# Working Group on Biochemical and Molecular Techniques and DNA-Profiling in Particular

BMT/16/2

Sixteenth Session La Rochelle, France, November 7 to 10, 2017

Original: English Date: November 2, 2017

# REPORTS ON DEVELOPMENTS IN UPOV CONCERNING BIOCHEMICAL AND MOLECULAR TECHNIQUES

Document prepared by the Office of the Union

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The Annex of this document contains a copy of a presentation "Report on Developments in UPOV concerning Biochemical and Molecular Techniques" to be made by the Office of the Union at the sixteenth session of the Working Group on Biochemical and Molecular Techniques, and DNA-Profiling in Particular.

[Annex follows]

BMT/16/2

ANNEX

Working Group on Biochemical and Molecular Techniques and DNA-Profiling in Particular (BMT) Sixteenth Session

# Report on developments in UPOV concerning Biochemical and Molecular Techniques

Peter Button, Vice Secretary-General Tomochika (Tom) Motomura, Technical/Regional Officer (Asia) UPOV

> La Rochelle, France, November 7-10, 2017

UPOV International Union for the Protection of New Varieties of Plants

## Preview

Developments in UPOV:

- General
  - membership & statistics
  - people & publications
  - PBR application tool (EAF)
  - impact of UPOV membership
  - UN SDGs & plant genetic resources
- Biochemical and molecular techniques

## UPOV

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MEMBERSHIP OF 75 members	UPOV
New member	
Bosnia and Herzegovina Octobe	er 10, 2017*
* Bosnia and Herzegovina will become bound to the 1991 Act	on November 10, 2017.

SITU Exa	IATION in UPOV mination of Laws		
	Council session	Advice	
Brunei Darussalam	October 26, 2017	Positive	
Guatemala	October 26, 2017	Positive	
Myanmar	October 26, 2017	Positive	
UPØV			4

















	Top 10:	UPOV	members	by n	umber o	of applications	5
	2007			2015		2016	
Rank	Member	Number of applications	Memb	er	Number of applications	Member	Number of applications
1	European Union	2'968	European Uni	ion	3'111	European Union	3'299
2	United States of America	1'485	China	<b>↑</b> 3	2'342	China	2'923
3	Japan	1'406	United States America	of <b>↓1</b>	1'634	United States of America	1'604
4	Russian Federation	885	Ukraine	<b>↑</b> 3	1'075	Ukraine	1'274
5	China	877	Japan	<b>↓</b> 2	914	Japan	977
6	Netherlands	846	Netherlands		799	Republic of Korea 1	966
7	Ukraine	560	Republic of Korea	1	757	Netherlands 🗸 🗸 🕹	804
8	Republic of Korea	527	Russian Federation	↓4	743	Russian Federation	772
9	Canada	430	Australia	1↑	359	Australia	387
10	Australia	336	Brazil	13	355	Brazil	326
							13

Applications filed as:								
Rank	Country of		Resident					
	residence of breeder	Resident	CPVO (EU member States)	Total	Non-resident	Total		
1	Netherlands	674	1'281	1'955	1'174	3'129		
2	China	2'686	0	2'686	34	2'720		
3	United States of America	812	0	812	1'223	2'035		
4	France	67	467	534	516	1'050		
5	Germany	50	395	445	489	934		
6	Republic of Korea	860	0	860	26	886		
7	Japan	609	0	609	152	761		
8	Russian Federation	613	0	613	1	614		
9	Ukraine	364	0	364	0	364		
10	Australia	140	0	140	176	316		
11	Switzerland	5	0	5	307	312		
12	Brazil	200	0	200	71	271		
13	Denmark	2	101	103	151	254		
14	Argentina	171	0	171	62	233		
15	United Kingdom	17	95	112	108	220		
16	Spain	29	70	99	100	199		
17	Italy	11	79	90	109	199		
18	Israel	45	0	45	141	186		
19	Czech Republic	60	15	75	89	164		
20	Viet Nam	162	0	162	0	162		
	Sum of top 20	7'577	2'503	10'080	4'929	15'009		
	Others	749	118	867	579	1'446		
	Total	8'326	2'621	10'947	5'508	16'455		

	Top 20: Country of residence of applicants									
Rank	2007		2015			2016				
	Residence	App. #	Residence		App. #	Residence		App. #		
1	Netherlands	2'600	Netherlands		2'720	Netherlands		3'129		
2	United States of America	1'764	China	<b>↑</b> 3	2'100	China		2'720		
3	Germany	1'336	United States of America	↓1	2'027	United States of America		2'035		
4	Japan	1'283	France	13	1'038	France		1'050		
5	China	818	Germany	↓2	942	Germany		934		
6	Russian Federation	777	Japan	↓2	766	Republic of Korea	1↑	886		
7	France	621	Republic of Korea	1↑	647	Japan	<b>↓1</b>	761		
8	Republic of Korea	388	Russian Federation	<b>↓</b> 2	640	Russian Federation		614		
9	Ukraine	318	Ukraine		412	Ukraine		364		
10	Australia	314	Australia		368	Australia		316		
11	United Kingdom	253	Switzerland	15	358	Switzerland		312		
12	Argentina	243	Spain	13	306	Brazil	11	271		
13	Denmark	225	Argentina	↓1	248	Denmark	<b>↑</b> 3	254		
14	Italy	193	Brazil	11111111111111111111111111111111111111	223	Argentina	<b>↓1</b>	233		
15	Spain	181	United Kingdom	<b>↓</b> 4	219	United Kingdom		220		
16	Switzerland	178	Denmark	<b>↓</b> 3	191	Spain	<b>↓</b> 4	199		
17	New Zealand	176	Israel	1↑	180	Italy	1↑	199		
18	Israel	174	Italy	√4	148	Israel	↓1	186		
19	South Africa	144	New Zealand	↓2	135	Czech Republic	115	164		
20	Brazil	121	Canada	<b>1</b> 4	119	Viet Nam	11	162		



























	Selected EXN/INF deve	elopments
Reference	Explanatory Notes on:	Timetable
UPOV/EXN/EDV/2 (revision)	Essentially Derived Varieties	Adopted by the Council in April 2017
UPOV/EXN/PPM/1	Propagating Material	Adopted by the Council in April 2017
UPOV/INF/13/2	Guidance on how to become a member of UPOV (adoption by correspondence)	Adopted by the Council in April 2017
UPOV/INF/5 (revision)	UPOV model plant breeders' rights gazette	possible revision to be considered by CAJ in October 2018
UPOV/INF/12 (revision)	Variety Denominations	WG-DEN
		29



### Program for CAJ in 2018

Presentations by members and observers to share their perspectives on :

### (a) Essentially Derived Varieties

- (i) essential characteristics
- (ii) predominantly derived
- (iii) indirect derivation, including in relation to parent lines and hybrids
- (iv) assessment of essentially derived varieties
- (b) **Conditions and Limitations** Concerning the Breeder's Authorization in Respect of Propagating Material
  - suitable examples of conditions and limitations

### (c) Scope of Provisional Protection

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### Key benefits

- Online PBR application tool to provide application data to participating PVP Offices in required format (hard copy, e-mail notification, system-to-system)
- Application forms can be displayed in range of languages (answers must be provided in acceptable language for PVP Office some information in TQ will be automatically translated in navigation and output form languages)
- Variety data can be re-used in subsequent applications
- Different user roles can be specified (e.g. drafter, signatory, translator, agent, procedural representative)
- Controlled access, secure and confidential
- Easy access to PVP application forms [and next steps in procedure from mid-2018]
- Track your applications... UPOV

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UPOV members PB	(16) and R Applic	crops (5 ation Toc	) current ol (EAF)	ly covere	ed by
AUTHORITY	APPLE FRUIT VARIETIES	LETTUCE	ΡΟΤΑΤΟ	ROSE	SOYABEAN
Argentina	V		V	V	$\checkmark$
Australia	V	V	V	V	$\checkmark$
Chile	V	V	V	V	$\checkmark$
China		V		V	
Colombia				V	
France	V	V	V	V	√
Kenya	V	V	V		V
Netherlands	V	V	V	V	√
New Zealand	V	V	V		
Norway	V	V	V	V	√
Republic of Moldova	V	V	$\checkmark$	V	$\checkmark$
Switzerland	V	V	$\checkmark$	V	$\checkmark$
Tunisia	V	V	$\checkmark$	V	$\checkmark$
Turkey	V	V	V	$\checkmark$	V
United States of America		$\checkmark$	$\checkmark$		$\checkmark$
Uruguay	V		$\checkmark$		$\checkmark$



	Navigation languages								
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al Created Reference On Number XU_302017 00000658	Modified On 14/09/2017	Date of Submissio n	Crop	Proposed Variety Denomination	Breeder''s Variety Reference	Submitter"s Own Variety Reference	Deutsch	•	
xu_302017 00000659 28/06/2017	28/06/2017	NA	Rose			1	Español	•	
							中文	•	
UPØ	V								

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		Rom	ania	an
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Başvuru Sahibinin Adresi 1(a)(ii) Ülkesi	- Søknadsskjema Søker (sortseier)			
Telefon 1(a)(iii)	Navn 1(a)(i)			Hend Madhour
<b></b>	Adresse 1(a)(ii)			Chemin de follieu
Faks 1(a)iv)				
Faks 1(a)iv) e-Posta 1(a)(v)	Postnummer			
Paks 1(a)/v) e-Posta 1(a)/v)	Land			Switzerland hend madhour@upov.int

# Anticipated expansion from January 2018 (Version 2.0)

- Bolivia (Plurinational State of)
- Canada
- European Union
- Georgia
- Mexico
- Paraguay

## UPØV



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Licence Application Form <ul> <li>Start a new application</li> <li>Copy application</li> <li>Liser Role Management</li> <li>Licet User profile</li> </ul> Français    Français Decutsch Decutsch Decutsch Decutsch Español 中文 Decutsch Español 中文 Decutsch Español Decutsch Decutsch Decutsch Español Decutsch Decutsch Español Decutsch Decutsch Español Decutsch Decutsch Español Decutsch Decutsch Decutsch Español Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Español Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch Decutsch			Na	avigati	on la	angu	ages			
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# EAF Version 2.1 (mid-2018)

- New authorities which could be included in Version 2.1:
  - Brazil
  - (Ecuador)
  - (Japan)
  - Republic of Korea
  - Viet Nam
  - OAPI
  - South Africa

## UPØV









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# Preview

**Developments in UPOV:** 

- General
  - membership & statistics
  - people & publications
  - PBR application tool (EAF)
  - impact of UPOV membership

### – UN SDGs & plant genetic resources

• Biochemical and molecular techniques

## UPOV



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### Interrelations with ITPGRFA October 2017 The Council agreed the following concerning interrelations with the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA): (i) to **review the FAQ** on the interrelations between the UPOV Convention and the ITPGRFA; and (ii) exchange of experience and information on the implementation of the UPOV Convention and the ITPGRFA, with the involvement of stakeholders. As a next step, the Consultative Committee would consider the need for a revision of the current guidance in the "Explanatory Notes on Exceptions to the Breeder's Right under the 1991 Act of the UPOV Convention" (document UPOV/EXN/EXC/1). UPOV 74













### STATUS OF UPOV DOCUMENTS CONCERNING MOLECULAR TECHNIQUES

Document reference	Title
UPOV/INF/17/1	Guidelines for DNA Profiling: Molecular Marker Selection and Database Construction ("BMT Guidelines") (2010)
Document reference	Title

Guidance on the Use of Biochemical and Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)
Possible Use of Molecular Markers in the Examination of Distinctness, Uniformity and Stability (2011)

UPOV/INF/17/1 (INFormation document)

"Guidelines for DNA Profiling: Molecular Marker

Selection and Database Construction ("BMT

Guidelines")"

The purpose of this document (BMT Guidelines) is to provide guidance for developing harmonized methodologies with the aim of generating high quality molecular data for a range of applications. The BMT Guidelines are also intended to address the construction of databases containing molecular profiles of plant varieties [...]

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## UPOV/INF/18/1 (INFormation document)

"Possible Use of Molecular Markers in the Examination

of Distinctness, Uniformity and Stability"

The purpose of this document is to provide guidance on the possible use of biochemical and molecular markers in the examination of Distinctness, Uniformity and Stability (DUS). [...]

UPOV



TGP/15/1 (Technical Guidelines Protocol)

"Guidance on the Use of Biochemical and Molecular Markers in the Examination of Distinctness, Uniformity and Stability (DUS)"

The purpose of this document is to provide guidance on the use of biochemical and molecular markers in the examination of Distinctness, Uniformity and Stability (DUS) on the basis of the models in document UPOV/INF/18 that have received a positive assessment and for which accepted examples have been provided.

→ Adopted by the Council of UPOV in October, 2013.

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**PURPOSE:** 

to ensure sustainable plant breeding development by:

providing effective protection for the breeder and

 encouraging cooperation between breeders and developers of new technologies such as genetic modification

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## **ESSENTIALLY DERIVED VARIETIES**

...a variety shall be deemed to be **essentially derived** from another variety ("the initial variety") when

(i) it is **predominantly derived from the initial variety**, or from a variety that is itself predominantly derived from the initial variety, **while retaining the expression of the essential characteristics** that result from the genotype or combination of genotypes of the initial variety,

(ii) it is **clearly distinguishable** from the initial variety and

(iii) except for the differences which result from the act of derivation, it **conforms to the initial variety in the expression of the essential characteristics** that result from the genotype or combination of genotypes of the initial variety.





Predominantly derived from the initial variety (Article 14(5)(b)(i))

• A derived variety could not, in practice, retain the expression of the essential characteristics of the variety from which it is derived unless it is almost entirely derived from that initial variety



(Photo: istockphoto/valentinarr)



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Question: Is it possible to obtain protection of a variety on the basis of its DNA-profile?

For a variety to be protected, it needs to be clearly distinguishable from all existing varieties on the basis of characteristics that are physically expressed, e.g. plant height, time of flowering, fruit color, disease resistance etc. The DNA-profile is not the basis for obtaining the protection of a variety, although this information may be used as supporting information.

A more detailed explanation is provided in the FAQ 'Does UPOV allow molecular techniques (DNA profiles) in the examination of Distinctness, Uniformity and Stability ("DUS")?

See also: "What are the requirements for protecting a new plant variety?"





[End of Annex and of document]