

Course on Cassava Genetic Resources and their Manipulation for Crop Improvement. By Prof. Nagib M. A. Nassar

Location: Piracicaba, Brasil

Date: 8 - 9 September 2008

Organisation: [ESALQ](#)

The first part of the course will deal with the genetic resources principles and foundations; history; the Vavilov concept and its revision by Harlan; conservation methods and dynamics; origin of agriculture; and sources of variation and domestication.

The second section of the course will look at examples of cassava; the geographic distribution of cassava species and their genetic diversity and center of origin; manipulation of cassava wild species by interspecific hybridisation (breaking barriers to crosses, gene markers, polyploidization, chimeras, meiotic restitutioin, induction of aneuploids, and production of high protein content hybrids. Induction of apomixis and development of apomictic clones); and selection of indigenous cultivars rich in carotenoids.

Registration details

Contact prof. Paulo Kageyama, email kageyama@esalq.usp.br, Dept. Florestal, ESALQ.

see events www.scidev.net

Recommended Bibliografia :

- NASSAR, N.M.A 1978a Conservation of the genetic resources of cassava (*Manihot esculenta* Crantz): Determination of wild species localities with emphasis on probable origin. *Economic Botany*, 32:311-20.
- NASSAR, N.M.A. 1978b. Genetic resources of cassava: Chromossome Behaviour in some *Manihot* species. *Ind. J. Genet.* 38(1): 135-137 .
- NASSAR, N.M.A.1978c Hydrocyanic acid content in some wild *Manihot* (cassava) species. *Can.J. Plant Sci,* 58: 577-8.
- NASSAR, N.M.A. 1978d Microcenters of wild cassava *Manihot* spp. diversity in central Brazil. *Turrialba,* 28(4): 345-7.
- NASSAR, N.M.A 1978e. Some further species of *Manihot* with potential value to cassava breeding. *Can.J.Plant Sci,* 58: 915-916 .
- NASSAR, N.M.A 1978f. Wild *Manihot* species of central Brazil for cassava breeding. *Can. J. Plant.,* *Sci,* 58: 257-61.
- NASSAR, N.M.A. 1979a A study of the collection and maitainance of the germplasm of wild cassavas. *Manihot spp.* *Turrialba,* 29(3): 221.

- NASSAR, N.M.A. 1979b Three brazilian *Manihot* species with tolerance to stress conditions. *Can. J. Plant sci.*, 59: 533-55.
- NASSAR, N.M.A. 1980a. Attempts to hybridize wild *Manihot* species with cassava. *Econ. Bot.*, 34(1):13-15.
- NASSAR, N.M.A. 1980b. The need for germplasm conservation in wild cassava. *Ind. J. Genet.* 39(3): 465-470 .
- NASSAR, N.M.A. 1981. Interspecific *Manihot* grafting: A way to maintain wild cassava, *Manihot* spp. in living collections. *Ciência e cultura*, 33(3): 414-416 .
- NASSAR, N.M.A. 1982. Collecting wild cassava in Brazil. *Ind. J. Genet.*, 42: 405-411 .
- NASSAR, N.M.A., Pio, R. 1983. A quebra da dormência da semente das espécies selvagens da Mandioca, *Manihot* spp. *Ciência e Cultura*, 35(5): 630-632 .
- NASSAR, N.M.A.1984.Natural hybrids between *Manihot* reptans Pax and *M. alutacea* Rogers & Appan. *Can. J. Plant Sci.*, 64: 423-425 .
- NASSAR, N. M. A.1985. *Manihot neusana* Nassar: A new species native to Paraná, Brazil. *Can. J. Plant Sci.*, 65: 1097-100.
- NASSAR, N.M. A . 1986 c.Genetic variation of wild *Manihot* species native to Brazil and its potential for cassava improvement. *Field Crops Research*, 13:177-84.
- NASSAR. N.M.A.; GRATTAPAGLIA, D. 1986e.Variabilidade de clones de mandioca em relação a fertilidade e aspectos morfológicos. *Turrialba*, 36(4): 555-559 .
- NASSAR, N. M. A. 1989. Broadening the genetic base of cassava, *Manihot esculenta* Crantz by interspecific hybridization. *Can. J. Plant Sci.* 69: 1071-1073.
- NASSAR, N.M . A. 1991. Production of triploid cassava, *Manihot esculenta* Grantz by hybrid diploid gametes. *Field Crops Research*, 13: 173-82.
- NASSAR, N.M.A. and Costa C.P. Tuber formation and protein content in some wild cassava (mandioca) species native to Central Brazil. *Experientia*, 33: 1304-1306.
- NASSAR, N.M.A & DOREA G. 1982. Protein contents of cassava cultivars and its hybrid with *Manihot* species. *Turrialba*, 32(4):429-32.
- NASSAR, N.M.A. & O'HAIR, S. K. 1985. Variation among clones in relation to seed germination. *Indian J. Genet.*, 45:429-32.
- NASSAR, N. M. A., da SILVA, J. R. and VIEIRA, C. 1985. Hibridação interespecífica entre mandioca e espécies silvestres de *Manihot* Adans. *Ciência e Cultura* 38: 1050-1055.
- COSTA, L.R.; NASSAR, N.M.A.; PERIM, S. 1984. Padrão de crescimento de raízes e partes aéreas da mandioca, *Manihot esculenta* Crantz. *Turrialba*. 34: 530-531
- GRATTAPAGLIA, D.E.; NASSAR,N.M.A.;DIANESE, J. Biossistêmática de espécies brasileiras do Gênero *Manihot* baseada em padrões de proteína da semente. *Ciência e Cultura*. 1.6.: 168-171 .
- NASSAR, N.M.A. 1992. Cassava in South America: A plant breeder viewpoint. *Ciência e Cultura*. 44:25-27.NASSAR, N. M. A. 1994. Selection and development of cassava apomictic clones. *Ciência e Cultura* 41: 168-171 .
- NSSAR N.M.A.; NASSAR HALA, N.M.; VIEIRA, C.; SARAIVA S.L. 1995. Cytogenetic behavior of interspecific hybrids of cassava and *M. neusana* Nassar. *Canj. J. Sci.*, 75: 675-678 .
- NASSAR N.M.A.; NASSAR HALA, N.M.; CARVALHOC A.; VIEIRA, C. 1996. Inducion of a productive aneuploid in cassava, *M. esculenta* Crantz. *Braz. J. Genet* 19: 123-125 .
- VASQUEZ, N.; NASSAR N.M.A. 1994. Unreduced microspores in cassava, *Manihot esculenta* Crantz clones. *Turrialba*. 52: 436-411 .

- NASSAR, N.M.A.; CARVALHO C.G.; VIEIRA,C. 1996. Overcoming barriers between cassava *Manihot esculenta* Crantz and wild relative. *M. pohlii* Warwa. *Braz. J. Genet.* 19: 617-620 .
- NASSAR, N.M.A.; FREITAS ,M. 1997. Prospects of polyploidizing cassava. *Manihot esculenta* Crantz, by unreduced microspores. *Plant Breeding.* 116: 195-197 .
- NASSAR, N. M. A. 1997. Development of cassava interspecific hybrids for savanna conditions. *J. Root Crops* 22:9-17.
- NASSAR, N.A.; VIEIRA, M.A., VIEIRA, C. & GRATTAPAGLIA, D. 1998. Molecular and embryonic evidence of apomixis in cassava (*Manihot esculenta* Crantz). *Euphytica.* 102:9-13.
- NASSAR, N.M.A. 1999. Cassava, *Manihot esculenta* Crantz genetic resources: Their collection, evaluation, and manipulation. *Advances in Agronomy* 69: 179-230 .
- NASSAR, N.M.A. Wild Cassava, *Manihot* spp. Biology and potentialities for genetic improvement. 2000. *Genet. & Mol. Biol.* 23: 201-212 .
- NASSAR, N.M.A. ,E. dos Santos, S.David2001. The transference of Apomixis genes from *Manihot Neusana* Nassar to cassava, *M. esculenta* Crantz. *Hereditas* 132: 167-170 .
- NASSAR, N.M.A. 2002a Cytogenetics and Evolution of cassava (*M. esculenta* Crantz). *Genetics and Molecular Biology* 23:4,1003-1014.
- NASSAR, N.M.A. 2002b The nature of apomixis in cassava (*M. esculenta* Crantz). *Hereditas* 134: 185-187 .
- NASSAR, N. M. A. 2003a. Cassava, *Manihot esculenta* Crantz and wild relatives: Their relationship and evolution. *Genetic Resources and Crop Evaluation* 48: 429-436 ..
- NASSAR, N. M. A 2003c Cassava , *Manihot esculenta* Crantz genetic resources IV Anatomy of diversity center. *Genetics and Molecular Research* 2:2-5-218.
- NASSAR, N. M. A 2003d. Gene flow between cassava *Manihot esculenta* Crantz and its wild relatives .*Genetics ad Molecular Research* 2: 334-347 .
- NASSAR, N. M. A 2004a. Polyploidy, chimeras and fertility of interspecific cassava hybrids. *The Indian J. Genet.&Plant Breed.* 64: 132-134 .
- NASSAR, N. M. A 2004b Cassava: Some considerations on its ecology and improvement. *Journal of Food, Agriculture, and Environment* 2: 167-173 .
- NASSAR, N. M. A 2005a. Cassava genetic resources extinct in Brazil. *Genetic resources and crop evolution* 51:1-8.
- NASSAR, N. M. A and R. Collevatti 2005b. Microsatellite markers confirm high apomixis level in cassava inbred lines. *Hereditas* 142:1-5.
- NASSAR, N. M. A. (2006). The synthesis of a new cassava-derived species *Manihot vieiri* Nassar. *Genet. and Mol. Res.* 5: 536-541 .
- NASSAR, N. M. A. (2005). Chromosome doubling induces apomixis in cassava x *Manihot anomala* hybrid. *Hereditas* 143:1-15
- MASSAR, N. M. A. 2007. Cassava improvement: . Challenges and impact. *Journal of Agricultural Science* 145: 1-9.
- Wild and Indigenous cassava diversity: An untapped genetic resources. *Genet. Resour Crop Evol.* 54:1523-1530.
- NASSAR, N. M. A . Wild and indigenous cassava diversity :an untapped genetic resources. *Genetic Resources and Crop Evolution*, v. 54, p. 01-10, 2007.
- NASSAR, N. M. A ; C.Vizzotto ; C.Schwartz ; pires junior . Cassava diversity in Brazil:the case of carotenoid-rich landraces. *Genetics and Molecular Research*, v. 06, p. 116-121 , 2007.

- NASSAR, N. M. A. ; Kalkmann, D. ; Rosane Collevatti . A further study of microsatillite on apomixis in cassava. *Hereditas* (Lund), v. 144, p. 01-04, 2007.
- NASSAR, N. M. A. ; SOUZA, M. . Amino acid profile in cassava and its interspecific hybrid. *Genetics and Molecular Research*, v. 06, p. 192-197 , 2007.
- NASSAR, N. M. A. ; RIBEIRO, D. G. ; FERNANDES, S. . Anatomical alterations due to polyploidy in cassava,*Manihot esculenta* Crantz. *Genetics and Molecular Research*, v. 07, p. 276-283 , 2008.
- NASSAR, N. M. A. ; Ortiz, R . Cassava genetic resources: Manipulation for crop improvement. *Plant Breeding Reviewes*, v. 31, p. 01-50, 2008.