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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

GENEVA

WORKING GROUP ON BIOCHEMICAL AND MOLECULAR TECHNIQUES AND DNA-PROFILING IN PARTICULAR

Eighth Session
Tsukuba, Japan, September 3 to 5, 2003

GENETIC MAPPING OF SIXTY-SIX NEW MICROSATELLITE (SSR) LOCI IN BREAD WHEAT

Presentation prepared by experts from Mexico

Slide 1

Comparative study of genetic diversity in bread spring wheats using coefficients of parentage and molecular markers.

Almanza, P. M.I; Engleman, E.M; Khairallah, M.M.; Fox, P. N., and Warburton, M.L *CIMMYT, 2000.*
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General goal

To evaluate and compare the genetic diversity of 70 Wheats (*Triticum aestivum* L.) based on molecular markers and parentage relationships.

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Methodology

- The sample was composed of 32 wheats from CIMMYT and 38 wheats from other breeding programs worldwide.
- Eight AFLP-primer combinations and 37 pairs of SSRs.
- The genealogies were obtained from: International Wheat Information System (IWIS) and the Coefficients of parentage (COPs) from the Wheat Coefficients of Parentage Program (WCOP).
- UPGMS was used for Cluster analysis.

Slide 3

Results

AFLP ➡ 365/ 611 DNA bands were polymorphic

SSR ➡ 30 /37 SSR markers were polymorphic

Slide 4

Conclusions

- The AFLP and SSR molecular markers validate the general estimators of genetic diversity produced by the COPs.
- The estimators of the data of COPs, AFLPs, and SSRs, indicate that the CIMMYT genotypes are different genealogically and genetically from the worldwide genotypes.
- The same estimators indicate that the wheats introduced by CIMMYT in different decades show genealogic and genetic differences.
- The range of molecular marker data show that the spring bread wheats have a wide spectrum of genetic variation.

For further information, please refer to:

Genetic mapping of 66 new microsatellite (SSR) loci in bread wheat

Theor Appl Genet (2002) 105: 413-422 DOI 10.1007/s00122-002-0865-9

P.K. Gupta, H.S. Balyan, K.J. Edwards, P. Isaac, V. Korzun, M. Ruder, M.-F. Gautier, P. Joudrier, R. Schlatter, J. Dubcovsky, R..C. De la Pena, M. Khairallah, G. Penner, M.J. Hayden, P. Sharp, B. Keller, R.C.C. Wang, J.P. Hardouin, P. Jack, P. Leroy.

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