX CA AA 0	AT XX *BL 03*03	SCHIEX	*30 CETIO	*694 ARSAC	*CETI RIBEZ
*0062*81	82*08	01	26	ETOILE C13VS	*XX XX NXX CA AA 0	AT XX *BL 03*05	AIZAC	*30 CETIO	*694 ARSAC	*CETI GAECDEBASSE
*0063*81	82*04	01	17	AIGREFEUILC22VS	*XX XX NXX CA AA 0	AT XX *BL 03*10	BERTIN	*30 CETIO	*689 ARJAURE	*CETI GAEC BESSON
*0064*81	82*08	01	11	CASTELNAUDC31VS	*XX XX NXX CA AA 0	AT XX *BL 03*05	AIZAC	*30 CETIO	*684 DUFFAUT	*CETI CAL
*0065*81	82*09	01	32	LASSERRE C35VSL	*XX XX NXX CA AA 0	AT XX *BL 03*11	DUMAIL	*30 CETIO	*690 GILLY	*CETI BARRIC
*0066*81	82*02	01	80	BRIQUEMESNC41VS	*XX XX NXX CA AA 0	AT XX *BL 03*15	DE FONTANGE	*30 CETIO	*6A1 DEROZIER	*CETI DUTILLOY
*0067*81	82*01	03	28	PRUDEMANCHEC43VS	*XX XX NXX CA AA 0	AT XX *BL 03*35	FORET	*30 CETIO	*6A1 DEROZIER	*CETI MASSOT
*0068*81	82*01	02	37	TAUXIGNY C52VS	*XX XX NXX CA AA 0	AT XX *BL 03*35	FORET	*30 CETIO	*683 DEVINEAU	*CETI TIRAULT
*0069*81	82*06	02	21	GEMEAUX C62VS	*XX XX NXX CA AA 0	AT XX *BL 03*03	SCHIEX	*30 CETIO	*686 PICQ	*CETI NOIROT
*0070*81	82*05	04	18	ST DENIS C98VS	*XX XX NXX CA AA 0	AT XX *BL 03*04	VIDAL	*30 CETIO	*693 PALLEAU	*CETI PALLEAU

Pour un chapitre liste des variétés de ce chapitre.

LISTE DES 9 VARIETES CHAPITRE: 0000H010 COLZA OLEAGINEUX (PAGE 2)

CODE VARIETAL		REFERENCE PROVISOIRE OU DENOMINATION (*)	OBTENTEUR	COOBTENTEUR OU DEMANDEUR	PAYS D' ORIG.	1 EPE ANNEE EXPE.	ANNEE D' INSC.	ESP.
052225	T	* JET NEUF	RINGOT		F		78	5101
052712	T	* KID	RINGOT		F		79	5101
055759	1	[redacted]	OSV-CARGILL		FD	A2		5101
055760	1	[redacted]	OSV-CARGILL		FD	A2		5101
055765	1	[redacted]	INRA-RINGOT		F	A2		5101
055766	1	[redacted]	INRA-RINGOT		F	A2		5101
055105	2	0 [redacted]	RINGOT		F	A1	>>	5101
055106	2	0 [redacted]	NORD.PFLANZENZUCHT (D)	RINGOT	D	A1	>>	5101
055107	2	9 [redacted]	NORD.PFLANZENZUCHT (D)	RINGOT	D	A1	>>	5101

Pour un chapitre liste des modifications par essai .

LISTE DES MODIFICATIONS CHAPITRE: 0000H010 COLZA OLEAGINEUX (PAGE 3)

CODE VARIETAL	REFERENCE PROVISOIRE OU DENOMINATION (*)	OBTENTEUR	COOBTENTEUR OU DEMANDEUR	PAYS D'ORIG.	1 FRE ANNEE EXPE.	ANNEE D'INSC.	ESP.	
----ESSAI: 0039	---- RIEN A SIGNALER							
----ESSAI: 0040	---- RIEN A SIGNALER							
----ESSAI: 0041	---- RIEN A SIGNALER							
----ESSAI: 0042	---- RIEN A SIGNALER							
----ESSAI: 0043	---- RIEN A SIGNALER							
----ESSAI: 0044	---- RIEN A SIGNALER							
----ESSAI: 0045	---- RIEN A SIGNALER							
----ESSAI: 0046	---- RIEN A SIGNALER							
----ESSAI: 0047	---- RIEN A SIGNALER							
----ESSAI: 0048	---- RIEN A SIGNALER							
----ESSAI: 0049	---- RIEN A SIGNALER							
----ESSAI: 0050	---- RIEN A SIGNALER							
----ESSAI: 0051	----							
055759	1 DSV19	DSV-CARGILL		FD	A2	5101		N.SE
055760	1 DSV15	DSV-CARGILL		FD	A2	5101		N.SE
----ESSAI: 0052	---- RIEN A SIGNALER							
----ESSAI: 0053	---- RIEN A SIGNALER							
----ESSAI: 0054	---- RIEN A SIGNALER							
----ESSAI: 0055	---- RIEN A SIGNALER							
----ESSAI: 0056	---- RIEN A SIGNALER							
----ESSAI: 0057	---- RIEN A SIGNALER							
----ESSAI: 0058	---- RIEN A SIGNALER							
----ESSAI: 0059	---- RIEN A SIGNALER							
----ESSAI: 0060	---- RIEN A SIGNALER							
----ESSAI: 0061	----							
000918	H							EN
000919	H							EN
000920	H							EN
000921	H							EN
000922	H							EN
000923	H							EN
000924	H							EN
000925	H							EN
000926	H							EN
000927	H							EN
000928	H							EN
000929	H							EN
000930	H							EN
000931	H							EN
000932	H							EN
054504	H							EN

.../...

3.2 - Le bilan comptable de l'expérimentation.

Ce bilan se fait par voie conversationelle et BATCH.L'utilisateur peut obtenir les bilans qu'il veut, sur les renseignements qu'il veut, dans l'ordre qu'il veut. Par exemple, pour tous les essais qui concernent l'espèce blé, l'utilisateur peut obtenir le bilan des parcelles selon l'ordre des départements où ces essais sont implantés avec des sous-totaux par département.

Il faut remarquer que, comme tous les renseignements, qu'ils soient d'ordre comptable ou d'ordre agronomique, ont la même organisation-stucture en machine, l'utilisateur peut par ce logiciel obtenir des bilans sur les conditions agronomiques qui ont constitué l'environnement de l'expérimentation. A l'évidence ces bilans auront lieu après la campagne agricole.

En fait cette application ne fait pas appel à une programmation propre mais uniquement au logiciel DESGRILLES, c'est pourquoi nous n'en donnerons ni l'ordonigramme ni les exemples de sortie.

3.3 -L'interprétation après contrôle des essais.

Il convient de préciser tout d'abord que tous les résultats des essais sont présentés sur le même type de modèle d'état, modèle d'état qui comprend de manière générale:

-La zone des renseignements généraux sur l'essai (zone des grilles).
-La zone décrivant les notations et mesures effectuées sur l'essai (zone cara).
-La (ou les) feuille B6 qui contient les mesures, la (ou les) feuille B7 qui contient plutôt les notations visuelles.

Aprés la récolte ces bordereaux sont vérifiés par les responsables d'espèce puis confiés à une société de services en vue de leur saisie. En ce concerne leur traitement, un premier programme (VERMER) analyse les erreurs grossières et donne les premières anomalies. Un second programme (VANGOG) confronte chaque essai au répertoire afin de voir s'il est conforme. Si tel est le cas, l'essai est stocké dans les fichiers qui concernent l'espèce à laquelle il appartient; si l'essai n'est pas conforme, il n'est pas stocké.

Le programme RENOIR calcule pour chaque espèce les caractères comme le tallage/épis ou les ARCSINUS des pourcentages etc... L'utilisateur a la possibilité de modifier cette liste de caractères calculés. Il peut par exemple introduire un nouveau caractère, cette application comportant un interpréteur, cela ne remet pas en cause la programmation.

Le programme PICASO interprète chaque essai caractère par caractére. Ce programme peut donner soit des statistiques élémentaires, soit une analyse de variance, soit une analyse non paramétrique. Ce programme stocke pour chaque caractère un certain nombre de renseignements pour chaque variété étudiée.C'est à ce niveau moyen que seront introduits les caractères pour lesquels une variété n'a qu'un résultat (analyse technologique faite sur un échantillon de semences par variété et par essai).

Le programme VINCI réalise l'édition des calculs des étapes précédentes avac en plus le calcul des pourcentages par rapport à un ou plusieurs groupes de témoins (au maximum 3) ainsi que le calcul d'un test de comparaison multiple entre les variétés.

La deuxième partie de la chaîne est consacrée à l'étude des regroupements des essais et à la présentation des résultats obtenues par variété.
Cette deuxième partie comprend 5 programmes .

Cette application est en cours de test ce qui signifie qu'il reste un travail très important à faire dessus. La campagne agricole permettra en particulier d'affiner les types de contrôles qui sont effectués. Elle permettra aussi aux utilisateurs de se situer par rapport aux "produits" de cette chaîne pour laquelle, il est vrai,nous avons été plutôt obligé de faire une synthése de quelques expériences plutôt que de créer un produit original.

Nous nous réservons donc de donner ultérieurement les exemples concernant cette partie.

C - Quelques applications diverses

Il s'agit d'applications qui constituent une charge très faible pour l'unité de calcul du G.E.V.E.S. et qui sont implantés sur le SOLAR de La minière ou sur l'IRIS de Jouy en Josas. Parmi ces applications citons la gestion des adresses des personnes qui travaillent d'une manière ou d'une autre avec le G.E.V.E.S. ainsi que l'édition automatique de groupes d'adresses.

Une autre application plus importante est en cours de mise en place, elle concerne la gestion conversationnelle des demandes d'équipements et de fournitures diverses par les services du G.E.V.E.S.

Enfin signalons quelques petits programmes plus ou moins maintenus et qui concernent un utilisateur particulier. Politiquement le centre de calcul ne fait plus de développement dans ce sens en raison de la faiblesse de ses effectifs, en revanche, il préfère investir ses disponibilités dans des applications plus générales et permettant de réaliser des économies de personnel.

[Annex III follows/
L'annexe III suit/

III . Les développements à moyen terme

A notre sens les moyens dont dispose le G.E.V.E.S. en informatique demeurent minimes malgré les investissements réalisés ces dernières années. La grande faiblesse de ce secteur réside surtout dans le très faible nombre de personnes qui travaillent pour l'unité de calcul. Cette situation devrait légèrement s'améliorer avec l'arrivée d'un ingénieur supplémentaire à la fin de 1982 ou au début de 1983. Pour le moment, l'unité de calcul fait face aux charges qui pèsent sur elles en recrutant du personnel à titre temporaire (pour une personne, le recrutement est de 5 mois maximum).

Le développement le plus évident à moyen terme concerne le développement d'une informatique mieux répartie entre le centre de La Minière et les centres de province. Dans cette optique une étude devrait être prochainement menée. Certains utilisateurs la réclament depuis quelques années, mais il nous a paru difficile d'y répondre avant d'avoir remis certaines apllications essentielles en état.

En ce concerne l'harmonisation souhaitable du point de vue des problèmes qui touchent à l'informatique entre les différents partenaires qui travaillent sur la protection et/ou l'inscription des variétés -nous en avons parlé dans notre introduction générale- rappelons qu'elle nous paraît extrèmement importante à condition qu'elle concerne un horizon assez vaste dans le domaine végétal et qu'on y consacre les moyens appropriés.

Conclusion

Ce document est très incomplet et nous prions les lecteurs de bien vouloir nous en excuser. Cependant, son but était de montrer les principales applications que nous gérons et par là d'essayer de faire percevoir une politique. Nous attendons beaucoup de la synthèse qui pourra ainsi être faite des contributions des différents pays.

TC/XVIII/5
ANNEX III/ANNEXE III/ANLAGE III

AN ROINN TALMHAÍOCHTA, ÁRAS TALMHAÍOCHTA, BAILE ÁTHA CLIATH 2.
DEPARTMENT OF AGRICULTURE, AGRICULTURE HOUSE, DUBLIN 2

TEL. 789011

TELEX 4280

REF—

15 March 1982

Mr H Thiele - Wittig
Senior Technical Officer
UPOV
34, Chemin des Colombettes
1211 Geneve 20
Switzerland

Subject: Exchange of Lists of Candidate Varieties under Test.

Dear Mr Thiele - Wittig

I wish to apologise for failing to reply to your circular of last November on the above topic. Ireland would indeed be interested in exchanging such lists with the other Member States of UPOV and the Office of the Union. The lists should be sent to me at the above address.

In reply to your circular concerning harmonisation of automation and of computer programs I wish to inform you that no automation has yet been introduced into our office though it is under active consideration at the present.

I hope my delay in replying has not inconvenienced you too much.

Yours sincerely

D Feeley

D Feeley

[Annex IV follows/
l'annexe IV suit/
Anlage IV folgt]

0182

RAAD VOOR HET KWEKERSRECHT

Adres : Nudestraat 11
: Postbus 104
6700 AC Wageningen
: 08370 - 19031
Postgiro: 198113

Dr. H. Mast
UPOV
34 Chemin des Colombettes
1211 Genève 20
Suisse

UPOV 29 JUIL 1982
1867-08.1

uw brief	ons kenmerk	datum
	RD-CV-782	21-07-1982

onderwerp

Harmonization of automation and computer programs

Dear Dr. Mast

In reply to the inquiry in Circular U 660-80.1 we can give you the following information.

At the moment the statistical analysis of both VCU and DUS data in varietal research is executed at the Wang 2200 MVP computer at RIVRO. For some crops (e.g. potatoes) comparisons of data in view of the acceptance of new varieties are made through a computer program which RIVRO can run on a DEC PDP 11 elsewhere at Wageningen. The same holds for testing program of proposed varietal denominations. This program is adapted to the Dutch fonetics. The bottleneck here is the input of reference names, but we hope to tackle this problem in the months aheads.

This month a new DEC PDP 1114 is installed at RIVRO which will take up all computer work in future. This will comprise a combined variety documentation system for both the Raad voor het Kwekersrecht and RIVRO.

Hopefully this brief information will give you an idea about our situation.
We are very much interested to take part in an exchange of information on automation within UPOV.

Sincerely yours

Ir. W. Heuver

Verzoeke bij beantwoording aanvragenummer en datum te vermelden.

[Annex V follows/
L'annexe V suit/
Anlage V folgt]

Plant Variety Office
MINISTRY OF AGRICULTURE & FISHERIES

14 January 1982

Dr. H. Mast
Vice Secretary - General
Office of UPOV
POB 18
1211 Geneva 20
SWITZERLAND

Dear Dr. Mast

REPLY TO CIRCULAR NO. U 560/-08.1
(SUBJECT: HARMONISATION OF AUTOMATION AND COMPUTER PROGRAMMES.)

The use of automation or computerisation to assist with both technical and administrative procedures of my Office has been periodically considered but to date no such methods have been adopted.

Yours sincerely

F.W. Whitmore

(F.W. Whitmore)
Registrar of Plant Varieties.

[Annex VI follows/
L'annexe VI suit/
Anlage VI folgt]

All communications to be addressed to the:

Registrar
Plant Varieties Office
P.O. Box 24

0184

TC/XVIII/5
ANNEX VI/ANNEXE VI/ANLAGE VI

LA 30/14

Telegrafiese adres:
Telegraphic address:
"Sativa PRETORIA"
Tel. 213111

Verwys asb. in u antwoord na:
In reply please quote:

No. 11/1/13/2/2

REPUBLIEK VAN SUID-AFRIKA • REPUBLIC OF SOUTH AFRICA

DEPARTEMENT VAN LANDBOU EN VISSERYE
DEPARTMENT OF AGRICULTURE AND FISHERIES

AFDELING PLANT- EN SAADBEHEER
DIVISION OF PLANT AND SEED CONTROL

LANDBOUGEBOU
HAMILTONSTRAAT
PRIVAATSAK X179
PRETORIA
0001

AGRICULTURE BUILDINGS
HAMILTON STREET
PRIVATE BAG X179
PRETORIA
0001
Rep. of S.A.

UPOV | 17 FEB 1982 | 1643-08.1

AIRMAIL

1982-02-09

Vice Secretary-General
UPOV
34 Chemin des Colombettes
1211 GENEVE 20
SWITZERLAND

Your circular No. U660-80-1 of November 25, 1981

HARMONIZATION OF AUTOMATION AND COMPUTER PROGRAM

In view of the relatively small number of applications for plant breeders' rights handled in South Africa it was until now not found necessary to introduce any measure of automation in respect of the technical or administrative procedures applied to variety registration. Computer facilities are available should the need for such automation arize.

Sincerely yours

J.F. VAN WYK
DIRECTOR: DIVISION OF PLANT AND SEED CONTROL

[Annex VII follows/
L'annexe VII suit/
Anlage VII folgt]

MINISTERIO DE AGRICULTURA
Instituto Nacional
de Semillas y Plantas de Vivero
JER/jdn.-

June 30, 1.982.

Dr. H. Mast
Vice Secretary-General
U.P.O.V.
34, Chemin des Colombettes
1211 GENEVE 20 (Suiza)

Subject: Harmonization of automation and computer programs.

Dear Dr. Mast:

In conection with this subject included in the proposed Agenda for the next Session of the Technical Committee, I would like to inform you that in the work of our Institute related with P.B.R. the use of computers has been introduced in the following areas at present:

1.- D.U.S. Test:

1.1.- Statistical treatement of data for quantitative characteristics. (Already in operation).

1.2.- Distinctness for self pollinated species and qualitative characteristics.(in preparation).

2.- Variety denominations:

2.1.- Search of similarity and identity of proposed denominations for new varieties. (in preparation).

2.2.- Recording of storage of existing denominations. (in preparation).

Sincerely yours,

J.M. Elena Rosselló.
Head of the Register of Varieties.

[Annex VIII follows/
L'annexe VIII suit/

STATENS VÄXTSORTNÄMND

Datum
1982-06-30

Dr H Mast
Vice Secretary-General
UPOV
34, chemin des Colombettes
1211 GENEVE 20

Harmonization of automation and computer programs
Circular No. U 660/-08.1

Dear Dr Mast,

At our office automation is not yet introduced. With the exception for use of electronic calculators this is also the case at our testing authority.

Yours sincerely,

Evan Westerlind

Evan Westerlind

[Annex IX follows/
L'annexe IX suit/
Anlage IX folgt]

Postadress
171 73 SOLNA

Telefon
08 - 85 01 30

Postgiro
6 89 55 - 4

TC/XVIII/5
ANNEX IX/ANNEXE IX/ANLAGE IX

NIAB

NATIONAL INSTITUTE OF AGRICULTURAL BOTANY
HUNTINGDON ROAD CAMBRIDGE CB3 0LE
Telephone Cambridge (0223) 76381

PATRON: HER MAJESTY THE QUEEN

Dr H Mast
UPOV
34 chemin des Colombettes
1211 Geneve 20
SWITZERLAND

YOUR REFERENCE

OUR REFERENCE AFK/JB/062b

DATE 2 March 1982

Dear Dr Mast

HARMONISATION OF AUTOMATION AND COMPUTER PROGRAMS - Your Circular No. U660-08.1

Thank you for your letter of 25 November 1981. I asked our people to prepare a summary of the situation here at Cambridge and I enclose a copy of their report.

Please let me know if there is any further information which you require.

Yours sincerely

A F KELLY
Deputy Director

Enc.

Notes in Reply to UPOV Circular No U660:-

"Harmonization of Automation and Computer Programs"

1. Administrative Procedures

Progress of varieties through test and trial is monitored by PVS Branch of MAFF at Cambridge using a purpose written COBOL Computer System referred to as the "Seed and Fees" package. This system stores details of breeders names and addresses and is used to issue requests for test fees and test (seed) material. Decisions relating to variety additions to the National List and the granting of Plant Breeders Rights are also contained in the system for fee collection purposes. Interrogation is via VDU terminals. The files are updated and maintained by MAFF.

An example set of input documents is attached.
Output reports are produced using a report generation program (REPORTER) and can be simply tailored to suit a particular output requirement. An example of a variety progress report is attached.

Fuller details of this system can be obtained on request.

2. Technical Procedures for DUS Testing

(i) Cereals

A special FORTRAN program (G1YR), based on a program written by Dr Hillmann; Hannover, is used to sort and group varieties on the basis of input data on 40 recorded plant and grain characters. All data is scored on a Ø-9 scale.

The program is first used to define groups based on major morphological characters such as grain colour, straw wall thickness and reaction to DDT. Each established group is thereafter considered as a separate entity and each variety is compared with all other varieties within that group. The rule for separating varieties within a group is based on the definition by technical staff of the size of differences between scores which represent meaningful differences between varieties in distinctness terms. Any variety pair which cannot be separated in this way is listed as an aid to isolating potential distinctness problems.

Examples of completed record forms and computer output are attached.

(ii) Grasses, Herbage Legumes, onions, broad/field beans, beetroot, oilseed and forage rape

The DUST Computer Package (ref. Dr S T C Weatherup : Statistical procedures for distinctness, uniformity and stability variety trials. Journal Agricultural Science 1980, (94) 31-46) is a Fortran based system which summarises data recorded on 10-20 plants per plot and stores variety means and variety standard deviations on disc files for further processing. Main programs in use for all crops are

(i) TEST - multiple comparison (all pairs on all characters) produces tabulations of significances and level of significances to indicate any possible distinctness problems.

(ii) DUST - assess the characters recorded with a view to reducing the character set to those which consistently contribute in separating varieties. Varieties which cannot be separated or are separated by a single characteristic are listed.

Programs in regular use for some crops or on experimental basis for other include:-

(i) UNIF (Aids Uniformity Decisions) - compares the variety standard deriation (SD) with the distribution of SD's of 'controls' or varieties with acceptable levels of variation. Lists candidates lacking uniformity (1 tail test) at 1% and 5% probability level.

(ii) STAB (Aids Stability Decisions) - combines probability of 2 stocks being significantly different in 2 or more years. Stability can also be assessed using program TEST and treating each stock as a separate variety - but can only be based on a single year.

(iii) TVAL (Aids Distinctness Decisions) - produces a report on a specified pair of varieties grown together for 2 or more years and tabulates statistics based on several criteria to determine distinctness. This includes the TSCORE Statistic which can further be used to add to similar statistics obtained from other centres.

(iv) FITC - Fitting constant analysis over a number of years at a centre and can also combine over year means obtained from several centres.

(v) VDES - Variety description program using over year/centre means produced by FITC.

Example output for the above programs is attached.

3. Future Developments

We are undertaking a joint project with PVS Branch of MAFF to evaluate a MICROFIN hand-held data logger for use initially with DUS field and laboratory recording. The MICROFIN has a full alpha numeric keyboard, 16 digit LED display and is powered by rechargeable cells. A program has been written and stored in the memory of the device to prompt a recorder for data in a predetermined sequence. An interface connection between the MICROFIN and our mainframe has been written and works successfully. Links with our on-site PET Micro computers is also well advanced giving us flexibility in the storage and validation of DUS recordings.

Details of the MICROFIN are attached.

J R LAW
NIAB 16/2/82

NATIONAL LIST AND PLANT BREEDERS' RIGHTS

Variety sent to TEST & TRIALS

VARIETIES UNDER TESTS AND TRIALS

Form Type 0 3 (1–2)

Card No. 1 (3)

AFP No: (4–10)

Sub-group (see code list) 1. (11–13)

Ploidy: (1 = Not applicable; 2 = Diploid; 3 = Triploid; 4 = Tetraploid; 5 = Polyploid; 6 = Hexaploid; 7 = Other) 2. (14)

Breeders' reference 3. (15–42)

Variety name 4. (43–70)

Name status: 1 = Proposed; 2 = Accepted; 3 = Refused 5. (71)

Variety Origin: (see country code list) 6. (72–75)

Application types: 1 = NL (PBR not applicable); 2 = NL; 3 = PBR (NL not applicable); 4 = PBR; 5 = Both 7. (76)

Test and Trial Type: 1 = DUS only; 2 = VCU and DUS; 8. (77)

Form Type 0 3 (1–2)

Card No. 2 (3)

AFP No. (4–10)

Date application accepted – NL 9. (11–16)

Date application accepted – PBR 10. (17–22)

ADDRESS CODES

- Breeder 11. (23–27)
- NL application 12. (28–32)
- PBR application 13. (33–37)
- Seed requests 14. (38–42)
- Test fees 15. (43–47)

PBR Priority status: 1 = Not applied for; 2 = Applied for; 3 = Granted; 4 = Refused; 5 = Withdrawn 16. (48)

PBR Priority operative date 17. (49–54)

Current PD status: 1 = Not applied for; 2 = Applied for; 3 = Granted; 4 = Refused; 5 = Withdrawn 18. (55)

PD No. 19. (56–59)

PD Operative date 20. (60–65)

Previous AFP No. (if re-application) 21. (66–72)

Decoratives/Fruit merit trial; 1 = Yes; 2 = No; 22. (73)

0191

NATIONAL LIST AND PLANT BREEDERS' RIGHTS

VARIETIES UNDER TESTS AND TRIALS (Contd.)

Form Type 0 3 (1–2)
Card No. 3 (3)
AFP No. (4–10)

NL Withdrawn/refused indicator: 1 = Withdrawn; 2 = Refused 23. (11)
NL Date withdrawn/refused 24. (12–17)
PBR Withdrawn/refused indicator: 1 = Withdrawn; 2 = Refused 25. (18)
PBR Date withdrawn/refused 26. (19–24)

Foreign connection (0 = None; 1 = Variety DUS tested in UK on behalf of foreign country; 2 = Variety DUS tested abroad on behalf of UK - fees payable; 3 = Variety DUS tested abroad on behalf of UK - no fees payable) 27. (25)

Country involved (see country code list) 28. (26–29)
Other countries in which tests and trials are being carried out 29. (30–33)

DUS TESTS

Total years in normal test cycle 30. (34)
Year of DUS test: 1 = Year 1; 2 = Year 2; ..... 9 = Year 9; E = Establishment 31. (35)
Test status (0 = New application; 1 = Plant material requested; 2 = Seed sown, invoice sent; 3 = Invoice paid; 4 = Held over; 5 = Put back; 9 = Complete) 32. (36)

Test history (See Code List)

Year 1	33.	(37–39)
2	34.	(40–42)
3	35.	(43–45)
4	36.	(46–48)
5	37.	(49–61)
6	38.	(52–54)
7	39.	(55–57)
8	40.	(58–60)
9	41.	(61–63)

No. of years in test 42. (64)
Establishment year count 43. (65)

Form Type 0 3 (1–2)
Card No. 4 (3)
AFP No. (4–10)

VCU TRIALS

Total years in normal trial cycle 44. (11)
Year of VCU trial: 1 = Year 1; 2 = Year 2; ..... 9 = Year 9 45. (12)
Trial status (0 = New application; 1 = Plant material requested; 2 = Material sown; 4 = Held over; 5 = Put back; 9 = Complete) 46. (13)

Trial history (See Code List)

Year 1	47.	(14–16)
2	48.	(17–19)
3	49.	(20–22)
4	50.	(23–25)
5	51.	(26–28)
6	52.	(29–31)
7	53.	(32–34)
8	54.	(35–37)
9	55.	(38–40)

No. of years in trial 56. (41)

Date of first seed/plant material request 57. (42–47)
STOP INDICATOR: 1 = Normal; 2 = User stop - no action on this variety 58. (48)

Cereal DUS - Input Record Sheet & V 0192

Cambridge [2] Year
Barley [?] Winter [1] Spring [2]
Collection var [0] Test var [2] Ref No

BARLEY Winter/Spring [2] [7 9]
TERN [2] [2]
[Ø] [2 Ø 8]

GS	No.	0 1 2 3 4 5 6 7 8 9	No.	Gp	Note	Remarks
20	1	Erect SE M S Prostr P	1	1 Growth habit	3	Tillering J M S
	2	vShort S M Long vL	2	2 Leaf - length	5	Establisnment P A G
	3	vNarrow N M Wide vW	3	3 - width	5	
	4	vLight L M Dark vD	4	4 - colour	5	
	5	Abs vWeak W M Strong vS	5	5 Sheath - hairiness	0	
	6	Abs vWeak W M Strong vS	6	6 - pigment	[illegible]	
30-31	7	Erect SE M S-Recurved R	7	7 Leaf - attitude	4	
50	8	Date (incl.month) when 1-2cm awn visible in 50% of ears	8	8 Ear emergence	3	---- May / 3 1 June / ---- July
	9	E SE SE-SR R H D	9	9 Flagleaf - attitude	3	
	10	Abs vWeak W M Strong vS	10	10 - auricle pigment	5	
	11	vShort S M Long vL	11	11 - length	3	
	12	vNarrow N M Wide vW	12	12 - width	4	
	13	vWeak W M Strong vS	13	13 Glaucosity - leaf	3	
	14	" " " " "	14	14 - sheath	3	
	15	" " " " "	15	15 - culm	1	
	16	Abs " " " " "	16	16 - ear	2	- Weak glume
70	17	Abs " " " " "	17	17 Awn tip pigment	3	Group with ear glumes
to	18	1=para, 2=P to Wdiv, 3=Mdiv, 4=Sdiv	18	18 Sterile spklt - attitude	2	Together for S 80
75	19	vShort S M Long vL	19	19 - length	5	
	20	1=Square, 2=Rounded, 3=Pointed	20	20 - tip shape	2	
	21	1=both S 2=1S,1L 3=both L	21	21 - glume awn length	3	
	22	cf.gl. 3=Shorter 5=Equal 7=Longer	22	22 Median spklt - glume awn length	[illegible]	
	23	vShort S M Long vL	23	23 - glume length	5	
	24	Abs vWeak W M Strong vS	24	24 Nerve pigment	4	
	25	1=white 2=blue	25	25 Aleurone colour	1	
75	26	Erect SE Horiz Droop Pend(aN)	26	26 Ear attitude 21 days after AE	7	
91	27	vShort S M Long vL	27	27 Ear - length	5	
	28	vLax L M Dense vD	28	28 - density	5	
	29	1=Parallel, 2=Fusiform, 3=Tapering	29	29 - shape	1	Ear width N B
	30	vShort S Equal Long vL	30	30 Awn length c.f. ear length	6	
	31	1=Platform, 2=P/SC, 3=SC, 4=SC/C, 5=Cup	31	31 Collar type	2	
	32	Height in cm to tip of ear excluding awns	32	32 Straw length		10 cm
	33	Level M Irregular	33	33 Ear level - uniformity of	Ø	Lodging 0-9 ......
	34	Neg.vShort S M Long vL	34	34 Neck-length	4	
	35	Abs-vW Weak M Strong vS	35	35 - flex	3	
	36	Abs-vW Weak M Strong vS	36	36 - kink	Ø	
	37	vShort S M Long vL	37	37 First rachis segment - length	5	
	38	vNarrow N M Wide vW	38	38 - width	5	
	39	vWeak W M Strong vS	39	39 - curvature	5	
	40	Erect SE Horiz. Droop Pend(aN)	40	40 Ear attitude at maturity	7	

Caveat DUS -
Computer Output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G R O U P I N G          I  H E PIGHT EAR A E 8 H L F E C F F F S C E N F S S
...............          I  E A           W A T A E L A O L R L H U A E L T T
                         I  I R S A N L D N R   B A A R L A S A E L R C A
                         I  G I H W E E E     S I F G   A G   G A M   K G S S
CHARACTER                I  H N E N R N N L G P T     A R   C   T   S     P P
.........                I  T G A   V G S E L K   A A T   L U A H G H L L K K
                         I    D T T E T I N A     T T T T E R     L A E E
                         I    A H I   H T G U A   T T   Y N V P G A P N N G T
1 2 3 4 5 6 7 8          I    T   P     Y T C T       2 P G E I L U E Q Q A I
                         I    E           H   T       1 E T   Q A C   T T L P
```

VAR CODE/NAME				172	173	174	175	176	177	178	179	162	138	136	147	154	157	158	160	146	148	131	137	139	156	161	141	169	140	144	145	159	164	141	151	150
"CLASS WIDTHS"				1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	3	3	2	2	2	1	3	3	1	1
CHECKING NEIGHBOURS																																				
2433	HVS81875	(80)	*	1	1	1	1	1	1	1	0	5	6	2	5	2	4	4	7	2	3	7	4	7	2	2	6	2	5	7	6	1	0	5	1	2
518	ROXANE	(80)	*	1	1	1	1	1	1	1	0	4	5	9	2	5	5	5	7	5	2	1	1	3	3	3	4	7	7	7	9	1	0	4	1	2
438	GOLDMARK	(80)	*	1	1	1	1	1	1	1	0	3	7	3	3	4	6	4	3	5	2	2	1	3	2	3	4	5	5	8	8	1	0	4	1	1
469	SOVERIGN	(80)	*	1	1	1	1	1	1	1	0	4	8	2	1	2	5	4	4	5	2	2	1	3	1	4	4	5	5	8	8	1	0	4	1	1
392	GOLDSPEA	(80)	*	1	1	1	1	1	1	1	0	4	7	3	3	1	6	3	3	6	3	2	1	2	2	4	4	5	4	3	8	1	0	4	2	2
2403	4/200/5/	(80)	*	1	1	1	1	1	1	1	0	4	4	3	1	3	4	3	3	5	3	1	1	1	1	4	4	5	5	9	8	1	0	4	1	2
204	MIDAS	(80)	*	1	1	1	1	1	1	1	0	5	7	1	3	1	5	4	2	7	2	2	1	2	2	4	4	3	2	8	8	1	0	4	1	1
483	PRISCA	(80)	*	1	1	1	1	1	1	1	0	6	7	6	5	5	5	4	7	1	3	3	3	5	5	3	4	5	6	5	7	1	3	4	1	2
410	KIEBITZ	(80)	*	1	1	1	1	1	1	1	0	5	7	7	5	3	5	6	8	2	3	5	3	5	5	3	4	3	6	6	7	1	2	4	1	2
139	MARI	(80)	*	1	1	1	1	1	1	1	0	3	1	2	5	5	5	3	7	6	2	3	3	3	3	3	9	5	8	7	8	1	3	9	1	3
619	TAMARA	(80)	*	1	1	1	1	1	1	1	0	4	7	4	5	4	6	6	5	7	3	3	3	5	4	1	6	5	7	8	8	1	1	6	1	2
449	MAISONNE	(80)	*	1	1	1	1	1	1	1	0	5	5	5	3	7	5	5	7	7	1	3	2	3	4	3	5	5	6	7	7	1	2	5	2	3
162	COLUMBA	(80)	*	1	1	1	1	1	1	1	0	5	5	5	6	3	5	4	7	3	3	3	3	3	5	3	4	5	5	6	7	1	4	4	2	3
205	RUBY	(80)	*	1	1	1	1	1	1	1	0	4	7	7	5	4	5	5	7	5	2	3	3	6	4	4	5	3	4	6	8	1	1	5	1	2
470	WELAM	(80)	*	1	1	1	1	1	1	1	0	4	4	7	3	6	4	3	7	6	2	3	3	2	4	3	4	3	6	7	8	1	2	4	1	2
336	VALETA	(80)	*	1	1	1	1	1	1	1	0	4	3	7	3	3	4	5	7	6	3	3	3	2	5	3	5	7	7	6	8	1	1	5	1	1
368	ALVA	(80)	*	1	1	1	1	1	1	1	0	5	7	0	0	0	5	4	7	5	2	3	3	2	4	2	5	5	0	7	8	1	2	5	1	3
345	ARK ROYA	(80)	*	1	1	1	1	1	1	1	0	6	8	7	3	3	5	4	7	3	2	3	3	2	5	3	4	3	6	5	8	1	2	4	1	2
253	PROCTOR	(80)	*	1	1	1	1	1	1	1	0	5	7	7	3	4	4	5	7	5	2	3	3	7	5	5	5	5	7	7	7	1	1	5	1	2
285	ADORRA	(80)	*	1	1	1	1	1	1	1	0	6	6	5	4	3	6	3	5	1	2	3	3	7	5	3	5	5	8	7	7	1	3	5	1	1
378	LOLA	(80)	*	1	1	1	1	1	1	1	0	5	4	3	5	7	3	5	7	5	2	3	3	2	4	3	5	3	7	5	7	1	2	5	1	1
207	TELLUS	(80)	*	1	1	1	1	1	1	1	0	5	7	7	5	7	5	4	7	2	2	3	3	5	6	3	5	3	6	6	7	1	2	5	1	2
414	PIRDUETT	(80)	*	1	1	1	1	1	1	1	0	3	7	4	5	5	5	5	7	5	2	4	4	5	5	3	4	5	7	7	8	1	2	4	2	3
536	KYM	(80)	*	1	1	1	1	1	1	1	0	5	6	6	3	3	6	4	6	1	2	3	3	5	5	3	5	5	7	7	8	1	1	5	1	3
441	MAGNUM	(80)	*	1	1	1	1	1	1	1	0	6	9	0	2	3	5	4	7	5	3	6	7	7	2	3	4	3	5	7	7	1	3	4	1	2
150	SARLA	(80)	*	1	1	1	1	1	1	1	0	6	7	4	5	4	5	4	7	3	1	2	3	3	7	4	6	5	7	5	8	1	3	6	2	3
217	KRISTINA	(80)	*	1	1	1	1	1	1	1	0	6	7	7	5	3	5	6	7	7	1	3	3	3	3	3	5	5	5	7	8	1	0	5	2	2
VARIETY PAIRS NOT SEPARATED																																				
2415	CA10604	(80)		1	1	1	1	1	1	1	0	6	7	4	4	3	4	5	7	7	2	3	3	5	5	4	5	5	6	6	7	1	2	5	1	2
37	BAUBA	(80)		1	1	1	1	1	1	1	0	5	7	3	5	4	5	6	7	6	2	3	4	5	5	3	5	5	6	5	8	1	0	5	1	2

434	ALBION	(80)	*	1	1	1	1	1	1	2	0	6	4	8	2	5	5	3	7	7	2	3	3	7	3	3	5	6	7	7	9	1	2	5	1	2
405	CLAUDIA	(80)	*	1	1	1	1	1	1	2	0	6	7	1	2	3	6	4	7	6	2	8	3	4	5	4	4	5	5	8	8	1	0	4	1	2
365	RUPAL	(80)	*	1	1	1	1	1	1	2	0	6	6	3	2	4	5	7	7	5	2	2	3	3	3	4	5	5	7	8	8	3	0	5	1	2
384	NORDAL	(80)	*	1	1	1	1	1	1	2	0	4	7	5	5	4	5	5	5	3	2	3	2	7	5	3	5	5	7	7	8	1	0	5	1	2
196	HASSAN	(80)	*	1	1	1	1	1	1	2	0	3	4	7	3	6	4	6	8	7	3	3	3	3	5	3	4	7	6	8	8	1	2	4	1	2
303	MONA	(80)	*	1	1	1	1	1	1	2	0	3	1	4	5	3	4	4	7	6	2	3	3	2	4	3	5	7	9	5	7	1	3	5	1	2
144	PALLAS	(80)	*	1	1	1	1	1	1	2	0	4	7	7	4	4	5	6	7	4	2	3	3	5	3	3	5	5	7	6	7	1	2	5	1	2

established groups - each variety distinct

Variety pair not separated

COMPARISON WITH 16 BARUNDI1

		CHARACTERS															
		1	91	4	5	8	10	11	14	15	17	18	98	20	5X	2X	1X
1	S170	-	-	-	-1	+1	+	+1	+1	-	-	0	0	-	4	4	4
2	S170 NEW	-	-	-	-1	+1	+	+1	+5	-	+	-1	-2	-	6	5	4
4	ALTA	-	-	+	-1	+1	+	+1	+1	-	-	-	-	-	4	4	4
5	BACKAFAL	-	-	+	-	+1	+2	+	+1	+	+	-1	-1	-	5	5	4
6	CONWAY	-	-	-	-1	+1	+	+	+1	-	+	-	-	-	3	3	3
7	CONWAY N	-	-	-5	-1	+1	+	-	+1	-	-	-5	-5	-	6	3	3
8	DOVEY	-1	-1	-1	-1	+1	+	+2	+1	+	+	-1	-1	-5	10	9	8
9	FESTAL	-	-	-	-1	+1	-	-2	+1	-5	-1	-	-	+	6	5	4
10	RABA	-5	-5	-	-1	+1	+	+	+1	+5	+5	-5	-5	-	9	3	3
12	JEBEL	0	0	+	-1	-	-1	-	+	-	-1	-1	-1	-1	6	6	6
13	KASBA	0	0	-	-1	-5	-2	+	+	-	-2	-5	-	-	5	3	1
17	BARUNDI2	0	0	+	+	-	+	+	+	-	+	-	-	+	0	0	0
18	BARUNDI3	0	0	+	+	-	-	-	+5	+	+	-	-	-	1	0	0
19	BARCEL 1	0	0	+	-	-	-	-1	+	-	-	-	-	+	1	1	1
20	BARCEL 2	0	0	+	+	+	-	-1	+	-	-	-	-	+	1	1	1
21	BARRIETI	-	-	+	-	-	-1	-5	+2	+	-	-	-	-	3	2	1
22	CONWAY78	-5	-5	-	-1	+1	+5	+	+1	-	-	-1	-1	-	8	5	5
23	DOVEY 77	-	-	-1	-1	+1	+	+	+2	-	+	-1	-1	-1	7	7	6

COMPARISON WITH 17 BARUNDI2

		CHARACTERS															
		1	91	4	5	8	10	11	14	15	17	18	98	20	5X	2X	1X
1	S170	-	-	-1	-1	+1	+	+1	+5	-	-	+	+	-	5	4	4
2	S170 NEW	-	-	-	-1	+1	+	+1	+	-	+	-	-	-	3	3	3
4	ALTA	-	-	-	-1	+1	+	+1	+5	-	-	-	-	-5	5	3	3
5	BACKAFAL	-	-	-	-	+1	+5	+	+1	+	+	-2	-2	-	5	4	2
6	CONWAY	-	-	-1	-1	+1	+	+	+1	-	+	+	+	-	4	4	4
7	CONWAY N	-	-	-1	-1	+1	+	-	+1	-	-	-	-	-	4	4	4
8	DOVEY	-1	-1	-1	-1	+1	+	+2	+1	+	+	-1	-1	-5	10	9	8
9	FESTAL	-	-	-5	-1	+1	-	-2	+	-5	-1	-	-	-	6	4	3
10	RABA	-5	-5	-1	-1	+1	+	+	+1	+5	+5	-	-	-	8	4	4
12	JEBEL	0	0	-	-1	-	-1	-	+	-	-1	-1	-1	-1	6	6	6
13	KASBA	0	0	-2	-1	-5	-1	+	-	-	-1	-	-	-	5	4	3
16	BARUNDI1	0	0	-	-	+	-	-	-	+	-	+	+	-	0	0	0
18	BARUNDI3	0	0	-	+	-	-	-	+	+	+	+	+	-	0	0	0
19	BARCEL 1	0	0	-	-	-	-5	-1	-	-	-5	-	-	+	3	1	1
20	BARCEL 2	0	0	-	+	+	-	-1	+	-	-5	-	-	+	2	1	1
21	BARRIETI	-	-	-	-	-	-1	-5	+	+	-	+	+	-	2	1	1
22	CONWAY78	-5	-5	-2	-1	+1	+	+	+1	-	-	-5	-5	-	8	4	3
23	DOVEY 77	-	-	-1	-1	+1	+	+	+	-	+	-1	-1	-1	6	6	6

No significant differences between the 2 stocks of same variety.

For example. To compare BARUNDI2 with S170 for character 8 (Date of Ear Emergence)

Mean for BARUNDI2 = 79.02 } Difference of 15.25 exceeds the Sig Diff (P = 0.01) of 3.342 days
Mean for S170 = 63.77

Comparison between BARUNDI2 and S170 is coded +1 to indicate that BARUNDI2 is significantly greater than S170 at the 1% probability level.

DUST

Output from DUST – Tall Fescue DUS Spaced Plants Cambridge 1980

ESSENTIAL CHARACTERS

CHARACTER 10 HGT EE IS ESSENTIAL TO THE FOLLOWING PAIR

(21, 18)

CHARACTER 11 WDTH EE IS ESSENTIAL TO THE FOLLOWING PAIR

(19, 16) (20, 16)

CHARACTER 14 FLAGLGTH IS ESSENTIAL TO THE FOLLOWING PAIR

(18, 16) (21, 19)

THE FOLLOWING PAIRS OF VARIETIES CANNOT BE SEPARATED

(17, 16) (18, 17) (20, 19) (21, 20)

T TEST USED IN COMPARISONS AT 5 % LEVEL

INDIVIDUAL CHARACTER SEPARATIONS

	CHARACTER	NUMBER OF PAIRS SEPARATED
1	HEAD YOS	29
91	HEAD YOS	28
4	ANGLEYOS	62
5	SPR HGT	127
8	DATE EE	138
10	HGT EE	75
11	WDTH EE	92
14	FLAGLGTH	68
15	FLAGWDTH	43
17	STEMLGTH	72
18	HEAD AFT	55
98	HEAD AFT	66
20	HGT AFT	34

SUMMARY

	CHARACTER	NUMBER OF PAIRS SEPARATED	CUMULATIVE
8	DATE EE	138	138
11	WDTH EE	18	156
5	SPR HGT	6	162
14	FLAGLGTH	3	165
10	HGT EE	1	166
18	HEAD AFT	1	167

THE FOLLOWING CHARACTERS ARE REDUNDANT

1 4 15 17 20 91 98

(UNIF) 096

Output from UNIF - Tall Fescue DUS Spaced Plants Cambridge 1980

USERCODE28180011 TALL FESCUE CAMBRIDGE 1980
UNIFORMITY ASSESSMENT
(VARIETY S.D.S)
CHARACTER NAMES

CONTROL VARIETY	1 HEAD YOS	91 HEAD YOS	4 ANGLEYOS	5 SPR HGT	8 DATE EE	10 HGT EE	11 WDTH EE	14 FLAGLGTH	15 FLAGWDTH	17 STEMLGTH
1 S170	12.91	0.13	8.39	7.70	7.41	6.73	6.48	5.11	1.47	17.18
4 ALTA	12.91	0.13	6.92	6.99	7.07	7.24	5.65	4.79	2.02	15.98
5 BACKAFAL	12.91	0.13	6.12	5.98	7.86	8.04	7.62	4.72	1.96	14.72
6 CONWAY	22.36	0.22	7.19	7.36	7.65	7.26	7.71	4.34	1.99	12.67
9 FESTAL	12.91	0.13	6.52	6.10	6.79	8.46	7.48	5.53	1.95	11.44
8 DOVEY	29.19	0.29	7.44	7.72	8.11	7.56	6.70	4.64	1.66	15.64
10 RABA	25.09	0.25	6.16	7.98	8.65	7.64	7.06	4.28	1.43	16.49
12 JEBEL	0.0	0.0	6.52	8.90	4.28	10.97	6.69	4.97	1.96	14.90
13 KASBA	0.0	0.0	5.85	7.73	3.97	9.42	5.04	5.45	1.47	13.53
16 BARUNDI	0.0	0.0	5.81	6.10	4.20	10.11	7.28	4.57	1.61	16.73
SD CON	10.55	0.11	0.81	0.96	1.76	1.39	0.87	0.43	0.25	1.87
MEAN CON	12.83	0.13	6.69	7.25	6.59	8.34	6.77	4.84	1.75	14.92
1% LEVEL	42.61	0.43	8.98	9.96	11.64	12.26	9.22	6.04	2.45	20.20
5% LEVEL	32.18	0.32	8.18	9.01	9.81	10.89	8.36	5.62	2.21	18.35
ENTRANT VARIETY										
2 S170 N	12.91	0.13	6.12	5.18	5.24	6.69	4.72	6.96	1.83	11.71
7 CONWAY N	12.91	0.13	6.71	6.85	7.66	7.53	6.52	6.16	1.81	15.02
17 BARUNDI2	0.0	0.0	7.19	5.67	5.41	10.98	6.09	5.23	1.87	14.60
18 BARUNDI3	0.0	0.0	6.95	6.85	4.03	8.94	6.39	5.39	1.77	13.06
21 BARRIET	12.91	0.13	6.33	4.62	4.45	10.42	6.29	6.88	2.21	13.16
12 BARCEL 1	0.0	0.0	6.52	8.90	4.28	10.97	6.69	4.97	1.96	14.90
20 BARCEL 2	0.0	0.0	7.53	6.33	4.15	8.23	6.76	5.40	1.77	13.41
22 CONWAY78	23.57	0.24	6.04	5.78	5.90	7.24	6.38	5.02	1.57	16.22
23 DOVEY 77	18.37	0.18	9.38	8.04	6.94	8.69	8.15	5.94	2.12	11.00

CHARACTERS

ENTRANT VARIETY	1	91	4	5	8	10	11	14	15	17
2 S170 N	NS	NS	NS	NS	NS	NS	NS	1%	NS	NS
7 CONWAY N	NS	NS	NS	NS	NS	NS	NS	1%	NS	NS
17 BARUNDI2	NS	NS	NS	NS	NS	5%	NS	NS	NS	NS
18 BARUNDI3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
21 BARRIET	NS	NS	NS	NS	NS	NS	NS	1%	NS	NS
12 BARCEL 1	NS	NS	NS	NS	NS	5%	NS	NS	NS	NS
20 BARCEL 2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
22 CONWAY78	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
23 DOVEY 77	NS	NS	1%	NS	NS	NS	NS	5%	NS	NS

STAB

STABILITY COMPARISONS WRG(DIP) CAMBRIDGE 1979 AND 1980 2YEAR

COMPARISON BETWEEN 1 MDM 91 A AND 2 MDM 91 B

PERCENTAGE PROBABILITY LEVELS POSITIVE VALUES IF MDM 91 A LARGER THAN MDM 91 B

		YEARS 79	80	COMBINED PROBABILITY over years	
3	DATEOFE1	-52.1601	-13.2824	25.656400	NS
4	ANGLE EE	58.0819	-53.2666	70.460670	NS
5	HGT ATEE	26.8828	-2.3934	3.810935	*
6	WDTHATEE	-81.6603	-35.2017	62.798760	NS
9	FLGLFLOT	100.0000	94.9115	99.795260	NS
10	WDTHFLAG	25.2742	19.3735	21.611090	NS
11	REC HGT	-40.1829	0.0	0.000001	***
12	DATEOFE2	83.1346	0.0000	0.0	***
13	ANG GRW	94.9295	1.6476	4.955950	*
18	STEM-EAR	11.9469	-.0006	0.000254	***
19	EAR LGTH	20.1297	-48.1965	33.932230	NS
20	AWNS	100.0000	-.6940	1.842925	*

0198

(TVAL)

Output from TVAL - Tall Fescue DUS Special Plants Cambridge 1980 & 1979

TSCORE COMPARISON TALL FESCUE CAMBRIDGE 1979 AND 1980 2YEAR

COMPARISONS BETWEEN 11 BARCEL I AND 5 DOVEY

T-VALUES POSITIVE IF BARCEL ILARGER THAN ,DOVEY

		SIGNIFICANCE LEVELS YEARS 79	80		COMBINED PROBABILITY		T VALUES YEARS 79	80	T SCORE
1	HEAD YOS	-1	-1	D	-.0078	***	-6.853	-3.201	-6.871
4	ANG GROW	-1	-1	D	-.0058	***	-4.249	-3.567	-6.740
5	SPR HGT	-1	-1	D	-.0002	***	-5.658	-7.667	-6.740
8	DATEOFEE	+1	+1	D	0.0002	***	19.471	20.331	6.740
10	HGTAT EE	+1	+1	D	0.0002	***	9.933	3.586	6.740
11	WDTHATEE	+1	+1	D	0.0002	***	8.979	6.162	6.740
14	FLAGLNGT	+1	+1	D	0.0002	***	3.379	4.942	6.740
15	FLAGWDTH	-2	+1	ND	63.2462	NS	-2.543	2.776	0.233
17	SLTEEE30	+1	+1	D	0.0002	***	4.449	2.847	6.217
20	AFT HGTH	-1	-2	ND	-.0002	***	-5.357	-2.586	-5.955

COMPARISONS BETWEEN 11 BARCEL I AND 6 FESTAL

T-VALUES POSITIVE IF BARCEL ILARGER THAN ,FESTAL

		SIGNIFICANCE LEVELS YEARS 79	80		COMBINED PROBABILITY		T VALUES YEARS 79	80	T SCORE
1	HEAD YOS	-1	-	ND	-80.8498	NS	-4.678	-.538	-3.370
4	ANG GROW	+	-	ND	-44.0646	NS	0.0	-.793	0.0
5	SPR HGT	-	-1	ND	-.1142	**	-1.651	-2.902	-2.902
8	DATEOFEE	+1	+1	D	0.0002	***	5.321	4.284	6.740
10	HGTAT EE	+1	+	ND	0.4054	**	4.268	0.375	3.370
11	WDTHATEE	+8	+	ND	2.3535	*	2.092	1.216	2.092
14	FLAGLNGT	-	+1	ND	23.2729	NS	-1.120	2.726	2.726
15	FLAGWDTH	-1	-	ND	-.0007	***	-5.613	-1.362	-3.370
17	SLTEEE30	-	-8	ND	-1.3405	*	-1.342	-2.146	-2.146
20	AFT HGTH	+	-	ND	60.2703	NS	1.837	-.469	0.0

'TEST' procedure on each years data.

Dif 2@ 1% sig diffs or 3@ 2% sig diff (Distinctness test)

Combined probability that mean over years significant - using the pooled w error

t-values for each individual year.

tscore is sum of t-values over years subject to:-
t-value less than 1.98 set to zero
t-values greater than 3.37 set to 3.37

0199

FITTING CONSTANTS MARG(DIP AND TST) CAMBRIDGE 1976-1980 4YEARS

CHARACTER NUMBER 3 CHARACTER NAMEDATEOFRE

VARIETY MEANS

		ADJ. MEAN		78	79	79	80
1	HARDLEY	130.81	(4)	146.70	136.55	134.55	126.25
2	CRICKET	130.54	(4)	150.66	136.88	131.90	122.64
3	DUTCH	130.75	(4)	146.15	135.46	131.37	121.33
4	MERWESTR	131.11	(4)	147.72	138.40	129.44	116.86
5	MOLTO	134.49	(4)	148.23	132.70	131.16	125.81
6	WELORA	129.69	(4)	147.62	127.19	125.80	118.76
7	WE*O	134.28	(4)	147.34	136.98	127.92	124.88
8	MOMLMW91	132.39	(3)	-1.00*	133.98	130.72	118.30
9	MOMLMW15	129.26	(3)	-1.00*	133.65	127.28	112.70
10	G TAMA	132.70	(4)	147.75	138.14	131.02	121.89
11	TEWERA	139.49	(4)	150.35	140.66	139.25	127.68
12	LUNAR 1	135.22	(4)	148.18	132.90	134.14	125.65
13	HW 66 1	135.76	(4)	149.48	136.32	133.23	124.38
14	MOMLMW96	139.23	(3)	-1.00*	136.74	138.38	128.40
	YEARS MEANS			148.20	133.59	131.87	122.53

RESIDUAL MEAN SQUARE = 6.3993

POOLED ERROR MEAN SQUARE = 2.3755 WITH DEGREES OF FREEDOM = 564

-1.00 missing observation

0200

VDES

ADJ. MEANS FROM FITTING CONSTANTS AMRG(DIP AND TET) CAMBRIDGE 1976-1982 4YEARS

VARIETY DESCRIPTIONS

		Character No. 3	4	5	9	13
1	BARCLOI	1	1	1	2	4
2	CRICKET	2	4	2	2	4
3	DUTCH	4	1	5	5	5
4	MERMESTR	4	2	3	4	4
5	MOLTO	3	3	2	2	3
6	MELORA	5	5	5	4	5
7	MEND	3	5	4	3	2
8	MOMLMW91	4	2	3	3	3
9	MOMLMW15	5	4	4	4	3
10	G TAMA	3	3	4	5	2
11	TEWERA	1	2	1	1	1
12	LUNAR 1	2	3	2	1	2
13	MW 66 1	2	1	3	3	1
14	MOMLMW96	1	4	1	1	1

Adjusted Fitted Means grouped for each character - in this case into 5 groups. Delineating (nominated) varieties. can also be used.

VARIETY NAME	BREEDERS REFERENCE	AFP NO	PREVIOUS AFP
ARABELLE	ARABELLE	25 / 86	

Variety Progress Report

BREEDERS ADDRESS

8854

PLANT BREEDERS RIGHTS

DATE PBR APPLICATION RECEIVED	17 1 79
PBR W/D OR REFUSED W/D	6 4 81
PROTECTIVE DIRECTIVE STATUS	GRANTED
PROTECTIVE DIRECTIVE DATE	16 3 79
NAME	ARABELLE
NAME STATUS	ACCEPTED
PBR STATUS	
DATE OF PBR	
TERMINATION OF PBR	

DUS TESTS

NORMAL TEST CYCLE		4
YEAR OF DUS TEST		3
DUS TEST STATUS		TESTS COMPLETE
TEST HISTORY YEAR	1	0
(SEE CODES)	2	512
	3	256
	4	
	5	
	6	
	7	
	8	
TEST HISTORY YEAR	9	
NUMBER OF YEARS IN TEST		2
DATE DUS REPORT		

RECOMMENDED LIST

YEAR	CATEGORY	REMOVED
NOT RECOMMENDED		
DEFERRED		

GERMINATION %

COMMENTS

NATIONAL LIST

DATE NL APPLICATION RECEIVED	17 1 79
NL W/D OR REFUSED W/D	6 4 81
NAME	ARABELLE
NAME STATUS	ACCEPTED
NL STATUS	
DATE ON NL	
EXTENSION OF NL	
DELETION FROM NL	

VCU TRIALS

NORMAL TRIAL CYCLE		4
YEAR OF TRIAL		3
TRIAL STATUS		TRIALS COMPLETE
TRIAL HISTORY YEAR	1	0
(SEE CODES)	2	256
	3	128
	4	
	5	
	6	
	7	
	8	
TRIAL HISTORY YEAR	9	
NUMBER OF YEARS IN TRIAL		2
DATE VCU REPORT		

[Annex X follows/
L'annexe X suit/
Anlage X folgt]

0202

TC/XVIII/5
ANNEX X/ANNEXE X/ANLAGE X

United States Department of Agriculture
Agricultural Marketing Service
Livestock, Meat, Grain, and Seed Division
National Agricultural Library Building
Beltsville, MD. 20705

March 10, 1982

Dr. Heribert Mast
Vice Secretary-General
International Union for the
Protection of New Varieties of Plants
34, chemin des Colombettes
1211 Geneva 20
Switzerland

Dear Dr. Mast:

In response to UPOV Circular No. U 660 -08.1, a short expose on the use of computer automation in the U.S. Plant Variety Protection Office is enclosed. I hope this information enables the Technical Committee to develop a suitable format for exchange of technical information among all member states.

If you believe additional information not contained in this expose would be of value to the committee, please notify us and we will forward it as soon as possible.

Sincerely,

Kenneth H. Evans

Kenneth H. Evans
Acting Commissioner
Plant Variety Protection Office

Enclosures

THE ROLE OF COMPUTER AUTOMATION IN THE UNITED STATES PLANT VARIETY PROTECTION OFFICE

Computer Operations in the U.S. Plant Variety Protection Office

I. Software system utilized:

Easytrieve information retrieval and data management system, distributed by Pansophic Systems, Inc.

1. Easy for plant scientists to use, as no specialized computer knowledge is necessary.

2. Distributed worldwide with offices in USA, Europe, Canada, Japan, U.K., and Scandinavia.

II. Two computer file systems (Attachment No. 1)

1. Descriptive files

a. Composed of variety descriptions, one file for each crop. To facilitate data management, each crop file is maintained on a separate magnetic tape.

b. Each variety description is identified by a unique seven digit plant variety number (PV#).

/__ __/ /__ __/ /__ __ __ __/

Fiscal Year — Source: Application=0 Literature=1 — A number assigned chronologically, starting with 0001 each fiscal year

EXAMPLE: 7800049 -- PV# assigned to 49th application in fiscal year 1978

2. Administrative files

a. Exist as means of application management for office bookkeeping

b. Contains an entry for each application regarding PV#, status, crop kind, variety name, applicant's name, fees paid, etc.

Technical Use of Computer as Aid in Determining Varietal Distinctness Using Descriptive Files

Concept: Maintain up-to-date computerized files of variety descriptions based upon standardized objective description forms for each crop. Applications for plant variety protection include completed objective description form for applicant's variety to allow direct comparison of it with descriptions in descriptive file. Computer search of descriptive file allows elimination of varieties described sufficiently to be clearly distinct from application variety. Examiner completes novelty search by documenting distinctness of application variety from remaining similar or inadequately described varieties.

A. Devise objective description form (similar to UPOV "Technical Guidelines") for each crop kind

1. Search literature and contact research workers for reliable characters.

2. Create tentative form.

3. Circulate form to breeders for comment.

4. Revise, print, and distribute final form to public (Attachment No. 2a).

B. Establish coding form (Attachment No. 2b).

1. Similar to objective description form and is used in-house to coordinate the addition of descriptive information into descriptive file.

2. Includes field names and all possible field values.

EXAMPLE: For the character "Leaf Color" with expressions of yellow, green, or dark green:

Field name = LCOL
Possible Field Values = YELL GRN DKGN

3. Assigns each field a fixed numerical location.

C. Establish an Easytrieve library

1. Library provides the computer with a complete record of all field names and their numerical locations for a particular descriptive file. Included in all computer programs for that crop.

D. Search literature and register descriptive variety information into a descriptive file

1. Varieties not yet represented in descriptive file

a. Record descriptive characters onto a blank coding form, noting literature citation(s) for future reference.

b. Create or amend descriptive file by adding coded variety descriptions using Easytrieve addition program.

c. File coding form for future reference.

2. Varieties represented by incomplete description in descriptive file

   a. Record descriptive characters onto the incomplete coding form maintained for that particular variety, noting literature citation(s) for future reference.

   b. Amend descriptive file by updating existing variety descriptions using Easytrieve update program.

   c. Refile coding form for future reference.

E. Determining distinctness of an application variety

1. Examiner identifies critical descriptive characters and constructs query statements used in Easytrieve search program (Attachment No. 3a) to search descriptive file and eliminate those varieties which are described sufficiently to be clearly distinct from application variety.

2. Examiner investigates distinctness of application variety from remaining varieties listed by output of Easytrieve search (Attachment No. 3b), and if satisfied application variety is distinct, uniform, and stable, recommends certificate of protection be issued. If dissatisfied, requests additional evidence or information from applicant to correct inadequacies.

III. Administrative Use of Computer

Concept: Maintain a single computerized file which can be used as a data base to provide monthly office reports, to respond to public requests for information, and to generate camera-ready copy for the Official Journal.

A. Maintaining administrative file

1. Information from application forms (distinct from technical exhibits) of applications received are coded onto administrative file coding form (Attachment No. 4).

2. Amend administrative file by adding coded application information using Easytrieve addition program.

3. For applications previously received, application status, fee information, variety name, etc. can be updated using Easytrieve update program.

B. Producing monthly office report

1. Easytrieve program uses current administrative file to list application information by PV#, crop kind, or status. The office report is prepared for in-house use only.

2. A separate statistical analysis of examination progress is provided at the end of each report by a Statistical Analysis System (SAS) program, a software system available from the SAS Institute, Inc., Raleigh, North Carolina, U.S.A.

C. Responding to public requests for information

SAS program uses administrative file to generate lists of information concerning applications of interest to State agencies and the seed industry, in accordance with letter and telephone requests. These lists are then mailed to the interested parties.

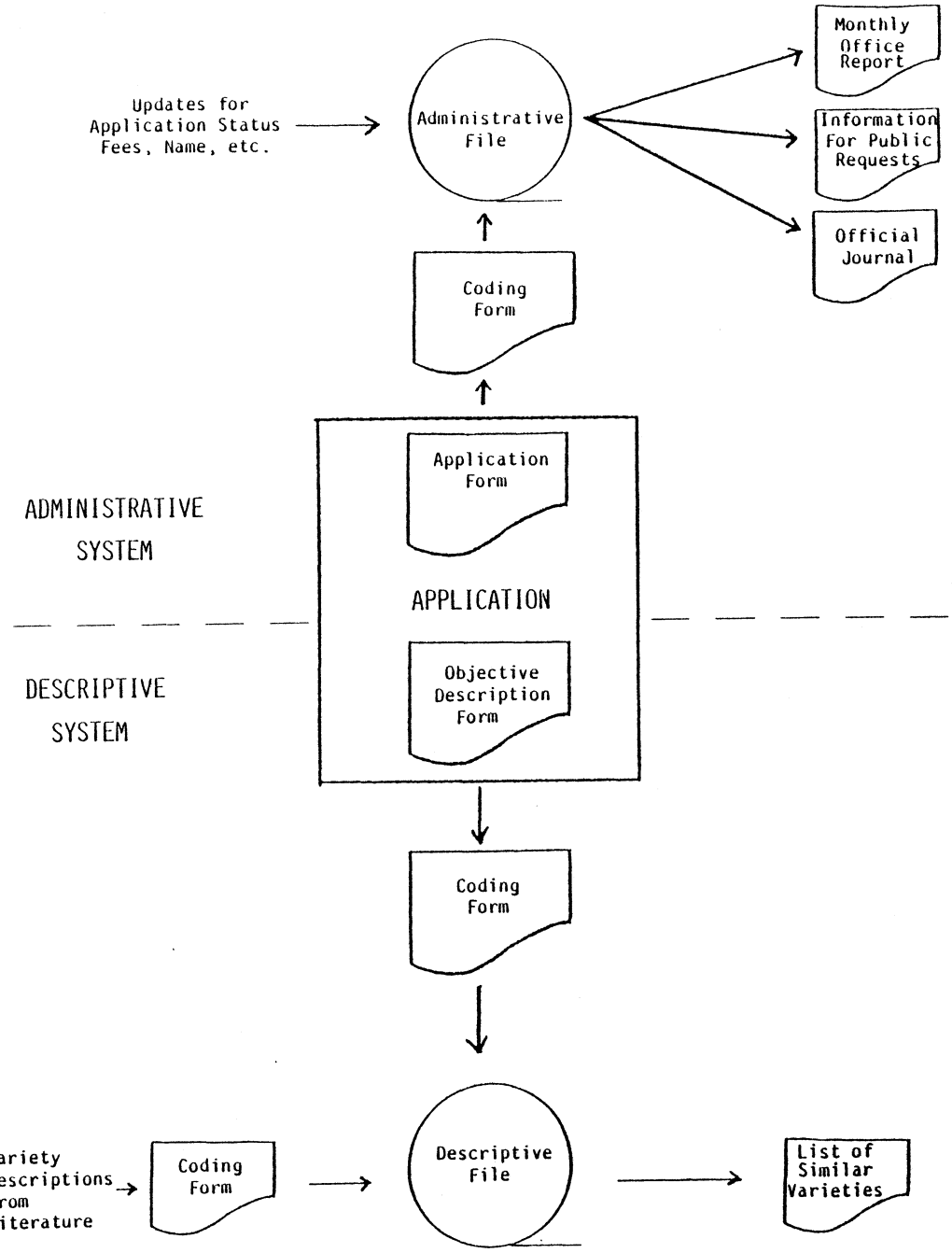
D. Generating camera-ready copy for the quarterly and index issues of the Official Journal

1. SAS programs are prepared establishing standard list format for each list to be included in Official Journal.

2. Appropriate subset parameters and titles are inserted into SAS programs, and the current administrative file is used to generate the required lists. Output is printed directly onto camera-ready paper (Attachment No. 5).

3. Camera-ready copy is assembled, verified by Examiners, and sent to printers for publication.

DATA MANAGEMENT IN THE U.S. PLANT VARIETY PROTECTION OFFICE



ATTACHMENT 1

FORM APPROVED OMB NO. 40-R3822

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN *(GLYCINE MAX)*

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)

ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code)*

FOR OFFICIAL USE ONLY

PVPO NUMBER

VARIETY NAME OR TEMPORARY DESIGNATION

Place the appropriate number that describes the varietal character of this variety in the boxes below.

1. SEED SHAPE:
☐ 1 = SPHERICAL 2 = SPHERICAL FLATTENED 3 = ELONGATE 4 = OTHER *(Specify)*

2. SEED COAT COLOR:
☐ 1 = YELLOW 2 = GREEN 3 = BROWN 4 = BLACK 5 = OTHER *(Specify)*
SHADE: ☐ 1 = LIGHT 2 = MEDIUM 3 = DARK

3. SEED COAT LUSTER:
☐ 1 = DULL 2 = SHINY

4. SEED SIZE
☐☐ GRAMS PER 100 SEEDS

5. HILUM COLOR:
☐ 1 = BUFF 2 = YELLOW 3 = BROWN 4 = GRAY 5 = IMPERFECT BLACK 6 = BLACK 7 = OTHER *(Specify)*
SHADE: ☐ 1 = LIGHT 2 = MEDIUM 3 = DARK

6. COTYLEDON COLOR:
☐ 1 = YELLOW 2 = GREEN

7. LEAFLET SIZE *(See Reverse)*:
☐ 1 = SMALL 2 = MEDIUM 3 = LARGE

8. LEAFLET SHAPE:
☐ 1 = OVATE 2 = OBLONG 3 = LANCEOLATE 4 = ELLIPTICAL 5 = OTHER *(Specify)*

9. LEAF COLOR *(See reverse)*:
☐ 1 = LIGHT GREEN 2 = MEDIUM GREEN 3 = DARK GREEN

10. FLOWER COLOR:
☐ 1 = WHITE 2 = PURPLE 3 = OTHER *(Specify)*

11. POD COLOR:
☐ 1 = TAN 2 = BROWN 3 = BLACK

12. POD SET:
☐ 1 = SCATTERED 2 = CONCENTRATED

13. PLANT PUBESCENCE COLOR:
☐ 1 = GRAY 2 = BROWN 3 = OTHER *(Specify)*
SHADE: ☐ 1 = LIGHT 2 = MEDIUM 3 = DARK

14. PLANT TYPES *(See Reverse)*:
☐ 1 = SLENDER 2 = BUSHY 3 = INTERMEDIATE

15. PLANT HABIT:
☐ 1 = DETERMINATE 2 = INDETERMINATE 3 = OTHER *(Specify)*

16. HYPOCOTYL COLOR:
☐ 1 = GREEN 2 = PURPLE

17. SEED PROTEIN:
☐ 1 = A 2 = B

18. NUMBER OF DAYS TO FLOWERING *(Place a zero in first box (e.g. 0 9) when days are 9 or less.)*
☐☐☐

19. MATURITY GROUP:
☐ 1 = 00 2 = 0 3 = I 4 = II 5 = III 6 = IV 7 = V 8 = VI 9 = VII 10 = VIII

20. SIZE OF 10 DAY OLD SEEDLING GROWN UNDER CONSTANT LIGHT *(Growth Chamber)* AT 25° C. *(Place a zero in first box (e.g. 0 2) when size is 9 mm. or less.)*
☐☐☐ MM. LENGTH OF SEEDLING ☐☐ MM. LENGTH OF COTYLEDON ☐☐ MM. WIDTH OF COTYLEDON

21. DISEASE: *(Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)*

☐ BACTERIAL PUSTULE	☐ SOYBEAN CYST	☐ DOWNY MILDEW	☐ PURPLE STAIN	☐ POD AND STEM BLIGHT	☐ ROOT KNOT
☐ FROGEYE	☐ STEM CANKER	☐ PHYTOPHTHORA	☐ BROWN STEM ROT	☐ TARGET SPOT	☐ BROWN SPOT
☐ BUD BLIGHT	☐ WILDFIRE	☐ RHIZOCTONIA ROT	☐ OTHER *(Specify)*		

FORM LPGS-470-2 (6-78) (Formerly Form GR-470-2, which may be used)

ATTACHMENT 2A PAGE 1 OF 2

0205

. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant shape		Petiole angle	
Leaf shape		Seed size	
Leaf color		Seed shape	
Leaf surface		Seedling pigmentation	

. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY:

VARIETY	NO. OF DAYS TO MATURITY	LODGING SCORE	PLANT HEIGHT	LEAF SIZE		CONTENT		AVERAGE NO. OF PODS PER PLANT	IODINE NO.
				Width	Length	Protein	Oil		
Submitted							%		
ame of similar variety									

INSTRUCTIONS

ENERAL: The following publications may be used as a reference aid for completing this form:

1. Scott, Walter O. and Samuel R. Aldrich, 1970, Modern Soybean Production, The Farmer Quarterly.
2. Norman, A. G., 1963, The Soybean: Genetics, Breeding, Physiology, Nutrition, Management.
3. McKie, J. W., and K. L. Anderson, 1970, The Soybean Book.

EAF COLOR: Nickerson's or any recognized color fan may be used to determine the leaf color of the described ariety. The following Soybean varieties may be used as a guide to identify the colors listed on the form.

COLOR	VARIETY
Light Green	"Ada"
Medium Green	"Wilkin"
Dark Green	"Swift"

EAF SIZE: The following varieties may be used as a guide to identify the relative size leaves.

SIZE	VARIETY
Small	"Amsoy"
Medium	"Bonus"
Large	"Anoka"

LANT TYPE: The following varieties may be used as a guide to identify the plant type.

TYPE	VARIETY
Slender	"Vansoy"
Intermediate	"Wirth"
Bushy	"Adelphia"

M LPGS-470-2 (6-78) (Reverse)

SOYBEAN CODING FORM

PVPO NUMBER	PV#	1-7	_ _ _ _ _ _ _
KIND	KIND	8-10	SOY
SEED SHAPE	SSHP	11-14	SPHR SPHF ELON OVAL OBLN _ _ _ _
SEED COAT COLOR	SCL	15-17	YEL GRN BRN BLA _ _ _
SEED COAT SHADE	SD	18-19	LT ME DK
SEED COAT LUSTER	LU	20-21	DL SH IN
SEED SIZE	SSZ	22-23	_ _
HILUM COLOR	HCL	24-26	BUF YEL BRN GRY IBL BLA B&B GRN _ _ _
HILUM SHADE	HS	27-28	LT ME DK SG
COTYLEDON COLOR	CCL	29-31	YEL GRN
LEAFLET SIZE	LS	32-33	SM ME LG
LEAFLET SHAPE	SP	34-35	OV OE LN EP .. WA _ _
LEAF COLOR	LCOL	36-39	LTGN MEGN DKGN
FLOWER COLOR	FCL	40-42	WHI PUR P&W
POD COLOR	PCL	43-45	TAN BRN BLA GRY LGY DGY SEG
POD SET	PST	46-48	SCA CON
PLANT PUBESCENCE COLOR	PBC	49-51	GRY BRN TWN G&B _ _ _
PLANT PUBESCENCE SHADE	PS	52-53	LT ME DK
PLANT TYPE	PT	54-55	SL BU IN
PLANT HABIT	PHB	56-58	DET IND _ _ _
HYPOCOTYL COLOR	HYC	59-61	GRN PUR
SEED PROTEIN	P	62	A B
DAYS TO FLOWER	FW	63-64	_ _
MATURITY GROUP	MAT	65-68	_ _ _ _
SEEDLING LENGTH	SDL	69-71	_ _ _
COTYLEDON LENGTH	CL	72-73	_ _
COTYLEDON WIDTH	CW	74-75	_ _

-2-

BACTERIAL PUSTULE	BCPS	76-80	BCPSØ	BCPS1	BCPS2
SOYBEAN CYST	SYCY	81-85	SYCYØ	SYCY1	SYCY2
DOWNY MILDEW	DYML	86-90	DYMLØ	DYML1	DYML2
PURPLE STAIN	PRST	91-95	PRSTØ	PRST1	PRST2
POD & STEM BLIGHT	PSBL	96-100	PSBLØ	PSBL1	PSBL2
ROOT KNOT	RTKN	101-105	RTKNØ	RTKN1	RTKN2
FROG EYE	FGEY	106-110	FGEYØ	FGEY1	FGEY2
STEM CANKER	STCR	111-115	STCRØ	STCR1	STCR2
PHYTOPHTHORA	PYPH	116-120	PYPHØ	PYPH1	PYPH2
BROWN STEM ROT	BRSR	121-125	BRSRØ	BRSR1	BRSR2
TARGET SPOT	TRSP	126-130	TRSPØ	TRSP1	TRSP2
BROWN SPOT	BRSP	131-135	BRSPØ	BRSP1	BRSP2
BUD BLIGHT	BDBL	136-140	BDBLØ	BDBL1	BDBL2
WILDFIRE	WDFR	141-145	WDFRØ	WDFR1	WDFR2
RHIZOCTONIA ROT	RZRT	146-150	RZRTØ	RZRT1	RZRT2
OTHER DISEASES	OTHD	151-155			
VARIETY NAME (25 Spaces)	NAME	156-180			

240 CHARACTER RECORD (Unblocked).

ATTACHMENT 2B PAGE 2 OF 2

ATTACHMENT 3A

```
3/25/81                          EASYTRIEVE 8.0E                                   PAGE  1
                            U S  DEPT  OF  AGRICULTURE

PROGRAM AND ALL SUPPORTING MATERIALS COPYRIGHT 1975 BY PANSOPHIC SYSTEMS, INCORPORATED
DISTRIBUTION TAPE SERIAL IS TN2NN

     FILE FILEA
               PV# 1 7 N KIND 8 3 A SSHP 11 4 A SCL 15 3 A SD 18 2 A LU 20 2 A,
     SSZ 22 2 N HCL 24 3 A HS 27 2 A CCL 29 3 A LS 32 2 A SP 34 2 A LCOL 36 4 A,
     FCL 40 3 A PCL 43 3 A PST 46 3 A PBC 49 3 A PS 52 2 A PT 54 2 A PHB 56 3 A,
     HYC 59 3 A P 62 1 A FW 63 2 A MAT 65 4 A SDL 69 3 A CL 72 2 N CW 74 2 N,
     BCPS 76 5 A SYCY 81 5 A DYML 86 5 A PRST 91 5 A PSBL 96 5 A RTKN 101 5 A,
     FGEY 106 5 A STCR 111 5 A PYPH 116 5 A BRSR 121 5 A TRSP 126 5 A BRSP 131 5 A,
     BDBL 136 5 A WDFR 141 5 A RZRT 146 5 A OTHD 151 5 A NAME 156 25 A,
     DISEASES 76 75 A OTDZ 181 5 A 9999
     MODE A
     IF SCL = YEL,*
     AND SSZ = *,13-21
     AND HCL = IBL,*
     AND CCL NQ GRN
     AND LS NQ LG
     AND SP = OV,*
     AND LCOL NQ LTGN
     AND FCL = PUR,*
     AND PCL = BRN,*
     AND PHB NQ DET
     AND PBC = GRY,*
     AND MAT = (    I),(   II),( III),*
     AND PYPH NQ PYPH2
     AND PSBL NQ PSBL2
     TISEARCH FOR VARIETIES SIMILAR TO USR-232 ON PVSOY128 (WO2244) MAR.25,1981
     LIST LJ SPACE 1 PV#,KIND,SSHP,SCL,SD,LU,SSZ,HCL,HS,CCL,LS,SP,LCOL,FCL,PCL,MORE
     PST,PBC,PS,PT,PHB,HYC,P,FW,MAT,SDL,CL,CW,NAME
     LINE2 DISEASES,*,*,*,*,*,*,*,*,*,*,*,*,*,*,*,*,*,*,*,OTHD,*,OTDZ
     END MODE A           *** GENERATED STATEMENT ***
     IF PV# = 8100023,7310025
     TICOMPARISON OF USR-232 AND BEESON ON PVOSY 128 (WO2244) MAR25,1981
     LIST LJ SPACE 1 PV#,KIND,SSHP,SCL,SD,LU,SSZ,HCL,HS,CCL,LS,SP,LCOL,FCL,PCL,MORE
     PST,PBC,PS,PT,PHB,HYC,P,FW,MAT,SDL,CL,CW,NAME
     LINE2 DISEASES,*,*,*,*,*,*,*,*,*,*,*,*,*,*,*,*,*,*,*,OTHD,*,OTDZ
     END JOB              *** GENERATED STATEMENT ***
```

ADMINISTRATIVE FILE
CODING FORM

APPLICATION NUMBER	PV#	1-7	__ __ __ __ __ __ __
KIND OF CROP	KIND	8-11	__ __ __ __ (Left justify.)
PRESENT STATUS	J	12	C (Certificate stage.) D (Denied.) E (Extended.) I (Issued.) S (Searching.) W (Ineligible.) X (Abandoned.) V (Withdrawn.) Y (Reconsidered.) F (Certificate abandoned.) Blank (Pending.)
DATE STATUS BEGAN OR EXTENSION DATE	K	13-18	__ __ __ __ __ __
APPLICATION DATE	L	19-24	__ __ __ __ __ __
APPLICATION FEE/DATE RECEIVED	M	25-30	__ __ __ __ __ __
APPLICATION FEE/AMOUNT	O	31-33	__ __ __
SEARCH FEE/DATE RECEIVED	P	34-39	__ __ __ __ __ __
SEARCH FEE/AMOUNT RECEIVED	Q	40-42	__ __ __
CERTIFICATE FEE/DATE RECEIVED	R	43-48	__ __ __ __ __ __
CERTIFICATE FEE/AMOUNT RECEIVED	T	49-51	__ __ __
OTHER FEES/AMOUNT RECEIVED	U	52-54	__ __ __
CERTIFIED SEED ONLY	G	55	Y N
FOREIGN, DOMESTIC, EXPT. STA.	H	56	F D E
NAME OF VARIETY (27 spaces)	B	57-83	_____
PERMISSION TO PUBLISH	PERPUB	90	Y N
NO. GEN. CERTIFIED SEED	#GEN	91	1 2 3
NAME OF APPLICANT (34 spaces)	APPLICANT	92-125	_____
DUPLICATE APPLICATION FLAG	DAF	154	#
DATE CERTIFICATE ISSUED	ISSDATE	155-160	__ __ __ __ __ __

160 Character Record

ATTACHMENT 4

ATTACHMENT 5

INDEX TO CERTIFICATES ISSUED IN 1981

CERTIFICATES OF PLANT VARIETY PROTECTION HAVE BEEN ISSUED FOR THE VARIETIES LISTED BELOW. ALL RIGHTS TO WHICH THE CERTIFICATE OWNER IS ENTITLED SHALL BE IN FORCE UNTIL FURTHER NOTICE IN THE OFFICIAL JOURNAL. SEED OF THE VARIETIES LISTED HERE MAY BE LABELED "UNAUTHORIZED PROPAGATION PROHIBITED - U.S. PROTECTED VARIETY."

KIND	CERT. NO.	VARIETY	ISSUED DATE	OWNER	
ALFALFA	7600021	OLYMPIC	810326	NORTH AMERICAN PLANT BREEDERS	
	7900092	CIMARRON	810326	GREAT PLAINS RESEARCH CO., INC.	
	8000035	VORIS A77	810514	NORTH AMERICAN PLANT BREEDERS	
	8000047	HI-PHY	810924	FFR COOPERATIVE	
	8100035	RERE	811119	CROP RESEARCH DIV., DSIR, N. ZEAL.	
BEAN, FIELD	* 8100036	EBONY	811210	WILBUR-ELLIS CO.	(3)
BEAN, GARDEN	8000110	GOURMET	810416	ROYAL SLUIS, NETH.	
	8000120	WIN	810730	ASGROW SEED CO.	
	8000121	PEAK	811119	ASGROW SEED CO.	
	8000138	LINDO	810924	ROYAL SLUIS, NETH.	
BEAN, LIMA	8000094	DOMPE 95	810924	BEN FISH AND SON	
	8100044	MAFFEI 8	810416	MAFFEI SEED CO., INC.	
BLUEGRASS, KENTUCKY	7900103	COLUMBIA	810129	PURE SEED TESTING, INC.	
	7900114	ARGYLE	810827	HEART SEED CO., INC.	
	8000079	SHASTA	810226	PURE SEED TESTING, INC.	
	8000154	ECLIPSE	810730	NEW JERSEY AGRIC. EXPT. STA.	
	8100011	AMERICA	810611	INTERNATIONAL SEEDS, INC.	
	8100012	APART	810730	ZELDER B. V., NETH.	
CAPER SPURGE	8100030	CHICO	810924	WILBUR A. OR EVA M. HENDERSON	
CHRYSANTHEMUM	7900026	APPLAUSE BRONZE SHADES	811210	FERRY-MORSE SEED CO.	
	7900027	APPLAUSE WHITE SHADES	811210	FERRY-MORSE SEED CO.	
	7900028	APPLAUSE LAVENDER SHADES	811210	FERRY-MORSE SEED CO.	
	7900029	APPLAUSE YELLOW SHADES	811210	FERRY-MORSE SEED CO.	
CLOVER, RED	* 7900041	TRISTAN	810326	NORTHRUP KING CO.	(2)
CORN, FIELD	8000066	LH 38	810226	HOLDEN'S FOUNDATION SEEDS, INC.	

*TO BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED
( ) NO. OF GENERATIONS OF CERTIFIED SEED PERMITTED BEYOND BREEDER'S SEED

[Annex XI follows/
L'annexe XI suit/
Anlage XI folgt]

TC/XVIII/5
ANNEX XI/ANNEXE XI/ANLAGE XI

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

3 MAR 1982

Dr. Heribert Mast
Vice Secretary General
International Union for the
Protection of New Varieties of Plants
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Dear Dr. Mast:

I am writing in reply to UPOV Circular U 660-08, November 25, 1981, concerning the harmonization of automation and computer programs.

Enclosed is a copy of Commissioner Mossinghoff's address to the annual meeting of the American Patent Law Association. These remarks explain in general terms the Patent and Trademark Office's present and contemplated endeavors in information retrieval and computer programs. In addition, I am enclosing a copy of a draft report* on our automation study under Section 9 of Public Law 96-517 enacted December 12, 1980. This draft is in the process of revision and will be finalized and sent to the Congress later this year.

Sincerely,

Rene D. Tegtmeyer
Assistant Commissioner for Patents

Enclosures

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* Annex XI of document TC/XVIII/5 contains only certain parts of this report.

tions, and events; but I feel that Mr. Zagame is correct: An important part of our culture has been overlooked—our immigrants.

While only a few stamps can be issued by the Postal Service each year, due to the volume of requests, there are precedents for such a series of stamps. These include "The Black Heritage" series, and the "Champions of Liberty" series which was issued from 1957 to 1961 at the rate of two stamps per year. Earlier, during 1943–44, a set of 13 stamps commemorating the "Overrun Country" series was issued by the Postal Service.

Mr. Speaker, given the tremendous contributions of immigrants to our society, I sincerely hope that the Citizens Stamp Advisory Committee will adopt Mr. Zagame's proposal for a series of four stamps honoring these great "new" Americans.

IMPROVEMENTS IN THE U.S. PATENT SYSTEM

HON. TOM RAILSBACK
OF ILLINOIS

IN THE HOUSE OF REPRESENTATIVES

Wednesday, November 4, 1981

Mr. RAILSBACK. Mr. Speaker, I would like to take this opportunity to introduce into the RECORD today the remarks of Gerald J. Mossinghoff, the Commissioner of Patents and Trademarks, which he made before the American Patent Law Association on November 3, 1981.

In an effort to address the problems that have been highlighted in the Patent and Trademark Office, as well as the patent and trademark system, and to increase research and development incentives, the Commissioner has proposed a four-point plan.

Under the four-point plan, the first area is to improve the operations in the Patent and Trademark Office so that they may deal more effectively with their backlog of pending patent applications. The second component deals with the reexamination of patents under Public Law 96-517, which was processed by the Judiciary Committee and is now law. The third component of the four-point plan is the administration's support of the enactment of the court of appeals for the Federal circuit bill, H.R. 4482, which would create a new court resulting from the merger of the Court of Claims and the Court of Customs and Patent Appeals. That legislation is moving in the other body and will be brought to the floor of the House in the very near future. The last component deals with the administration's strong support of a comprehensive Federal patent policy, which would create a truly uniform patent policy.

The text of his remarks follow:

REMARKS OF GERALD J. MOSSINGHOFF, COMMISSIONER OF PATENTS AND TRADEMARKS

Distinguished Guests, Ladies and Gentlemen, I welcome this opportunity to report to the American Patent Law Association on recent developments in the U.S. Patent and Trademark Office and to place those developments in the context of the Administration's overall plans for the patent and trademark systems.

A lot has happened in the three short months since my report to the ABA Section of Patent, Trademark and Copyright Law. Mr. Donald J. Quigg was sworn in as the Deputy Commissioner on October 26, following his confirmation by the Senate October 21. Mr. Bradford R. Huther, formerly Deputy Assistant Commissioner for Administration, was appointed on October 11 as Assistant Commissioner for Finance and Planning. Brad had served in an acting status in that position since late spring. Mrs. Theresa Brelsford has been appointed as the Deputy Assistant Commissioner for Administration, replacing Brad in that job. And I am pleased that Mrs. Barbara Luxenberg, formerly a senior analyst and writer for the Congressional Research Service, has joined the Office as my Special Assistant.

Based on my experience in government, I know that the Patent and Trademark Office now has a very strong top management team, one that is already in high gear to bring about needed and lasting improvments in the Office. I particularly want to commend Mr. Michael K. Kirk, Director of the Office of Legislation and International Affairs, for his recognition by the President in the form of a $10,000 rank of Meritorious Executive. Mike is one of three Department of Commerce employees so honored.

PATENT AND TRADEMARK OFFICE OPERATIONS

The anchor of the four-point plan concerns the Patent and Trademark Office itself. We now have a backlog of over 207,000 pending patent applications. That backlog grew by almost 20,000 cases during the fiscal year which ended September 30, 1981. In that year, we received 107,513 applications, and we disposed of 88,245. On the trademark side, we received 55,152 applications—an increase of about 6 percent from the previous year—and we disposed of 48,633. Our trademark backlog is now over 116,000, an all-time record. To begin to provide the examining resources to turn things around, in September the Administration proposed an increase of $4.8 million for the PTO for fiscal year 1982. This was part of a package sent to Congress on September 30 which included a 12 percent decrease across-the-board in the civilian agencies. The Senate Appropriations Committee has not included that increase in the bill it is recommending to the Senate, and since House floor action occurred prior to this recommended increase, the item will not be considered in the House-Senate conference. We are now working with the Department of Commerce and the Office of Management and Budget to formulate our next actions. The additional $4.8 million, if it is made available to the PTO this year, will permit us to hire 235 new examiners. This will result in a net increase of 185 patent examiners, a 20 percent increase. The additional funding request is part of Secretary Malcolm Baldrige's commitment not only to halt the increase in the backlog, but to decrease the average time it takes to get a patent to 18 months by fiscal year 1987. Our plan, which we are calling plan 18-87, will require enhancements throughout the patent side of the Office, both professional and clerical, to accomplish all preexamination functions in one month, examination in one year, and postexamination operations in five months.

On the trademark side, we are committed to what we are calling 3-12, three months to first action and an average of 12 months to disposal of a trademark application. For fiscal year 1982 we will increase the trademark examining corps of 14 examiners bringing the total to a record 98. We are also continuing efforts I announced earlier to raise the journeymen grade of a trademark examiner to GS-14. This initiative is aimed at increasing productivity by halting the extremely high turnover among trademark examiners.

These efforts are being supported by aggressive steps during fiscal year 1982 to place automated systems at the disposal of patent and trademark examiners. This September we awarded a contract to ISN, Incorporated of Arlington, to place as many as 20 terminals in the patent examining art units to provide direct access to several commercial data bases including IFI/Plenum's CLAIMS, Derwent's World Patent Index and Pergamon's U.S. Patent/Videopatsearch. These systems include capabilities such as full-text searching of front-page text and bibliographic data, keyword searches of chemical patents, citation searching and display of front-page drawings and chemical structures.

On July 31, 1981, I signed an agreement with Mead Data Central, which will enable patent examiners to conduct on-line searches from six experimental search files consisting of 50,000 patents issued since 1970. This unique full-text patent data base will be merged with the LEXIS system and will be available for initial experimental use in January and for patentability searching purposes by June. Similar searching experiments using both the CAS ONLINE and DARC systems will enable our chemical examining staff to search a data base of more than 5.5 million chemical structures beginning next spring.

On the trademark side, development of the Trademark Reporting and Monitoring system (TRAM 2) is continuing. The terminals and related equipment required to support this automated tracking system are being installed. This system will be able to track the location and status of trademark applications by next April. Also, this winter we will be soliciting proposals from industry for the development of systems to (1) capture a complete data base of all active registrations, (2) implement an automated searching system, and (3) produce the computer tapes which are used in printing the Official Gazette and registration certificates.

We have eliminated handwritten examiner actions in two of our 15 patent examining groups and are on schedule for the delivery of word processing equipment in the other 13 groups so that handwritten actions will be completely eliminated by March of next year.

To increase the usefulness of patent documents at our 37 Patent Depository Libraries, we awarded a $350,000 contract in September to a small business concern, ABA Incorporated, to provide those libraries free, unlimited access during fiscal year 1982 to the PTO's classification data base. This will permit the public in 25 states to find where patents are classified, to acquire lists of all patents in a given subclass, to search keywords from our Manual of Classification, and to view subclasses in their hierarchical relationships.

Finally in the automation area, copies of the first draft of the automation study we are preparing under §9 of P.L. 96-517 are now available. The report to Congress is not due for 13 months. By publishing a draft at this time, we hope to stimulate industry and the bar to participate with us in refining and, if necessary, changing our tentative conclusions.

REEXAMINATION

The second component of the four-point plan is the reexamination of patents under P.L. 96-517 enacted last December. As you all know, for the first time in history a patent owner, or his or her competitor, can request the Office to reexamine an issued U.S. patent and rule on whether it should be amended or cancelled because of evidence of earlier work. In many cases, this new and inexpensive procedure could avoid the need for protracted patent litigation. Since July 1 of this year, when we instituted reexamination, we have received 94 cases, 34 of which or 36 percent are involved in litigation. We have ordered reexamination in 54 cases, two of which were granted on petition, and a total of six requests were ultimately denied.

The regulations to repeal the so-called Dann Amendments in reissue practice have been cleared by the Department of Commerce and are now being reviewed by OMB. Copies of those regulations are available from Rene Tegtmeyer's office. Essentially, the new regulations, which are in the form of a proposed rulemaking, will eliminate no-defect reissues, delete the notice in the Official Gazette that a reissue application has been filed, deny access to reissue cases except by petition to the Commissioner, and require that reissue cases be handled exclusively on an ex parte basis.

The new regulations will also change the Rule 56 duty-of-disclosure practice. We will consider protests in this area, but again, except for the initial protest, all other considerations will be ex parte. Significantly, if a determination is made that Rule 56 has been violated in any case, that will form the basis of a rejection of the claims, rather than a striking of the application, so that the applicant can have the matter reviewed by the Board of Appeals and then either the District Court for the District of Columbia or the Court of Customs and Patent Appeals.

COURT OF APPEALS FOR THE FEDERAL CIRCUIT

The third component of the four-point plan is the Administration's decision to support enactment of the Court of Appeals for the Federal Circuit, a new court resulting from a merger of the Court of Claims and the Court of Customs and Patent Appeals. We were very pleased that the House bill which would establish this new court, H.R. 4482, was favorably reported by the House Judiciary Committee on October 14. The Senate counterpart, S. 1700, was similarly recommended by the Senate Judiciary Committee on October 20. As I have stated previously, by providing a single authoritative tribunal to handle patent cases nationwide, these bills will contribute greatly to a single standard of patentability which will be understandable to inventors and businessmen alike. Barring unforeseen complications, we expect that legislation establishing the new court will be enacted during this session of the 97th Congress. The American Patent Law Association is to be commended for its strong and effective support of this very important legislation.

FEDERAL PATENT POLICY

The final element of our four-point plan is the Administration's strong support for enactment of a comprehensive Federal patent policy patterned after S. 1657, written by Senator Harrison H. Schmitt, and H.R. 4564, introduced by Congressman Alan E. Ertel. I was pleased to testify before a joint hearing of the Senate Committee on Commerce, Science and Transportation and the House Committee on Science and Technology in support of these two bills. In my view, Congress has a unique opportunity this year to enact a truly uniform patent policy, one that applies to all government agencies and to all of their contractors. And that policy will be specifically designed to spur business executives to invest in inventions resulting from Federal sponsorship. Both bills draw upon the extensive experience of the government that the likelihood of an invention being developed and commercially used is significantly increased when exclusive commercial rights in the form of title are given to the contractor.

Contractor ownership of patented inventions also provides another significant benefit: it relieves the government of the responsibilities, burdens and costs of seeking commercial uses for inventions made by others under Federal sponsorship. The rate of commercialization of government-owned inventions made under contract is very low. This is so principally for two reasons: first, when the government takes title to an invention and attempts to license others, it takes the invention away from the persons most interested in its development, namely the inventor and his or her co-workers. Secondly, the government simply has not been able to devote the resources necessary to market aggressively the patent portfolio of the 28,000 patents it owns.

Major goals of the Department of Commerce are to promote private sector capital formation, job creation and productivity. S. 1657 and H.R. 4564 are designed specifically to contribute to those goals. The bills will permit government contractors, except in narrowly defined areas, to retain commercial rights to their inventions, subject to a broad government license and "march-in rights." Thus, they will encourage the most qualified and competent contractors to participate in government programs, and stimulate the introduction of new products into commerce, thereby promoting competition.

Another major goal of the Department is to minimize regulatory and administrative barriers to business growth, profitability, trade and competitiveness. By establishing easily understood standards for the allocation of rights to inventions, S. 1657 and H.R. 4564 will permit business judgments to be made and carried out with a minimum of bureaucratic delays and uncertainties.

PATENT AND TRADEMARK FEES

Let me now turn to what is certain to be the most controversial part of our plans: increased patent and trademark fees. In his address to the nation on September 24, President Reagan pointed out the difficult steps he was determined to take as part of the Administration's economic recovery program. Those steps involve deep cuts across government, extending to virtually every civilian department and agency. Within the Department of Commerce, Secretary Baldrige and Deputy Secretary Joseph Wright, Jr. have determined that the patent system is and intergral part of the overall economic recovery program. Thus, the PTO has not only been spared deep cuts as I have noted, but we actually requested increased funding for FY 1982. But in order to bring about the needed improvements in the Patent and Trademark Office which industry, the bar and the public demand, we will need to increase substantially the fees that users of the patent and trademark systems will pay beginning in FY 1983. Thus, the PTO is recommending an increase in the fee ratios currently established in Public Law 96-517. Specifically, under our recommendation the recovery ratio for trademark processing and for design patent processing will be increased from 50% to 100%. The 25%/25% recovery formula in Public Law 96-517 for the patent process—25% recovery now with an additional 25% to be recovered through maintenance fees—will, in accordance with our recommendation, be changed to a 50%/50% fee recovery plan.

In formulating our recommendation for increased fees, Secretary Baldrige, Deputy Secretary Wright and I were faced with a critical choice: whether the Patent and Trademark Office would absorb its share of necessary government-wide cuts which would cause us to decrease our present inadequate staff and lead to overpowering backlogs or whether we would strive to give inventors and industry first-class service with quality and timely examination by increasing user charges. Realistically, there are no other alternatives. For us the choice was apparent. We would commit to a first-class Patent and Trademark Office through Plan 18/87 in patents, 3/13 in trademarks, and the other enhancements I have mentioned, and we would finance this service through increased user fees.

We are still in the process of refining our FY 1983 budget projections and concluding our analyses of what the actual fees will need to be. We have requested the Department of Commerce's Assistant Inspector General for Audits to review our analyses, and we must reach agreement with the Office of Management and Budget on the details of our budget projections. With all those caveats, and with the clear understanding that much work needs to be done on all sides to formulate the fee schedule, we now project that the fees will be substantially as follows under an amended Public Law 96-517:

Patent processing fees:	
Base filing (includes up to 3 independent and 20 total claims)	$300
Independent claims over 3 (each)	30
Total claims over 20 (each)	10
Base issue	500
Appeals:	
Filing	115
Hearing	100
Brief	115
Petitions for automatic extensions of time:	
First	50
Second	100
Third	200
Design patent:	
Filing	125
Issue	175
Trademark processing fees:	
Filing	200
renewal	300
Section 8 affidavit	100
Section 15 affidavit	100
Section 8 and 15 combined	150
Opposition	300
Cancellation	300
Appeal	100
Hearing in opposition, cancellation, or appeal	100
Service fees:	
Patent copy	1.00
Trademark copy	.50
Design copy	.50
Record assignment	30

Without doubt the new fees will be controversial. But there are good and substantial reasons, in my view, for industry, inventors and the bar to support these new fees

The Patent and Trademark Office

P.L. 96-517, Section 9

Automation Plan

November 2, 1981

D R A F T

D R A F T

Section 9 of P.L. 96-517

"The Commissioner of Patents and Trademarks shall report to Congress, within two years after the effective date of this Act, a plan to identify and if necessary develop or have developed computerized data and retrieval systems equivalent to the latest state of the art which can be applied to all aspects of the operation of the Patent and Trademark Office, and particularly to the patent search file, the patent classification system and the trademark search file. The report shall specify the cost of implementing the plan, how rapidly the plan can be implemented by the Patent and Trademark Office, without regard to funding which is or which may be available for this purpose in the future."

December 12, 1980

PREFACE

The Patent and Trademark Office has made considerable progress in automation during the past decade. This work and current initiatives form the foundation for the development of this automation plan as required by P.L. 96-517, Section 9. The plan has been developed with particular attention to management and program needs and the current state-of-the-art. The study addresses the current mission of the Office; current automation programs, both U.S. and foreign; automation opportunity areas; and, the current state-of-the-art.

The approach used in developing the automation plan was 1) to document past and current automation activities; 2) to explore opportunities and initiatives in the areas of Office/Public communication, trademarks, patents, printing, and internal operations; and, 3) to seek public participation to insure that all automation issues are addressed.

An ad hoc team composed of staff (40) from program and support offices and coordinated by the Office of Finance and Planning developed the plan. A study team from the MITRE corporation conducted a brief survey of the current state-of-the-art in support of the Office ad hoc team.

Section 9 Automation Plan
Table of Contents

Section 9 Automation Plan
Table of Contents
(Continued)

Section 9 Automation Plan
Table of Contents
(Continued)

Section 9 Automation Plan
Table of Contents
(Continued)

Section 9 Automation Plan
Table of Contents
(Continued)

Section 9 Automation Plan
Table of Contents

List of Figures

The Patent and Trademark Office

P.L. 96-517, Section 9

Executive Summary

EXECUTIVE SUMMARY

ntroduction. This plan begins with a discussion of the Patent and rademark Office mission, objectives, organization, functions, and urrent automation activities. The mission of the Office is to pro-ote the progress of science and the useful arts as authorized by he Constitution and mandated by public law. Implicit in the per-ormance of this mission is the need for the most efficient utiliza-ion of resources available to the Office. The information present-d in this plan requires an understanding of the patent and trade-ark systems in particular, and of the Patent and Trademark Office n general. This background information is provided in detail in arts I and II of the plan.

he patent process is intended to provide the incentive to invent by ranting to the inventor a limited, seventeen (17) year monopoly to he invention. The inventor, in return, provides the public with nformation concerning the details of the invention. Incentive and nformation constitute the bedrock of the patent system. The trade-ark process initiated by Congress in 1870, enables product identi-ication in the marketplace. The trademark process recognizes the mportance of source identification to an ordered and healthy econ-my. The Office examines applications for the registration of rademarks which meet the statutory qualifications, provides trade-ark information to the public, and resolves legal disputes between arties concerning registration rights. Dissemination of the infor-ation generated by the patent and trademark processes is also a ajor activity of the Office.

Goals. The Office has established goals which directly support its mission and are essential to viable patent and trademark systems. These goals are:

- a prompt, high quality examination of patents (18 months pendency by 1987) and trademarks (3 months to first action and an average of 13 months to disposal);
- issuance of valid patents and registration of valid trademarks;
- automation of the Office by the 1990's;
- effective and responsive dissemination of patent and trademark information;
- complete, accurate, and prompt service to the public; and,
- maximum patent and trademark protection for U.S. business in foreign countries.

Strategy. For the U.S. Patent and Trademark Office, change is the key to the future -- change to meet the demands of today and the challenges of tomorrow. By continually examining problems and opportunities, the Office will be capable of accomplishing its constitutionally mandated mission. The Office must also recognize the impact on human resources and include a careful plan for the participation of unions and other employee groups in planning and implementing such changes. The Office should examine the impact of improved operations on present and potential forms of cooperation with corresponding offices in other nations.

Efforts to improve the dissemination of information are consistent with federal policy on stimulating innovation. Especially important will be efforts to assure the availability of patent information to small businesses and independent inventors and efforts to increase the availability of information on foreign produced technology.

Current Programs. The history of Office automation activities presented in this study begins with the availability of machinery capable of performing in the area of patent classification and searching, in 1948. The first officially recognized Office attempt to mechanize the patent search was initiated at that time. A sorter was modified, and coordinate indexing of descriptor terms was developed and used for patent search in the field of composition of matter. Mechanized search proved to be faster and more efficient than manual search. During the next thirty years numerous other initiatives were undertaken which culminated in the current inventory control systems for both patents (PALM) and trademark (TRAM) application processing activities; a mini-computer system to display classification information of selected patents; a computer system to update trademark search room records and a new computer system and terminal network. A complete discussion of all current systems is provided in part II of the Plan.

Significant accomplishments since that time include implementation of the revised Patent Application Locator and Monitoring system; evaluation of automated patent searching methods; procurement of data base vendor services to provide classification information to depository libraries; development of data base requirements for the classification data system; and, completion of the revised Trademark support system.

Public Testimony. The Office received a wide range of oral and written comments on automation opportunities and techniques. The most common views presented by the fifty-three (53) respondents are the following:

- Automation is not the sole answer to resolving Office operating problems. Automation is not always appropriate. It cannot replace the examiner.

- Automation should be accomplished in phases and current systems maintained until automated systems have proven satisfactory.

- Current state of automation and systems should be studied to determine potential for use in Office automation effort.

- Search File integrity should be a major priority of automation effort.

- All automated files should be accessible from search rooms and PDL.

- Respondents favor automation.

This plan considered these, and all other, views expressed during the development of each opportunity area.

Future Automation. Achievement of this plan is dependent on sizable increases in resources. These resources are necessary for both the evaluation of technological alternatives and the procurement of

selected systems. Embarking on an effort of this magnitude requires from the outset an understanding of the potential costs as well as a commitment to achieving the enormous benefits that are possible.

The initiatives contained in this plan are highly interdependent, and thus should be developed and implemented in harmony. Without a commitment to increased and continued funding, this ambitious plan must be deferred in favor of a much more limited effort which would not address many opportunities for improvement.

Plan Highlights. The major automation opportunity areas addressed in this plan include Office/Public Communications, Trademarks, Patents, Printing Support System, and Internal Operations

Office/Public Communication. The discussion of this opportunity area proposes an approach to office/public communications base on three principles: 1) every computer system shall be available for use by the public, to the maximum extent feasible and allowable; 2) systems available for public use within the Office shall also be available to individuals and small business; and, 3) access to Office information dissemination systems shall be available to the public on a cost reimbursable basis.

Trademark Automation. The workflow control portion of this opportunity is currently being implemented. Automated searching and photocomposition, and the initial portion of a full text retrospective data base, will be implemented next. Potential new opportunity areas include activities that enhance in-house availability and utilization of data and other activities that reduce processing costs by improving use of automated data capture and retrieval technology.

Patent Automation. A comprehensive, integrated approach which addresses the entire patent process is outlined in this discussion. New opportunity areas include a document retrieval system, assignment backfile loading, classification data base redesign, use of commercially available data bases of patent and patent related information, experimentation and prototyping of patent text searching methodologies, creation of a classification definition data base, and merging of the assignments and patentee index information.

Printing Support System. The discussion of this opportunity area calls for a comprehensive investigation of the data input technology, mass data storage, and photocomposition software. Benefits of increased automation in these areas will include: improved quality of patent grants and trademarks registrations; reduced pendency; reduced printing costs; and, an application data base. The conversion of drawings to machine readable form is essential to print patents and trademarks.

Internal Operations. Three major opportunity areas for automation are: computer support systems, new management data systems, and new office automation systems. Operational use of contemporary technology will require anticipation, training, and developmental activities which will contribute to the growth of the organizations and personnel involved. Many opportunities exist for improvement of current data systems and for creation of new data systems including operational control systems, management control systems, and planning systems. A comprehensive assessment of Office needs and available technology will be conducted, as well as a study on evolutionary implementation of high payback, effective systems to provide greater support to Office management.

Technology Assessment. MITRE Corporation conducted a preliminary technology survey in support of the Office automation study. The survey investigated whether adequate hardware and software technology is, or will soon be, available to support Office automation with respect to text/graphics input, data storage, data display, and search/retrieval.

Text and graphics input capability is required to create digital data bases from new patent and trademark information. Currently available page optical character readers (OCR) complemented by manual key-in of data for non-OCR readable material can meet the text input requirements. Existing image scan digitizer technology can support automatic input of drawings and design marks.

Long-term archival mass storage must support one trillion characters (8×10^{12} "bits") of storage. Optical disk and magnetic tape cartridge mass storage systems promise this capacity, although such capability is not currently commercially available. Current optical disk based systems are limited in capacity and in the flexibility of their disk writing requirements. Magnetic tape cartridge systems are available, but the short (approximately 2 year) archival life presents operational problems of regeneration.

Current data display technologies can provide adequate resolution for graphics with zoom capability. Alphanumeric terminals are available to provide scrolling and manipulation of data by the user. Current technology can support a workstation configured around two or more separate terminals for graphics and text.

Developmental technology offers interesting possibilities for larger split screen configurations which can accommodate both graphics and

text on a single screen. However, human factors analysis is essential in the design of the examiner workstation. Printing and photocomposition requirements for both text and graphics can be met by currently available commercial systems (with modifications).

Search and retrieval methodologies for very large data bases are receiving considerable research attention. Several of the developing approaches hold the promise of fast and efficient search and retrieval. At this time, for example, such approaches consist of indices (document level) combined with parallel search engines especially designed to handle text very efficiently.

The schedule for implementing and operating the initiatives in each opportunity area are shown in Part III. The interrelationships of the initiatives are not shown, but rather are discussed in detail for each initiative. The total resources needed to implement all of the initiatives are not known at this time. Several major studies are necessary to determine requirements in the areas of automated text input, full text searching, and document retrieval. When the results of these studies are available total costs can be determined.

Part II

Current Automation Programs - U.S. & Foreign.

CURRENT OFFICE SYSTEMS

D R A F T

PATENTS

Patent Application Location and Monitoring System (PALM)

Patents Assignment System

Patentee Index System

Patent Classification Data Systems

Patent Concordance

Alphabetic Index to U.S. Class/Subclass by Subject Matter

Quality Review Statistics System

Patent Search Systems

Reissue Index

Computer Controlled Microform Search Systems

On-Line Bibliographic Search Services

Patent Application Location and Monitoring System (PALM)

Prior to the implementation of the PALM System, status, location, and bibliographic information as well as prosecution history data was maintained through the use of a card file system known as the SR/DR (Serial Register/Docket Record) and through entries on the application file jacket. After an application was disposed of, a separate storage SR card system was maintained to allow for location of the file. A limited data processing system, utilizing an intelligent key entry device, was designed to support the production of the filing receipt, a file jacket label containing bibliographic information, and the SR/DR cards. In addition, productivity, inventory control, and time reporting were carried out through the use of nearly 600,000 mark sense cards annually. Though automated, the support was not particularly effective or accurate. Routine headings had to be typed on pre-printed forms each time a letter was sent to the applicant. Furthermore, it was necessary to first send the applicant a "Notice of Allowability" to insure that prosecution was closed in a timely fashion. That notice was followed later with a formal "Notice of Allowance, Base Issue Fee Due" letter. Many management reports concerning time, productivity and inventory were manually prepared. The system suffered from several problems including data accuracy, the time involved in preparing reports and typing standard heading information, and timeliness.

PALM utilizes an extensive on-line network for locating pending, patented and abandoned application files; retrieving information about the file (e.g., inventors name, title of invention, etc.); maintaining prosecution history and current status; monitoring the critical dates for Patent Cooperation Treaty (PCT) and Reexamination

proceedings; automated printing of standard headings and "Notice of Allowance, Notice of Base Issue Fee Due" letters; monitoring the processing of government interest applications and requests for license to file applications abroad; preparation of automated reports and printing of letters indicating patent lapse, payment of balance of issue fees due, letter of transmittal of applications to the printing contractor and number of advance copies of patents ordered; automated patent number assignment; reporting of examiner time and activity; and providing management reports on productivity and inventory. On-line updating of the data base is accomplished on a network of computer controlled printers, data input terminals, bar code readers, and a bar code/numeric label printer.

Currently, the PALM data base contains over 500,000 records of pending, patented, and abandoned applications, including PCT and Reexamination Applicatons. The data base is updated on a real-time and batch mode basis through the input of over 25,000 update transactions daily. This data is input through the use of a combination of bar code readers, interactive display terminals (CRT's) and intelligent key entry (IKE) terminals.

Patents Assignment System

Prior to the implementation of the present patent assignment system, access to records transferring patent rights was maintained on four manual card systems. These card files were manually prepared and filed according to inventor name, assignor (owner) name and assignee (buyer) name. The fourth file, called the "Secret File", maintains information on pending applications, which according to statute is not available to the public. Approximately 80,000 deeds are received annually, of which approximately 75,000 are recorded after it is

determined that the "deed" does affect title to the application. This required manually filing about 350,000 index cards annually. The "Patent Files," (inventor, assignee and assignor) currently contain about 4,000,000 index cards. The "Secret File" contains about 200,000 cards. This cumbersome process required a substantial staff to "abstract" the data for the index cards and file them. Furthermore, with the frequent use of these files, integrity was virtually impossible to maintain. The difficulty in maintaining integrity led to misleading or incorrect ownership information being obtained. This was especially troublesome when attempting to conduct a title search for a particular patent and one of the assignment "links" was misplaced or missing, thereby casting doubt on the validity of the claim to ownership of the patent.

Beginning in August 1980, a new patent assignment system was implemented, utilizing a mini-computer data entry system and the PALM data base to maintain current assignment information. Since much of the information necessary for the assignment system is already present in the PALM system data base, this information is extracted without need for redundant data reduction, thereby saving a great deal of time and expense. The update of the assignment master file is carried out in batch mode, usually overnight. The new system employs an automated data base, on-line retrieval terminals for the patent number, and computer output microfilm (COM) with readers for assignee and assignor information. In addition, office employees can access assignment information by serial number. With this automation, the sorting and filing on index cards has been eliminated. At the present time, only deeds filed from time of start-up are in the system. There are plans under consideration to add to the system the full file of retrospective assignments - more than 4,000,000

documents. The data base currently contains approximately 50,000 records, (approaching 200,000 by December 1982) and processes approximately 75,000 "deeds" annually.

Patentee Index System

The Patentee Index is an alphabetical index of the names of inventors and the persons or companies to whom rights of ownership were assigned at the time of issue of the patent grant. This index is maintained in the Public Search Room for the benefit and use of the public and Office staff.

Up until the beginning of 1978, this file of over 7,000,000 cards was maintained manually on 3x5 index cards. The cards were a by-product of the Patent Data Base Printing System. Each new patent generated an average of three cards. Because of the physical size of the file, the large number of cards added weekly, and the need for continuous public access to the file, the Patent Search Division found it difficult to provide continuous file access while manually interfiling new cards and in maintaining file integrity. Furthermore, the job of filing 260,000 new cards annually required approximately three staff years.

Beginning in January 1978, the Patent Data Base contractor supplied modified data tapes which were used to produce patentee index data via computer-output-microfilm technology. The information is placed in microfiche cartridges which are updated weekly. It can be easily and quickly retrieved through the use of semi-automated reading equipment in the Public Search Room. As a result of this system

change, the problems of file maintenance, integrity, and access have been greatly reduced. In addition, the three staff members who used to file the cards were transferred to other work within the Office.

At the present time, the Office is gradually converting the Patentee Index to a newer microfilm system. This was necessitated by the deterioration of the previous equipment. Conversion was completed by October 1981. After more than three years of growth, the data base now contains about 800,000 records.

Patent Classification Data Systems

The Patent Documentation Organizations utilize data processing resources for maintaining and using a very large patent information data base. These resources are currently provided primarily through contractural services for general data processing, systems design, and programming. The data elements contained in this large data base are described below:

Approximately 108,000 subclass records which comprise the valid subclasses that make up the U.S. Patent Classification system, their hierarchical relation to each other, assignment for examination purposes, physical location, and reclassification status.

More than twelve million U.S. patent records which comprise the classifications where each patent is found along with information characterizing its appearance and an indication of where it can be found - i.e., the Public or Examiner search files.

Foreign issuing patent documents along with their priority status, counterpart relationships, publication date, ownership and classification.

The information in this data base is used through various combinations in the following applications:

Processing of newly issuing U.S. patents to assure that classifications will be valid on the date of issue and that each will be properly routed for filing into the search files and for further processing into a reclassification project or a mechanized search system.

Processing of foreign patent receipts to assure that only one member of each family of counterparts is routed to examiners for classification and that control is maintained over each document throughout its processing.

Reclassification processing to build "nucleus" areas for reclassification consideration based on statistical analysis of data for each of these areas to provide a means of establishing their reclassification priority. Information is also used for controlling and reporting on the status of each reclassification project.

File integrity processing through the pinpointing of the search file areas in which disintegrity might be concentrated and the provision of an informational base against which document integrity in any portion of the search files can be measured and upgraded.

Rapid patent classification information retrieval through mini-computer terminal access to portions of the data base.

ome of these applications are related solely to data base utiliza-ion to support the Documentation program. However, most also have omponents which contribute to the maintenance of the data base. ince its inception improvements have been and will continue to be ade in the operational techniques for both updating and utilizing he Documentation data base. These improvements will be evolution-ry in nature.

Patent Concordance

nder international agreement, the U.S. assigns an International atent Classification (IPC) to all issuing patents. A concordance s maintained between the IPC system and the U.S. Patent Classifica-ion System. When a U.S. Patent is published, the area of technol-gy described by the claims of the patent must be classified into oth systems. Prior to the implementation of the Patent Concor-dance, there was no direct link or concordance between the two sys-ems to convert a U.S. class/subclass to an IPC subdivision. After making a determination that an application for a patent was allow-able, the patent examiner had to determine the IPC equivalent class-ification. Since the IPC system is not used by the U.S. examiner for searching areas of technology and the conceptual design of each system is different (function vs. structure/element), it was diffi-cult for the patent examiner to properly classify the application into the IPC system.

The present concordance is maintained on a tape file and is sorted first according to U.S. class and subclass showing the related IPC classification for each subclass. A second sort is made on IPC class/subclass indicating the corresponding class/subclass of the U.S. system. The system is updated every five years. The last revision was carried out in 1979. After each update, the Index is published in book form. The data base contains 70,000 separate entries.

Alphabetic Index to U.S. Class/Subclass by Subject Matter

The Alphabetic Index to U.S. Class/Subclass is a hierarchical keyword index that is used to find the proper class/subclass for a particular area of technology. Keywords are freely chosen by examiners and classifiers and include generic names, current technological expressions, common abbreviations, and trademarks; classifications include official subclasses, unofficial subclasses, cross reference art collections, and digests.

Prior to the implementation of the present system, the Alphabetic Index to the Classification was maintained on a double card system, one in alphabetic order, the other in numeric order. Each time the class was reclassified the classifier received the affected index entries which were extracted from the numerical listing and augmented manually to fill in the complete hierarchical readout. Every time an entry was added or deleted from the Index, new cards had to be prepared and inserted in the decks (of both alphabetical and numerical systems) in the proper sequence, or, conversely, removed from the decks. This was a time consuming process that frequently led to errors being introduced. In addition, the difficulty in accessing

the system led to its being incompletely updated and infrequently reissued as a printed reference document. The reprinting process itself was cumbersome because the card deck had to be arranged in correct hierarchical order and photographed for page images.

The present system is maintained as a tape file, with extracting and editing program support. Keyword listings for reclassifications are easily provided in overnight turnaround, as printouts in several formats, most commonly as the specified class, range of subclasses, or single subclass in alphabetic arrangement with complete hierarchical readout down to fourth level of indent. An average of 50 special keyword listings are requested bimonthly. Presently, the master file is updated on a request basis which usually occurs bimonthly, in phase with reclassification updating. This data base contains approximately 65,000 line entries and 1,000 transactions are processed bimonthly on the master file. Every two to three years, after a series of special edits, a separate tape is generated for the Office of Publications for printing a new paper edition of the Index. This tape is preprocessed at the Government Printing Office and run through their Linotron photocomposition equipment which provides camera copy yielding a printed format about 235 pages, 3 columns per page, 90 lines per column, plus separate class titles and descriptive text. Concurrently with new printing, a tape is prepared for the National Technical Information Service, copies of which are made available for public purchase; one commercial purchaser then offers this data on the BRS on-line searching system as PATHELP. One to two times a year another tape is prepared for the Office of Micrographics to generate microfiche for use in the Public Search Room and the satellite search centers in the Patent Depository Libraries.

Quality Review Statistics System

The Patent and Trademark Office has conducted for approximately seven years, a quality review of issuing patents. This program concentrates on evaluating the quality of the examination process including substantive matters dealing with the identification of art in the search process, the treatment of appropriate legal issues and the adherence to established practice with respect to maintaining the application file. Of all routine issues a sample is drawn for this quality review process. In addition applications of special interest are reviewed on a broader basis. For instance all reissue patents are reviewed prior to publication.

The primary objective of the quality review process is to provide information for monitoring and improving the quality of the issued patents. To achieve this end, elaborate statistics are maintained on the sampled cases to facilitate evaluation of the location and types of problems being encountered. These statistics are related to both the group and art unit levels of the Patent Examining Corps. Statistical accuracy does not allow judgments to be made at the individual level. The statistical evaluation concentrates on what is occuring currently as well as the changes over time. The manual maintenance and manipulation of this information would be very time consuming and subject to error.

The data obtained from the utility patent sample is accumulated and reports based on this data are issued quarterly. This report is in three parts, dealing with primary examiners, junior examiners, and a combination of the two. Each record contains 50 data elements containing information such as the propriety of the classification of

the application at issue, the propriety of the field of search, and the identification of the number of claims determined to be clearly unpatentable. The data base contains in excess of 140,000 records, and between 2,500 and 3,000 transactions are processed annually.

In addition, several quarterly reports on reissue screenings and reviews are currently manually generated.

Patent Search Systems

The Mechanized Search System processes Patent information received from various international sources for many research and development projects. Records are currently processed for 18 different subject areas within the Office of Search Systems. Original input data is in card images; however, standard information is in Hollerith Code while the technical information for the record is in pure binary code. Input format for these records varies from subject to subject.

The search System is currently maintained on magnetic tape. The Master File is updated as requested. The four primary job streams for this system include one for original file creation with applicable reports, one to update the files with past update reports, one for past update reports and one for selection of specific records with reports. The file contains in excess of 75,000 records and processes approximately 5,000 transactions annually.

Reissue Index System

The Reissue Index System was established to ascertain whether a given printed patent at hand had been changed by reissuance. At one time patent files had contained information indicating reissuance of a patent. However,this updating function was eliminated or neglected due to staff reductions. The current system enables the users of the Search Room to know the status of each patent by means of microfiche and computer listings. This file is also used by Customer Services as a reference for completing order requests for patents which have been reissued. The Office of Documentation, Classification Section, references the Reissue Index computer listings in order to determine consistency of a reclassification project. The microfiche has been used as an economical means of providing the Reissue Index to the Patent Depository Libraries.

This system is divided into three phases, and run once per year, normally in February.

Phase I. The Reports Control Section (RCS) receives the handwritten or typewritten listing of consecutive Reissue Index numbers for the previous year from the Office of Management Systems (OMS). Each Reissue Index number must be accompanied by the original Patent Number or have "WHDRAWN" assigned to it. Each record keypunched must consist of the Reissue Index number and the Original Patent Number (or WHDRAWN). The Card-to-disk System/dumpall program inserts the file on disk.

Phase II. The current year's transactions which are maintained on a disk file are assigned a computer generated current date. The previous year's master tape is read and by combining these two inputs, the current Reissue Index Master tape is created. This file is checked for missing Reissue numbers and if any are found, an "error listing" is produced, corrected by RCS personnel and Phase I is restarted. If no Reissue numbers are found missing, a "Negative Error" report is produced and Phase III commenced.

Phase III. Output consists of a listing of all records inputted to the system for the current year and a cumulative listing of all Reissue Patent Numbers from the year 1920 to present. From this cumulative listing a tape is created and given to OMS to be microfiched.

The master tape contains approximately 16,000 records and processes approximately 300 transactions annually.

Computer-Controlled Microform Search Systems

The Computer - Controlled Microform Search System (CCMSS) is an on-line, interactive computer - assisted microfiche retrieval system used in the Office for searching patents and other technical documents. This system, although considered experimental, is in operational use as the primary search tool for about twelve examiners and as a secondary search system for a number of others. In addition, it is used by patent attorneys and agents from the private sector. The CCMSS was first installed in 1975 with four micrographic search

and retrieval stations. Because of initial experience and high user acceptance, both the hardware and software were upgraded in 1978.

The CCMSS presently consists of a number of Questicon units (13 at this time), all of which are under control of a single mini-computer. Each Questicon unit consists of a microfiche selection and image display device and a keyboard through which the user communicates with the minicomputer. The microfiche are clipped with binary coded metal strips. Images on the fiche are at 48X reduction, and each fiche contains up to 273 images. The fiche are stored in a carousel in the base of the Questicon unit. The carousel can hold 780 fiche, so that the capacity of a Questicon unit is over 200,000 pages, or about 30,000 U.S. patents. Average access time between patents is about 2 seconds, with a maximum of 4 seconds being required. Each Questicon unit, in addition to containing pages of documents, also contains pages of instruction and informational material necessary for using the system. With each group of Questicon units there is a printer by means of which users are able to obtain printouts or reports of what they did in conducting their search - e.g., the questions asked and the number of documents responding to each.

On-line Bibliographic Search Services

The Scientific Library began use of on-line search service in 1975 and currently subscribes to commercially available services provided by Lockheed Missile and Space Co., System Development Corporation (SDC), Bibliographic Retrieval Service (BRS), and Mead Data Central (LEXIS-NEXIS).

The Library is in the process of acquiring the Chemical Abstract Service (CAS) search system which is a chemical structure search and display system; and access to specialized data bases of the National Aeronautics and Space Administration. Separately, or as part of services already available in the Scientific Library, a number of specialized data bases are already available from the Department of Energy, National Library of Medicine (Medline), IFI Plenum, and Derwent Publications.

Overall the Scientific Library has access to over 150 different data bases in all subject fields of concern to the PTO; chemistry, electrical and mechanical engineering, electronics, medicine, nuclear energy, foreign and U.S. patents, legislature and judicial law, industrial property, management and administration, and current events. At present, approximately 2,000 searches are performed annually, approximately 85% of which are in direct support of the patent examination function. Most searches provide bibliographies on subjects in the various industrial arts, but the service is also used to retrieve citations to specific patents or non-patent publications. Bibliographies obtained from searches make known to examiners and other users a wide variety of patent and non-patent literature not held in the Scientific Library but available from other libraries through use of inter-library loan.

OVERVIEW

INTRODUCTION

Automation in the Office initially included such typical data processing functions as payroll, personnel, and accounting. More recently, however, it has rapidly expanded into areas of direct program support. Examples of these include workflow and inventory control of patent and trademark applications, productivity measurement, automated printing and information dissemination. The expansion of automation in these and other opportunity areas will increase dramatically during the next decade.

Significant accomplishments to date include implementation of the Patent Application Locator and Monitoring (PALM 3) system; evaluation of automated patent searching methods; procurement of data base vendor services to provide classification information to depository libraries; development of data base requirements for the classification data system; and, completion of the revised trademark support system.

Achievement of this plan is dependent on sizable increases in resources. These resources are for both the evaluation of technological alternatives and the procurement of selected systems. Embarking on an effort of this magnitude requires from the onset an understanding of the potential costs as well as a commitment to realizing the enormous benefits that can be achieved.

The initiatives contained in this plan are highly interdependent, and should be developed and implemented in harmony. Without a commitment to increased and continued funding, this ambitious plan must

be deferred in favor of a much more limited effort which would not address many opportunities for improvement.

PUBLIC TESTIMONY

The Office received a wide range of oral and written comments on automation opportunities and techniques. Among the most frequent views presented by the fifty-three (53) respondents are the following:

- Automation is not the sole answer to resolving Office operating problems. Automation is not always appropriate, nor can it replace the examiner.

- Automation should be accomplished in phases and current systems maintained until automated systems have proven satisfactory.

- The current state of automation and systems should be studied to determine potential for use in the Office automation effort.

- Search File integrity should be a major priority of the automation effort.

- All automated files should be accessible from search rooms and patent depository libraries.

- Respondents favor automation.

- The Office should make use of consultants in its automation efforts.

- Automation should not be delayed because of possible future international agreements, although their impact should be recognized.

- Trademark automation should not be considered as of less importance than patents in automation efforts.

- Separate automation plans should be developed for trademarks, patents and administration.

- Look at automation in foreign patent and trademark offices.

- The range of patent related files available to examiners should be increased.

- A capability to search graphics as well as text should be part of automation effort.

- The system should have the capability to integrate all functions and avoid a piece-meal approach.

- System outputs, visual or paper, and services should be of high quality and speedily provided when requested.

- Search function should be separate from examining function.

This plan has considered these, as well as all other, views expressed during the development of each opportunity area.

TECHNOLOGY ASSESSMENT

A preliminary technology survey was conducted by MITRE Corporation in support of the study to develop a plan to automate the Office. The survey investigated whether adequate hardware and software technology is, or will soon be, available to support Office automation with respect to text/graphics input, data storage, data display, and search/retrieval.

Text and graphics input capability is required to create digital data bases from new patent and trademark information. Currently available page optical character readers (OCR) complemented by manual key-in of data for non-OCR readable material can meet the text input requirements. Existing image scan digitizer technology can support automatic input of drawings and design marks.

Long-term archival mass storage must support one trillion characters (8×10^{12} "bits") of storage. Optical disk and magnetic tape cartridge mass storage systems promise this capacity, although such capability is not currently commercially available. Current optical disk based systems are limited in capacity and in the flexibility of their disk writing requirements. Magnetic tape cartridge systems are available, but the short (approximately 2 year) archival life presents operational problems of regeneration.

Current data display technologies can provide adequate resolution for graphics with zoom capability. Alphanumeric terminals are available to provide scrolling and manipulation of data by the user. Current technology can support a workstation configured around two or more separate terminals, for graphics and text.

Developmental technology offers interesting possibilities for larger split screen configurations which can accommodate both graphics and text on a single screen. It is, however, important that extensive analysis be done relative to the impact/effect of data display technology (e.g., long hours at a CRT) upon personnel employed at the data display work station. Printing and photocomposition requirements for both text and graphics can be met by currently available commercial systems (with modifications).

Search and retrieval methodologies for very large data bases are receiving considerable research attention. Several of the developing approaches hold the promise of fast and efficient search and retrieval. At this time, for example, such systems consist of indices (document level) combined with parallel search engines especially designed to handle text very efficiently.

PLAN HIGHLIGHTS.

The major automation opportunity areas addressed in this plan include Office/Public Communications, Trademarks, Patents, Printing Support System, and Internal Operations.

Office/Public Communication. The discussion of this opportunity area proposes an approach to office/public communications based on three principles: 1) computer systems shall be available for use by the public, to the maximum extent feasible and allowable; 2) systems available for public use within the Office shall also be available through a network of "satellite search centers," aimed, principally, at serving individuals and small business; and, 3) access to Office information dissemination systems shall be available to the public on a cost reimbursable basis in order to serve large scale information users having their own systems and to encourage and facilitate Office information dissemination by commercial information firms.

Trademark Automation. Trademark automation began development and implementation in FY 1981, and is scheduled for completion in FY 1984. The workflow control portion of this opportunity is currently being implemented. Automated searching and photocomposition, and the initial portion of a full text retrospective data base, will be implemented next. Potential new opportunity areas include various activities that enhance in-house availability and utilization of data. Others reduce processing costs by improving use of automated data capture and retrieval technology. The final group of potential projects involves mechanisms to allow the Office to provide improved services to the public by allowing access to the nation's primary source of automated information on trademarks.

Patent Automation. The discussion on the patent automation opportunity area represents a comprehensive, integrated approach addressing the full range of automation opportunities embodied in the patent process -- from patent application filing to dissemination of the information contained in granted patents. New opportunity areas include a document Retrieval System, assignment backfile loading, classification data base redesign, using commercially available data bases of patent and patent related information, experimentation and prototyping of patent text searching methodologies, creation of a classification definition data base, and merging of the assignments and patentee index information.

Printing Support System. The objective in this opportunity area is to conduct a comprehensive investigation of the automated data input technology, mass data storage, and software capable of creating photocomposition driver tapes. The anticipated benefits include: improved quality of patent grants and trademarks registrations; reduced pendency; reduced printing costs; and, establishment of an application data base. Automatic processing of bibliographic information

must be considered in any system which converts the application text to machine readable form. Essential to implementation of this concept is the conversion of drawings to some type of machine readable form. This concept area is supported by three initiatives: input of the full text of an application; creation of an application full text data base; and, development of a photocomposition system.

Internal Operations. The automation opportunity areas are addressed in terms of three major areas: computer support systems, new management data systems, and new office automation systems.

Computer Support Systems. Effective use of contemporary technology is an evolutionary process which places significant demands upon the intellectual resources available to the Office. Ultimate operational use of contemporary technology requires anticipation, training, and developmental activities which contribute to the growth of the organizations and personnel involved.

New Management Data Systems. Many opportunities exist for improvement of current data systems and for creation of new data systems including operational control systems, management control systems, and planning systems.

Office Systems. Opportunity abounds in the area of automated office systems. The Office will conduct a comprehensive assessment of Office needs and available technology, as well as a study on evolutionary implementation of high payback, effective systems to provide greater support to Office management.

Six new initiatives are planned to support and improve internal operations. These are initiatives toward mainframe replacement, minicomputer augmentation with OCR capability, network upgrade, management data systems, office systems, and library automation.

AUTOMATION APPROACHES

The initiatives in each of the opportunity areas could be approached through several alternatives. Figure III-1 depicts the various approaches for each initiative.

IMPLEMENTATION SCHEDULE

The schedules for implemention and operation of the initiatives in each opportunity area are shown in Figure III-2. The interrelationships of the initiatives are not shown, but rather are discussed in detail for each initiative.

RESOURCE REQUIREMENTS

The total resources needed to implement all of the initiatives is not known at this time. Several major studies are necessary to determine requirements in the areas of automated text input, full text searching, and document retrieval. When the results of these studies are available, total costs can be determined. Known costs for the next decade are depicted in Figure III-3.

APPROACHES WITHIN THE CURRENT STATE OF THE ART

OPPORTUNITY AREA Initiative	Current in-house systems: minor modification	Current in-house systems: major expansion	Similar government systems	Private sector systems: commercially available	Private sector systems: in-house private	New systems development	Remarks
OFFICE/PUBLIC COMMUNICATIONS							
Dissemination systems	n	n	y	y	n	y	Requirements analysis
TRADEMARKS							
Assignments System	y	n	n	n	n	n	Will rely on PALM 3 software.
Design Searching	n	n	n	n	n	y	Concept design/requirements analysis
Simplification of Printing	y	y	n	y	n	n	Requirements analysis
PATENTS							
Document Retrieval System	n	y	y	y	n	y	Concept design/requirements analysis
Assignment Backfile	-	-	-	y	-	-	Data reduction requirement
Classification data system redesign (DBMS)	n	n	n	n	n	y	Complete redesign using DBMS approach
Use of Commercial Data Bases	n	n	n	y	n	n	
Patent Text Searching	n	n	y	y	n	y	Experiment, Prototype, & Full system
Classification Definition Data Base	n	y	y	y	n	y	
Assignments/Patentee Index	y	n	n	n	n	n	
PRINTING SUPPORT SYSTEM							
Application Full Text Input	n	y	y	y	n	y	
Application Data Base	n	n	y	y	n	y	
Photocomposition System	n	n	y	y	n	y	
INTERNAL OPERATIONS							
Mainframe Replacement	n	n	n	y	n	n	Includes all current operations
Network Upgrade	n	y	n	y	n	n	
Minicomputer augmentation w/ OCR	n	n	n	y	n	n	
Management data systems	y	y	y	n	n	y	
Office Systems	y	y	y	y	y	y	y
Library Automation	n	n	y	y	n	n	

Figure III-1

D R A F T

IMPLEMENTATION SCHEDULE

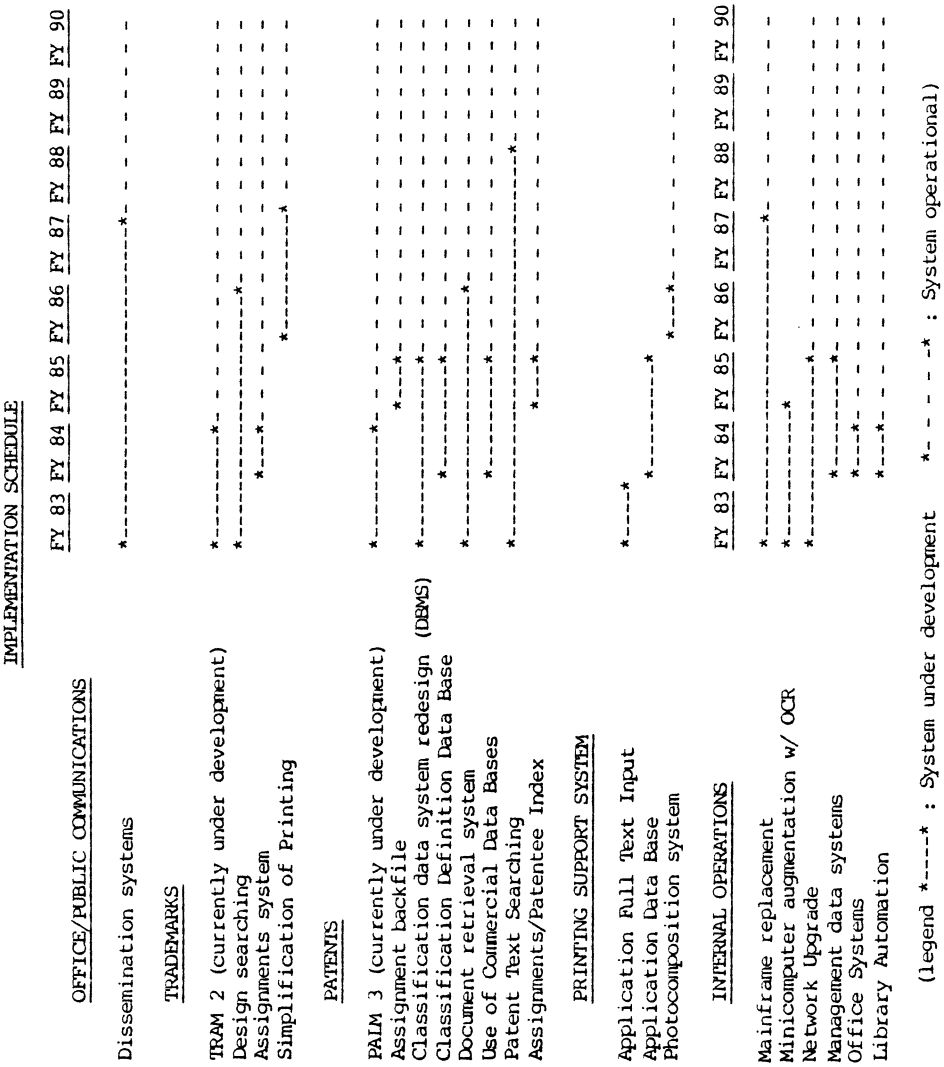


Figure III-2

11/2/81

III - 12

D R A F T

D R A F T

R E S O U R C E R E Q U I R E M E N T S
(Full time equivalent positions and budget requirments)

	FY 83 FTE ($)	FY 83 Budget	FY 84 FTE ($)	FY 84 Budget	FY 85 FTE ($)	FY 85 Budget	FY 86 FTE ($)	FY 86 Budget	FY 87 FTE ($)	FY 87 Budget	FY 88 FTE ($)	FY 88 Budget	FY 89 FTE ($)	FY 89 Budget	FY 90 FTE ($)	FY 90 Budget
OFFICE/PUBLIC COMMUNICATIONS																
Dissemination systems																
TRADEMARK																
TRAM 2:																
Design searching																
Assignments System:																
Simplified Printed Outputs																
PATENT																
PALM III																
Assignment Backfile																
Classification data system redesign (DBMS)																
Classification Definition Data Base																
Document retrieval system																
Use of Commercial Data Bases																
Patent Text Searching																
Assignments/Patentee Index																
PRINTING SUPPORT SYSTEM																
Full Text Input/Data Base/photocomposition																
INTERNAL OPERATIONS																
Mainframe replacement																
Minicomputer augmentation w/OCR																
Network Upgrade																
Management data systems																
Office Systems																
Library Automation																

Resource estimates will be established based on the final FY 1983 budget figures.

Figure III-3

Part III

Future Automation

Automation Opportunity Areas
Area/Initiative

Patents

Assignment Backfile
Classification Data Base Redesign
Classification Definition Data Base
Document Retrieval System
Use of Commercial Data Bases
Patent Text Searching
Assignments/Patentee Index

AREA: PATENT AUTOMATION

INTRODUCTION

Until recently, automation technology has been directed toward large-scale, centralized, computational or clerical data processing applications. Now, however, the capability for a human to interact meaningfully with a data processing machine has moved from the university research laboratory to the commercial marketplace.

The Office offers an ideal environment for one of the first large-scale applications of this new technology. This is because highly-skilled professionals represent more than 50% of the Office's workforce; and these professionals regularly access one of the world's largest and most concentrated collections of scientific and technical information. This information is contained in the text and diagrams of more than 24 million documents.

The Office has responsibility for examining the more than 100,000 applications received annually and issuing patent grants on those which satisfy legally prescribed criteria. Historically, 65 - 70 percent of all applications issue as U.S patents.

Before an application can issue as a U.S. patent, it must be examined for patentability against all relevant patent documentation and technical literature. This is to ascertain whether the claimed invention is novel, has otherwise been anticipated by the prior art, or has been used commercially in the United States prior to filing as prescribed by the patent statutes.

JRRENT OPERATIONS

e-examination Processing. The pre-examination process includes ıe the functions taking place between between receipt of the patent ɔplication in the Patent and Trademark Office mailroom and docket- ıg with the examiner for substantative prosecution.

ssentially this includes placing the application papers (oath/de- .aration, drawings and specification) in a file jacket, assigning a erial number, determining if the proper fee is present, and for- ırding the case, in batches of approximately 300, to the Applica- ion Division for further administrative review.

ı the Application Division the application content is evaluated to etermine to which technological "art" the application should be ssigned for examination. Thereafter, the file is reviewed for sta- ıtory and rule compliance and for identification of important bib- ographical data which is highlighted, coded and entered into a achine readable data base. This data base is used to produce, ıong other things, a label of bibliographic data for the face of ıe application file and a filing receipt for the applicant. This ceipt provides the applicant with the internal control number erial number) and the filing date which was accorded to the appli- tion.

e application files are then forwarded to a microfilming operation ich creates a security copy of the application as filed. At the me time, the drawings which illustrate the invention are reviewed r formality.

Before reaching the Examining Group to which the application has been assigned for prosecution, the case is reviewed to determine if there is any possibility of the technological content having any national security implications. In addition, where an invention may have been developed under a government contract, the case is identified for subsequent determination as to ownership of patent rights and whether such rights are total or partial.

The application is then forwarded to the assigned Examining Group, which will conduct the substantative evaluation of the application to determine if it should issue as a new patent. The file is reviewed by the supervisor (SPE) in charge of the subject matter contained in the application and assigned to a particular examiner for examination.

Examination Processing. The examiner takes up the new application generally in order of receipt in the Office and conducts a review to identify and understand the nature of the purported new invention. The decision on patentability requires a consideration of pertinent legal issues and a search of available reference materials to obtain precise information of the state of the art in the specific technological area of the application. During the initial review the examiner determines the areas of search that would most likely contain technology similar to the new case. When this is completed the process of searching begins.

At the present time, the Office maintains a file of manually searchable scientific and technical reference material consisting of approximately 24 million paper documents -- 4.5 million original U.S. patents, 8 million cross-reference copies of these patents, 10.5 million foreign patents, and about 1 million pieces of non-patent technical literature. In addition, the Office operates an

extensive reference library of technical and scientific books and periodicals.

The physical search conducted by a patent examiner routinely consists of going to an examiner search room and manually leafing through numerous documents stored in small, wide file drawers called "shoes" that are associated with a particular technology of interest. By the time the search of a given application is finished, the examiner will have scanned, on the average, approximately 2,000 separate documents. From these the examiner will select the most relevant documents, possibly a dozen or more, for a more thorough inspection. Supplemental searches may be performed as appropriate using other available technical information sources, such as books and journals available in the Office Scientific Library.

Obviously the Office's search file of some 24 million paper documents would be unwieldy for search purposes without some organization and file structure. In order to facilitate the physical storage and selective retrieval of these materials and, most importantly, to narrow the examiner's search for prior art references, the Office search files are arranged into an elaborate classification scheme of technology. This classification scheme contains more than 300 main groupings or "classes" with each class further divided into numerous small groupings -- over 108,000 in all -- called "subclasses" which form the basic units for patent classification organization.

In addition to U.S. patents and non patent literature, the classified search file contains an estimated eleven million foreign patent documents. An estimate must be given because no reliable records

exist of the number, distribution or location of the foreign patents in the file.

After conducting a comprehensive search of prior art, the examiner informs the applicant of the nature of the decision on patentability of the application. If it is unfavorable, the applicant has the opportunity to amend or further argue the case. Eventually, a final determination is made which results in the application being either allowed or abandoned. If the application is abandoned, it is stored, normally for twenty years, and is thereafter disposed of. If the application is allowed, the case is passed along to the next step, post allowance.

Post Allowance Processing. The first step in the allowance process is to inform the applicant of the fact. The applicant is then given 3 months from that time to pay an issue fee or the application will be abandoned for failure to pay the fee. During the time the applicant is returning the fee payment to the Office, the application is reviewed to insure all information in the application is correct. Upon payment of the issue fee, the application is "built into an issue" with about 1,200 to 1,500 other applications which typically issue each week. The applications are sent to a contractor for editing and entering of the specification into a machine readible data base. Once the specification is in the data base it is printed for review, proofed, and corrected. When the issue is ready for formal printing the data is extracted from the data base and formatted for photocomposition at the Government Printing Office. On the issue date (about 9 weeks after being built into an issue), applications which are issuing are published in an Official Gazette, which contains an abstract of the invention or a representative claim and a representative drawing figure. The Official Gazette and

copies of the printed patent are made available to the patentee and other interested parties. In this manner the content of the application is "disclosed" to the public.

Current Automation Support. The patent office procedure is presently supported by automation in the following systems:

- An on-line system (PALM 3) for locating and monitoring the status of pending, patented and abandoned application files, for reporting of examiner production, and for printing routine correspondence including the notice of allowance;

- A system for printing the Official Gazette (O.G.) and patent grants;

- An elaborate classification data system for permitting the checking of the integrity of the patent search files and for retrieving patent documents;

- A system for maintaining the record of ownership of various patent rights for both pending and patented applications in accordance with 35 USC 261.

The PALM 3 system, implemented in 1980, utilizes a network of over 300 terminals consisting of state-of-the-art bar code readers for data base updating, cathode ray tubes for information retrieval, and remote line printers for printing correspondence. Changes in status, location, and bibliographic information, such as title of invention and correspondence address, are entered into the system on-line. On a typical day, the system will process in excess of

25,000 transactions. Approximately 17,000 of these will update the data base and about 8,000 will retrieve information to assist in the prosecution of the application. Frequently the retrieval information can be used in lieu of actually retrieving the application file, resulting in decreasing the prosecution time and speeding the flow of work. Furthermore, workflow streamlining will eventually result in a reduction in pendency to issue. Subsequent improvements will result in the elimination of the cumbersome manual control system, maintained within the examining groups, for detailed status and examiner docket control.

Since 1970, the Office has utilized an automated photocomposition system for printing the Official Gazette (OG) and the patent grant. This system, which has evolved over the intervening years, is highly cost effective and produces valuable machine readable data which is now being marketed to the private sector through the National Technical Information Service (NTIS). This data base printing function is accomplished by "keying" the full text of an application and inserting the necessary print commands for each issuing patent. This data is then merged into a master data base where it is sorted and formatted for printing, and forwarded to the Government Printing Office to photocompose and print the desired products. While much more efficient than the old "hot metal" method of printing, the process is still very complex and costly. The creation of the master data base and photocompostion tapes are contracted for at an annual cost of approximately $9 million, the major portion of which is for data reduction of the patent text.

The classification data system supports the patent program in two distinct ways. The first is to provide a basis for controlling the enormous inventory of technological data contained in the U.S. patent data base, and thereby serve as the foundation for maintaining

file integrity. This is accomplished by providing a perpetual inventory of the classes and subclasses to which each patent is referenced. The second is to provide a consistent and efficient structure for searching and retrieving relevant patent documents. This large data base of over 4,000,000 U.S. patents is cross referenced approximately two (2) times and entered into the over 108,000 discrete subclasses for searching and retrieval purposes.

The final systems support for the patent program is in the automated maintenance of the ownership rights to the patent application and subsequent patent grant. This has been recently accomplished by providing support for the entry and retrieval of assignment data into a master data base. All new assigments are compared to the PALM 3 system to automatically extract data common to the needs of both PALM 3 and the assignments system. Any additional data is then entered into the integrated PALM 3/Assignment data base for on-line retrieval by either serial number (Office employees only) or by patent number. Retrieval by patent number is an added feature not available under the old manual system. Computer output microfilm (COM) of patent grants is produced weekly and made available in the Assignment search room for public searching of assignee or assignor interests in patent rights.

FUTURE INITIATIVES

The patent office procedures can be characterized as highly labor intensive, fragmented and dependent on a paper search file which is increasingly more difficult to manage and maintain. In the past, operating methods having these characteristics were the only way to accomplish a very complex mission.

The Patent concept for the future will focus on a fully integrated approach to processing, including searching and dissemination of information to the patent and technological communities. The keys to this concept are to maintain current, complete and readily accessable information relating both to the prosecution of the application and the technological content of the specification.

The focus of these improvements will continue to be on improving internal processing (accuracy, efficiency and timeliness), improving the quality of the product (the Patent Grant), and enhancing the use of the information (dissemination).

Consider the following scenario of the 1990's:

> The patent examiner, who wishes to examine the next patent application on the assigned docket, sits down at a computer terminal and presses a button. The drawings and text of the patent application appear on viewing screens. The examiner reads the content of the application, entering notes by means of a keyboard. The examiner, who then is ready to search the claimed invention against the world's technological literature, pushes additional buttons to call up on the viewing screens a series of tables, definitions, and other aids; formulates a search strategy; and enters it via the keyboard. The push of a button initiates an automated search. A summary of the search results, appears on a screen, together with an indication of which documents appear to be the most relevant and perhaps a listing of possibly relevant further search areas, for example, additional subclasses (Office "Book of Definitions" style). With this equipment it is possible to view, in various sequences, portions of text and drawings, displayed side-by-side, from several different reference documents and from the application, enter additional notes; review and modify the search request; consult legal opinions; consult technical indexes and thesauri; address queries to other examiners; and review prior notes and actions previously taken in the case, all without stepping away from the terminal.

When satisfied that a complete search has been made of U.S. patents, foreign patents, and non-patent literature, the examiner proceeds to key into the terminal an appropriate legal action, all while still still at the terminal. The action is then reviewed by the examiner's supervisor, also operating from a terminal; and if satisfactory, a copy of the action and the cited references are tele-communicated (or automatically mailed) to the applicant or applicant's attorney.

le this may seem futuristic, every one of the described capabili-s either is commercially available now, or is about to become ilable. These capabilities offer the very real possibility of a matic improvement in productivity, provided that automation pro-ds in a totally planned systematic manner, with each new automa-n initiative built on the preceeding ones, designed to be part of overall, fully integrated Office system.

broad outlines of such an overall system are already clear. The tem will be built upon two logically interrelated data base con-ts. One which contains technical information that is available all to use (Patented Data Base) and another which contains in-mation on patent applications which must be kept confidential nding Data Base) see Figure III-4. The content and structure of se data bases may be quite similar, but limitations on access-lity will be different.

Patented Data Base will consist of the U.S. patents, foreign ents, and non-patent literature which are searched by patent ex-ners, attorneys, science and industry. Access methods will in-de classification systems, indexing systems, full text search and play and drawing and diagram search and display. A number of ondary search aids also will be included, such as thesauri of ated technological terms, concordances (for example, from SIC duct code to Office subclass), and indices of various types.

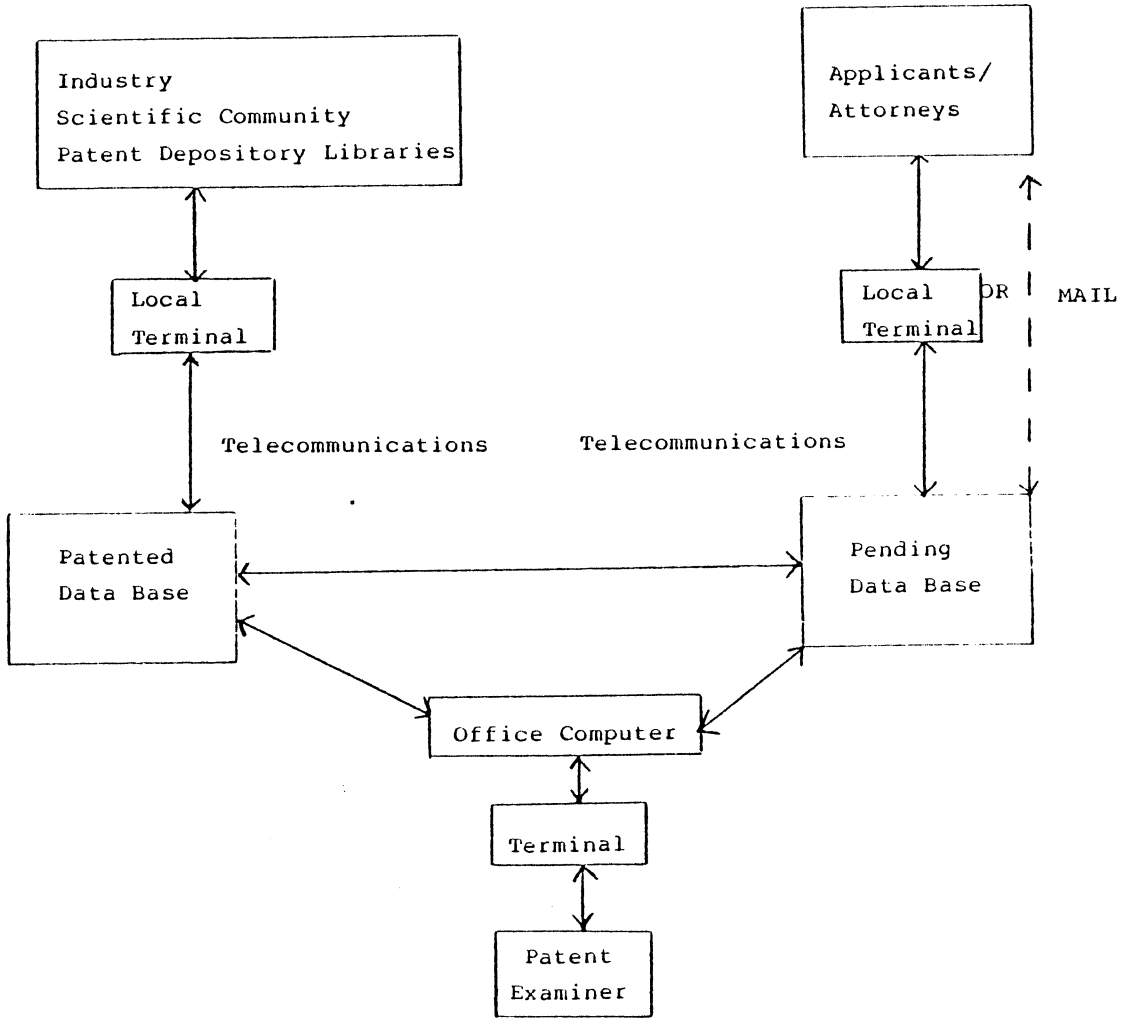


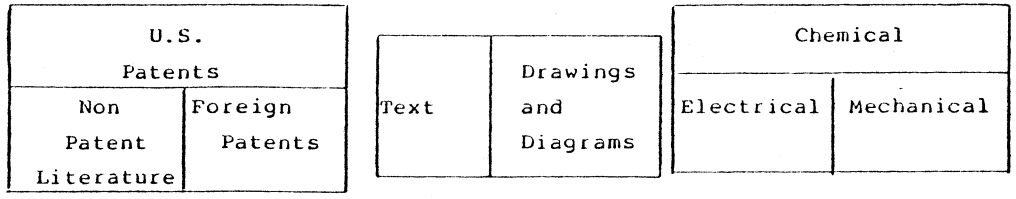
Figure III-4 - The 1990's Automated System

The Pending Data Base will contain the full text and drawings of all pending patent applications and a prosecution history. This data base will permit all prosecution and examination to be carried out using on-line word processing and will provide management reports concerning pendency, inventories, queries, budgeting and planning data. Futhermore, it will permit automated patent printing without additional data entry. Of course, when an application issues as a patent, the data record will be automatically made available for public access.

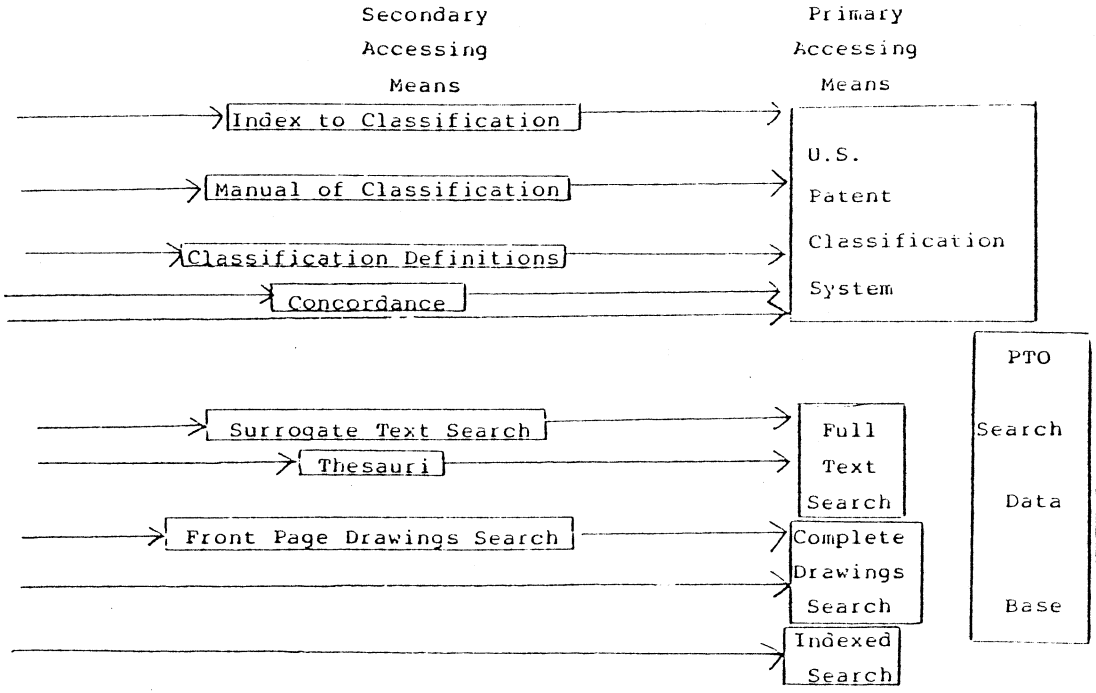
A diagrammatic representation of the Office Data Base(s) concept is shown in Figure III-5.

Since the essential functions of the Office are derived from statute, the overall process in the automated environment envisioned for the future will remain much the same as it is today. However, with the efficiencies of automation, paper handling can be streamlined significantly. This might be accomplished by: standardizing input formats to enable direct machine capture of data from the application, including bibliographic data contained in the oath as well as the specification and drawings; analyzing application data to assist in determining compliance with administrative requirements and to speed the application to the appropriate examiner; searching all appropriate data files to identify potential references; preparing and transmitting examiner's actions to the applicant; and, disseminating technological data to the public using advanced telecommunications techniques. The following discussion provides more detail for these opportunities as they would impact the workflow.

Figure III-5
The Office Search Data Base



(a) Three ways to think of the Office Search Data Base



(b) A partial picture of multiple accessing means to the Office Search Data Base (Different means may access different parts of the Data Base)

Future System Outline

"Pre-examination" would consist of a simplified process which accomplishes essentially all the current pre-examination functions plus the initial creation of a full text data base (see Printing Concept section). This can be accomplished by "reading" the application data from the applicant's submission directly into a master data base, possibly through OCR technology. Provision would, of course, need to be made for applications not filed in machine readable form. A human reviewer assisted by computer analysis of this data would: (1) determine if the application meets statutory requirements (e.g., existence of a properly signed oath/declaration, presence of a drawing if appropriate, and the filing fee); (2) assign the filing date and serial number; (3) analyze technical content of the application to assure proper examiner group assignment; (4) debit the appropriate deposit account; and (5) create the filing receipt. Similarly, subsequent correspondence, such as examiner's actions and applicant's amendments to the application, would be entered into the data base so that the entire prosecution history would be readily available from a medium such as computer output microform (COM) or video disk.

Examination would utilize automated search assistance of U.S. and foreign Patents and non-patent literature to identify potential references for the examiner. This process must necessarily include a search for the claimed invention, as well as for features disclosed in the rest of the specification submitted by the applicant. The examiner, utilizing on-line terminals, would then conduct a detailed examination and evaluation of potential references. Where necessary the examiner could request hard

copy of the references which, along with on-line composed actions, could be sent to the applicant, either through the mails or possibly through some type of high technology information transfer capability.

Post examination would rely on a representation of the new patent as it is extracted from the master data base. The representation would then be used for printing a conventional Patent Grant and Official Gazette or in producing other types of facsimiles.

The major technological modules necessary to achieve the process described above can be characterized as: (1) Data Base Creation and Storage and (2) Information Dissemination.

Future System Modules

Data Base Creation and Storage - Achievement of a complete data base of pending, patented and abandoned files would virtually solve the file integrity problem associated with the present paper files and create the foundation for fully automated information dissemination. Currently the technology which appears most practical for data base creation includes OCR and word processors. In the long run, direct computer to computer communication may be practical. Study will be required to determine the extent and methodology to which drawings might be converted to digital form and incorporated into the data base.

A study of storage mediums will focus on systems which couple an efficient storage mechanism, such as microfilm, with charged couple device (CCD) technology to digitize the document for

display on a high resolution CRT. An additional possibility is to utilize emerging video disk technology. Both of these technologies lend themselves to the efficient storage of text and drawings, but do not permit searching of the information contained in the document.

Information Dissemination This includes providing the capability to retrieve the technological data (contained in the data base created above) for the examiner and the public. This will facilitate the issuing of valid patents and provide to other government and private sector interest groups ready access to technological information which is needed for research and development, marketing, or other purposes.

Potential and Considerations. Achievement of the long-range goals could result in the virtual elimination of the Office's dependence on paper to support the dissemination function and provide faster, more complete and accurate searching. This would be accomplished by transmitting all information in a digitized form and employing complex software to search the technological data base(s) for the claimed invention.

There will be increasing need for a system to manage the diverse operations that make use of complex data base(s) of patent information. With application location monitoring, document processing, patent searching, reclassification, document retrieval, photocomposition and a host of other functions competing for resources, a data base management system of considerable capability will be needed.

The integration of new and complex technology into the operating process will require a sustained and well-coordinated effort over a long period of time. These efforts must introduce changes without severely disrupting operations, take advantage of potential highly cost effective improvements, and avoid the risks of total commitment to technology which has not been perfected or may soon become obsolete.

Changes of the magnitude described above will require phased implementation to insure that the new process is adequately absorbed in the workplace. This would also provide a "bridge" between current and future technology.

Benefits. Benefits to be realized through this concept include both enhancement of the Office's ability to carry out its statutory missions and reduction in the cost of performing the tasks involved in that effort. Program effectiveness will be improved in terms of promptness in responding to the needs of patent applicants, not only with respect to individual actions and inquiries, but also with respect to overall application pendency. The quality of the products and services provided will improve as 1) search file integrity is assured, 2) additional search aids direct the examiner's attention to pertinent references that might otherwise be missed, and 3) automated processes avoid errors inherent in repetitive manual data input. In addition, dissemination of information about technology disclosed in issued patents will be possible in ways that are vastly superior to techniques presently employed.

Sizeable annual investments of staff effort to maintain search file integrity will be replaced by document retrieval systems that pro

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vide file integrity as an extra dividend in addition to the efficiency generated. The reduction in staff effort presently devoted to the clerical filing of newly received reference materials and the reproduction and filing of references pulled by examiners for citation in Office actions will probably more than offset the cost of adding new references to the document retrieval system. The manual efforts to physically create a reclassified search file will be virtually eliminated.

To the extent that the text of the patent application specification and claims can be inexpensively captured in machine-readable form and can be economically updated in-house, actual cost savings may be experienced in the presently labor intensive operations performed (under contract) in the preparation of input for photocomposition.

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Ende des Dokuments]