

# Bibliographie

## *L'amélioration des plantes : de la domestication à la transgénèse,*

André GALLAIS

- BOULAIN J., 1992. *Histoire de l'agronomie en France*. Paris, Tec-Doc Lavoisier, 392 p.
- GALLAIS A., 2000. « Évolution des outils de l'amélioration des plantes : de la sélection généalogique à la transgénèse ». *C.R. Acad. Agric. Fr.*, 86, 13-26.
- GALLAIS A., 2002. « Progrès génétique chez le maïs ». *Le Sélectionneur français*, 53, 23-34.
- GALLAIS A., 2005. « Progrès réalisés en amélioration des plantes et agriculture durable ». Communication séance Académie d'agriculture de France, 01/05/2005.
- GALLAIS A., 2009. *Hétérosis et variétés hybrides en amélioration des plantes*. Versailles, Éd. Quae, 356 p.
- LE BUANEC B., 2002. « La transgénèse végétale en agriculture ». In *Les Plantes génétiquement modifiées*. Paris, Acad. Sci., Lavoisier, pp. 96-115.
- SHULL G.H., 1908. « The composition of a field of maize ». *Amer. Breed Assoc. Rep.*, IV, 296-301.
- TROTTE M., 2002. « Progrès génétique chez le blé ». *Le Sélectionneur français*, 53, 3-18.
- VILMORIN L. de, 1856. « Note sur la création d'une nouvelle race de betterave à sucre. Considérations sur l'hérédité des végétaux ». *C.R. Acad. Sci.*, XLIII, 18, 871-874.

## *Les complexes d'espèces et les flux de gènes entre les espèces sauvages et cultivées,*

Agnès RICOCH, Thierry ROBERT, Yann DUSSERT,  
Ghayas LAKIS et Claude FOURY

- ALLINNE C., MARIAC C., VIGOUROUX Y., BEZANÇON G., COUTURON E., MOUSSA D., TIDJANI M., PHAM J.L., & ROBERT T., 2008. « Role of seed flow on the pattern and dynamics of pearl millet (*Pennisetum glaucum* [L.] R. Br.) genetic diversity assessed by AFLP markers : a study in south-western Niger ». *Genetica*, 133, 167-178.
- ANDERSSON M.S., DE VICENTE M.C., 2010. *Gene flow between crops and their wild relatives*. The Johns Hopkins University Press.
- ARNAUD J.-F., FÉNART S., CORDELLIER M., & CUGUEN J., 2010. « Populations of weedy crop-wild hybrid beets show contrasting variation in mating system and population genetic structure ». *Evolutionary Applications*, 3, 305-318.
- AUROI C., 1996. « La pomme de terre au Pérou ». In P. ROUSSELLE, Y. ROBAT et J.C. CROSVRIER, ITP. *La Pomme de terre*. Éd. de l'INRA. 563-577.
- BURGER J.C., CHAPMAN M.A., & BURKE J.M., 2008. « Molecular insights into the evolution of crop plants ». *American Journal of Botany*, 95 (2), 113-122.

- CHAIR H., CORNET D., DEU M., BACO M.N., AGBANGLA A., DUVAL M.F., & NOYER J.L., 2010. « Impact of farmer selection on yam genetic diversity ». *Conserv. Genetics*, 11 (6), 2255-2265.
- CHÈVRE A.M., EBER F., BARANGER A., & RENARD M., 1997. « Gene flow from transgenic crops ». *Nature*, 389, 924.
- COLBACH N., DARMENCY H., & TRICAULT Y., 2010. « Identifying key life-traits for the dynamics and gene flow in a weedy crop relative : sensitivity analysis of the GENESYS simulation model for weed beet ». *Ecological Modelling*, 221, 225-237.
- COLBACH N., MONOD H., & LAVIGNE C., 2009. « A simulation study of the effects of field patterns on cross-pollination rates in oilseed rape ». *Ecological Modelling*, 220, 662-672.
- DALTON R.R., 2008. « Modified genes spread to local maize ». *Nature*, 456, 149.
- DANIELS R., BOFFEY C., MOGG R., BOND J., & CLARKE R., 2005. « The potential for dispersal of herbicide tolerance genes from genetically-modified, herbicide-tolerant oilseed rape crops to wild relatives ». In CEH Dorset. Winfrith Technology Centre. Dorchester.
- DOEBLEY J.F., 1990. « Molecular evidence and the evolution of maize ». *Econ. Bot.*, 44 (3) supplement, 6-27.
- ELIAS M., PENET L., VINDRY P., MCKEY D., PANAUD O., & ROBERT T., 2001. « Unmanaged sexual reproduction and the dynamics of genetic diversity of a vegetatively propagated crop plant, cassava (*Manihot esculenta* Crantz) in a traditional farming system ». *Mol Ecol.*, 10, 1895-1907.
- ELLSTRAND, N.C., 2003. *Dangerous Liaisons ? When Cultivated Plants Mate with Their Wild Relatives*. Johns Hopkins University Press, Baltimore, MD.
- FITZFOHN R.G., ARMSTRONG T.T., NEWSTROM-LLOYD L.E., WILTON A.D., & COCHRANE M., 2007. « Hybridisation within *Brassica* and allied genera : evaluation of potential for transgene escape ». *Euphytica*, 158, 209-230.
- FORD C.S., ALLAINGUILLAUME J., GRILLI-CHANTLER P., CUCCATO G., ALLENDER C.J., & WILKINSON M.J., 2006. « Spontaneous gene flow from rapeseed (*Brassica napus*) to wild *Brassica oleracea* ». *Proc. R. Soc. B*, 273, 3111-3115.
- GUADAGNUOLO R., CLEGG J., & ELLSTRAND N.C., 2006. « Relative fitness of transgenic vs. non-transgenic maize x teosinte hybrids : a field evaluation ». *Ecol. Appl.*, 16 (5), 1967-1974.
- HARLAN J.R., 1971. « Agricultural origins : Centers and noncenters ». *Science*, 174, 468-474.
- HAWKES, 1990. *The Potato, evolution diversity and genetic resources ?*. Belhaven Press, London.
- HYMOWITZ T., 1970. « On the domestication of the soybean ». *Economic Botany*, 24, 408-421.
- JORGENSEN R.B., 2007. « Oilseed rape : co-existence and gene flow from wild species ». *Advances in Botanical Research*, 45, 451-463.
- KERLAN M.C., CHÈVRE A.M., & EBER F., 1993. « Interspecific hybrids between a transgene rapeseed (*Brassica napus*) and related species : cytogenetical characterization and detection of the transgene ». *Genome*, 36 (6), 1099-1106.
- LÉOTARD G., DUPUTIÉ A., KJELLBERG F., DOUZERY E.J.P., DEBAIN C., DE GRANVILLE J.J., & MCKEY D., 2009. « Phylogeography and the origin of cassava : new insights from the northern rim of the Amazonian basin ». *Molecular Phylogenetics and Evolution*, 53, 329-334.
- MARIAC C., ROBERT T., ALLINNE C., REMIGEREAU M.S., LUXEREAU A., TIDJANI M., SEYNI O., BEZANÇON G., PHAM J.L., & SARR A., 2006. « Genetic diversity and gene flow among pearl millet crop/weed complex : a case study ». *Theoretical and Applied Genetics*, 113, 1003-1014.

- MUSTONEN L., PELTONEN-SAINIO P., & PAHKALA K., 2009. « Risk assessment for volunteer and seedling GM potatoes in the northernmost European growing areas ». *Acta Agriculturae Scandinavica, Section B - Plant Soil Science*, 59, 552-558.
- NAKAYAMA Y., & YAMAGUCHI H., 2002. « Natural hybridization in wild soybean (*Glycine max* ssp. *soja*) by pollen flow from cultivated soybean (*Glycine max* ssp. *max*) in a designed population ». *Weed Biology and Management*, 2 (1), 25-30, 189-196.
- OLSEN K.M., 2004. « SNPs, SSRs and inferences on cassava's origin ». *Plant Molecular Biology*, 56, 517-526.
- PERNÈS J., 1984. *Gestion des ressources génétiques des plantes*. Éd. Agence de coopération culturelle et technique.
- PIERRE J., 2010. « Review of 30 years of research conducted in France on pollination of oilseed rape ». *OCL - Oléagineux, Corps gras, Lipides*, 17 (3), 121-126.
- PUJOL B., P. DAVID, & MCKEY D., 2005. « Microevolution in agricultural environments : how a traditional farming practice favors heterozygosity in cassava (*Manihot esculenta* Crantz, Euphorbiaceae) ». *Ecology Letters*, 8, 138-147.
- RAPP R.A., HAIGLER C.H., FLAGEL L., HOVAV R.H., UDALL J.A., & WENDEL J.F., 2010. « Gene expression in developing fibres of Upland cotton (*Gossypium hirsutum* L.) was massively altered by domestication ». *BMC Biology*, 8, 139.
- RICROCH A., BERGÉ J.B., & MESSÉAN A., 2009. « Literature review on the dispersal of transgenes from genetically modified maize. Revue bibliographique sur la dispersion des transgènes à partir du maïs génétiquement modifié ». *Comptes rendus - Biologie, Académie des sciences*, 332 (10), 861-875.
- ROBERT T., MARIAC C., ALLINNE C., KAIROU A., BEIDARI Y., BEZANÇON G., COUTURON E., MOUSSA D., SASOU M.S., SEYDOU M., SEYNI O., TIDJANI M., & LUXEREAU A., 2005. « Gestion des semences et dynamiques des introgressions entre variétés cultivées et formes domestiques et spontanées des mils (*Pennisetum glaucum* ssp. *glaucum*) au Sud-Niger ». *Les Actes du BRG*, 5, 555-573.
- SCARCELLI N., TOSTAIN S., VIGOUROUX Y., AGBANGLA C., DAINOU O., & PHAM J.L., 2006. « Farmers' use of wild relative and sexual reproduction in a vegetatively propagated crop. The case of yam in Benin ». *Mol. Ecol.*, 15, 2421-2431.
- SCURRAH M., CAROLINA M., CELIS-GAMBOA M., CHUMBIAUCA S., SALAS A., & VISSER R.G.F., 2008. « Hybridization between wild and cultivated potato species in the Peruvian Andes and biosafety implications for deployment of GM potatoes ». *Euphytica*, 164 (3), 881-892.
- STRASBURG J.L., RIESEBERG L.H., 2008. « Molecular demographic history of the annual sunflower *Helianthus annuus* and *H. petiolaris*. Large effective population size and rates of long term gene flow ». *Evolution*, 62 (8), 1936-1950.
- U N., 1935. « Genome analysis in *Brassica* with special reference to the experimental formation of *B. napus* and peculiar mode of fertilization ». *Japanese Journal of Botany*, 7, 389-452.
- VAN DEYNZE A.E., HUTMACHER R.B., & BRADFORD K.J., 2011. « Gene Flow between *Gossypium hirsutum* L. and *Gossypium barbadense* L. is Asymmetric ». *Crop Science*, 51, doi: 10.2135/cropsci2010.04.0213.
- VAVILOV N.I., 1926. *Studies on the origin of cultivated plants*. Institut de botanique appliquée et d'amélioration des plantes, Leningrad.
- VERNIER P., ORKWOR G., & DOSSOU R.A., 2003. « Studies on yam domestication and farmers' practices in Benin and Nigeria ». *Outlook Agric*, 32 (1), 35-41.

- WANG K.-J., LI X.H., ZHANG J.-J., CHEN H., ZHANG Z.-L., & GUO-DONG Y., 2010. « Natural introgression from cultivated soybean (*Glycine max*) into wild soybean (*Glycine soja*) with the implications for origin of populations of semi-wild type and for biosafety of wild species in China ». *Genetic resources and crop evolution*, 57 (5), 747-761.
- WENDEL J.F., & CRONN R.C., 2002. « Polyploidy and the evolutionary history of cotton ». *Adv. Agron.*, 87, 139-186.
- WILKINSON *et al.*, 2003. « Hybridization between *Brassica napus* and *B. rapa* on a national scale in the United Kingdom ». *Science*, 302, 457-459.
- ZOUNDJIHEKPON J., HAMON S., TIO-TOURE B., & HAMON P., 1994. « First controlled progenies checked by isozymic markers in cultivated yams *Dioscorea cayenensis-rotundata* ». *Theor. Appl. Genet.*, 88, 1011-1016.

### *Les ressources génétiques et la diversité génétique des variétés végétales cultivées*, Alain DESHAYES ET Yvette DATTÉE

- BATAILLON T.M., DAVID J.L., & SCHOEN D.J., 1996. « Neutral genetic markers and conservation genetics : Simulated germplasm collection ». *Genetics*, 144, 409-417.
- BÉLIER S. et JOLY E., 2010. « La biodiversité doit devenir un des indicateurs de la richesse et du bien-être ». *Le Monde*, 20 octobre 2010.
- BRG, 2006. *Les Ressources génétiques à l'orée de temps nouveaux*. Éditions BRG, Paris, 43 p.
- BRUSH S.B., 1999. *Genes in the Field: On-Farm Conservation of Crop Diversity*. International Development Research Centre, 300 p.
- BUNTING A.H., 1992. « Genetic resources and society : preservation of genetic resources. A tribute to Jean Pernès ». In *Complexes d'espèces, flux de gènes et ressources génétiques des plantes. Colloque international en hommage à Jean Pernès*. Éd. BRG, p. 413-423.
- Bureau des ressources génétiques  
<http://www.brg.prd.fr/>
- Charte nationale pour la gestion des ressources génétiques, 1998.
- CHEVASSUS-AU-LOUIS B. (dir.), 2009. *Approche économique de la biodiversité et des services liés aux écosystèmes. Contribution à la décision publique*. Centre d'analyse stratégique, Rapports et documents, Services du Premier Ministre, avril 2009, 378 p.
- COME D., et ENGELMANN F., 1989. « L'utilisation du froid pour la conservation à long terme des organes végétaux ». *RGF*, juillet-août 1989, 219-323.
- COSTANZA R. *et al.*, 1997. « The value of the world's ecosystem services and natural capital ». *Nature*, 387, 253-260.
- CRANNEY J., 1996. *INRA, 50 ans d'un organisme de recherche*. Éditions INRA, 526 p.
- DATTÉE Y. *et al.*, 2010. « André Cauderon et les ressources génétiques ». *C.R. Acad. Agric. Fr.*, 96 (3), 133-140.
- DAVID J.L. *et al.*, 1992. « Méthode de gestion dynamique de la variabilité génétique. Exemple d'un réseau expérimental de populations composites de blé tendre ». In *Complexes d'espèces, flux de gènes et ressources génétiques*. Éditions BRG, Paris, p. 337-350.
- ENGELMANN F., 2009. « Biotechnologies et conservations phytogénétiques ». *Cahiers Agricultures*, 18 (6), 481-485.
- FAO, 1983. Résolution 9/83 de la Conférence de la FAO de 1983 (novembre 1983) : création d'une commission des ressources phytogénétiques.

- FAO, 2004. Traité international sur les ressources génétiques des plantes.  
<http://www.fao.org/ag/cgrfa/French/itpgr.htm>
- FAO, 2009. Traité international sur les ressources phytogénétiques pour l'alimentation et l'agriculture.
- FIRBANK L.G. *et al.*, 2003. *An introduction to farm scale evaluations of genetically modified herbicide tolerant crops.*
- FIRBANK L.G. *et al.*, 2003. *The implication of spring sown genetically modified herbicide tolerant crops for farmland biodiversity : a commentary on the farm scale evaluations of spring sown crops.*  
<http://www.defra.gov.uk/environment/gm/fse/results/fse-commentary.pdf>
- Fondation pour la recherche sur la biodiversité.  
<http://www.fondationbiodiversite.fr>
- FOOLAD M.R., ZHANG L.P., and LIN G.Y., 2001. « Identification and validation of QTLs for salt tolerance during vegetative growth in tomato by selective genotyping ». *Genome*, 44 (3), 444-454.
- FRANKEL O.H., 1967. *Crop genetic resources for today and tomorrow.* Cambridge University Press.
- FU Y.B., 2006. « Impact of plant breeding on genetic diversity of agricultural crops : searching for molecular evidence ». *Plant Genet. Resour.*, 4 (71), 71-78
- GASS T., 1998. « La conservation des ressources phytogénétiques : une préoccupation internationale ». *Biotechnol. Agron. Soc. Environ.*, 2 (1), 7-14.
- Greenpeace, 2002. « La pollution génétique, un cauchemar qui s'étend ». Note, février 2002.
- GRIFFON M., 2006. *Nourrir la planète.* Odile Jacob, 431 p.
- HAMON S., et NOIROU M., 1991. « Some proposed procedures for obtaining a core collection using plant characterization data ». IBPGR, Report of an international workshop on okra genetic resources. *International Crop Network series*, 5, 89-94.
- HAMON S. *et al.*, 1998. « Les biotechnologies pour l'amélioration des caféiers et la valorisation de leurs ressources génétiques ». *Cahiers Agricultures*, 7 (6), 480.
- JAMES C., 2009. « Global Status of Commercialized Biotech/GM Crops : 2009. The first fourteen years, 1996 to 2009 ». *ISAAA Brief 41.*
- JOSHI K.D., & WITCOMBE J.R., 2003. « The impact of participatory plant breeding (PPB) on land-race diversity : a case study for high-altitude rice in Nepal ». *Euphytica.*, 134 (1), 117-125.
- LE BUANEC B., 2010. « Évolution de la diversité génétique des variétés commercialisées chez différentes espèces de grande culture ». *ASF*, Versailles, 4 février 2010, 8 p.
- LEFORT M. *et al.*, 1998. « La gestion des ressources génétiques en France ». *Biotechno. Agron. Soc. Environ.*, 1, 16-26.
- LE GUYADER H., 2008. « La biodiversité : un concept flou ou une réalité scientifique ». *Le Courrier de l'Environnement*, (55), 7-26.
- Global crop diversity trust. A foundation for food security.  
<http://www.croptrust.org/main/>
- MARRIS E., 2009. « Putting a price on nature ». *Nature*, 462, 270-271.
- PAILLOTIN G., 2000. *L'Agriculture raisonnée.* Rapport au ministre de l'Agriculture et de la Pêche, 57 p.
- Parlement européen, 2010. Résolution du 21 septembre 2010 sur la mise en œuvre de la législation européenne visant la protection de la biodiversité (2009/2118 (INI)).
- PAVÉ A. *et al.*, 2009. « La question de la biodiversité, 2010, L'année internationale de la biodiversité ». Note de l'Académie des technologies. 9/12/2009, 22 p.

- PELLETIER G., 2010. « La biodiversité est-elle importante pour l'alimentation humaine (production agricole, ressources marines) ? ». In *Libres points de vue d'académiciens sur la biodiversité*. Institut de France, Académie des sciences. 22 juillet 2010.
- PRIMAR C. *et al.*, 1988. « Interspecific somatic hybridization between *Brassica napus* and *Brassica hirta* (*Sinapis alba*) ». *Theor.Appl. Genet.*, 75, 546-552.
- QUIST D., & CHAPELA I.H., 2001. « Transgenic DNA introgressed into traditional maize landraces in Oaxaca, Mexico ». *Nature*, (414), 541-543.
- RANDS M.R.W. *et al.*, 2010. « Biodiversity conservation. Challenges beyond 2010 ». *Science*, (329), 1298-1303.  
<http://www.sciencemag.org/cgi/content/abstract/329/5997/1298?rss=1>
- SMALE M., 1995. « Ongoing Research at CIMMYT : Understanding Wheat Genetic Diversity and International Flows of Genetic Resources ». In: *Part 1 of CIMMYT World Wheat Fact and Trends, Supplement*. Mexico.
- STEELE, K.A., *et al.*, 2009. « Has the introduction of modern rice varieties changed rice genetic diversity in a high-altitude region of Nepal ? ». *Field Crops Research*, 113 (1), 24-30.
- SURDEV P., 2010. *L'Économie de la biodiversité et des services écosystémiques*. Communautés européennes, 2008, et Convention on Biological Diversity, Nagoya, Session 1- TEEB 4Me, october 26 2010.  
<http://www.cbd.int/doc/newsletters/news-biz-2008-04/?articleid=142>  
[www.cbd.int/cooperation/pavilion/pavilion-news-digest-2010-10-26-en.pdf](http://www.cbd.int/cooperation/pavilion/pavilion-news-digest-2010-10-26-en.pdf)
- UNEP & CBD, 1992. « La convention sur la diversité biologique ». Juin 1992.
- UNEP & CBD, 2000. « Protocole de Cartagena sur la prévention des risques biotechnologiques relatifs à la convention sur la biodiversité biologique ». Textes et annexes, Montréal.  
<http://www.biodiv.org>
- UNEP & CBD, 2010. « Report of the fifth meeting of the conference of the parties to the convention on biological diversity serving as meeting of the parties to the Cartagena protocol on biosafety ». UNEP/CBD/BS/COP-MOP/5/17, Nagoya, Japan, 11-15 October 2010.  
<http://www.cbd.int/doc/?meeting=mop-05>

***Comment protéger les innovations végétales***, Bernard LE BUANEC  
 et Agnès RICOCH

International Seed Federation, 2010. [www.worldseed.org/isf/seed\\_statistics.html](http://www.worldseed.org/isf/seed_statistics.html).

***Les biotechnologies de culture in vitro en amélioration des plantes***,  
 Évelyne TÉOULÉ

- BELLIARD G., VEDEL F. & PELLETIER G., 1979. « Mitochondrial recombination in cytoplasmic hybrids of *Nicotiana* by protoplast fusion ». *Nature*, 281, 401-403.
- BOURGIN J.-P. & NITSCH J.-P., 1967. « Obtention de *Nicotiana* haploïdes à partir d'étamines cultivées *in vitro* ». *Annales de physiologie végétale*, 9, 377-382.

- CHUPEAU M.C., MAISONNEUVE B., BELLEC Y. & CHUPEAU Y., 1994. « A Lactuca Universal Hybridizer, and its use in creation of fertile interspecific somatic hybrids ». *Molecular and General Genetics*, 245, 139-145
- DAMBIER D., BENYAHIA H., PENSABENE-BELLAVIA G., AKA KAÇAR Y., FROELICHER Y., BELFALAH Z., LHOUB., HANDAJI N., PRINTZ B., MORILLON R., YESILOGLU T., NAVARRO L. & OLLITRAULT P., 2011. « Somatic hybridization for citrus rootstock breeding : an effective tool to solve some important issues of the Mediterranean citrus industry ». *Plant Cell Reports, Special issue : Plant Biotechnology in Support of the Millennium Development Goals*. On line Jan. 12, 2011.
- DOBRAŃSKI J. & DA SILVA J.A., 2010. « Micro propagation of apple. A review ». *Biotechnology Advances*, 28 (4), 462-488.
- DUMAS DE VAULX R. & POCHARD E., 1974. « Essai d'induction de la parthénogénèse haploïde par action du protoxyde d'azote sur les fleurs de piment (*Capsicum annuum* L.) ». *Annales de l'amélioration des plantes*, 24, 283-306.
- GERMANA M.A., 2011. « Anther culture for haploid and doubled haploid production ». *Plant Cell Tissue and Organ Culture*, 104 (3), 283-300.
- GUHA S. & MAHESHWARI S.C., 1964. « *In vitro* production of embryos from anthers of *Datura* ». *Nature*, 204, 497.
- HEBERLE-BORS E., 1998. « Experimental control of pollen development ». In CHUPEAU Y., CABOCHE M. et HENRY Y. (eds). *Androgenesis and Haploid Plants*. Versailles, Springer/INRA Éditions.
- HELGESON J.P., HABERLACH G.T. & EHLENFELDT M.K., 1993. « Sexual progeny of somatic hybrids between potato and *Solanum brevidens*. Potential for use in breeding programs ». *American Potato Journal*, 70, 437-452.
- HORLOW C. & RAQUIN C., 1998. « A critical analysis of existing haploidization techniques ». In CHUPEAU Y., CABOCHE M. et HENRY Y. (eds). *Androgenesis and Haploid Plants*. Versailles : Springer/INRA Éditions.
- JOHNSON A.A.T. & VEILLEUX R.E., 2001. « Somatic hybridization and applications in plant breeding ». *Plant Breeding Reviews*, 20, 167.
- KAO K.N., 1977. « Chromosomal behaviour in somatic hybrids of soybean-*Nicotiana glauca* ». *Molecular and General Genetics*, 150, 225-230.
- KASHA K.J. & KAO K.N., 1970. « High frequency haploid production in barley (*Hordeum vulgare* L.) ». *Nature*, 225, 874-876.
- LASHERMES P. & BECKERT M., 1988. « Genetic control of maternal haploidy in maize (*Zea mays* L.) and selection of haploid inducing lines ». *Theoretical and Applied Genetics*, 76, 405-410.
- MADLUNG A., MASUELLI R.W., WATSON B., REYNOLDS S.H., DAVISON J. & COMAI L., 2002. « Remodeling of DNA methylation and phenotypic and transcriptional changes in synthetic Arabidopsis allotetraploids ». *Plant Physiology*, 129 (2), 733-746
- MARGARA J., 1982. *Bases de la multiplication végétative*. Versailles, INRA, 262 p.
- MELCHERS G., SACRISTAN M.D. & HOLDER A.A., 1978. « Somatic hybrids of potato and tomato regenerated from fused protoplasts ». *Carlsberg Research. Communication*, 43, 203-218.
- MOREL G. & MARTIN C., 1952. « Guérison de dahlias atteints d'une maladie à virus ». *Comptes rendus de l'Académie des sciences Paris*, 235, 1324-1325.
- PATI P.K., KAUR N., SHARMA M. & AHUJA P.S., 2010. « *In vitro* propagation of rose ». *Methods in Molecular Biology*, 589, 163-176.

- PELLETIER G., PRIMARD C., VEDEL F., CHÉTRIT P., RÉMY R., ROUSSELLE P. & RENARD M., 1983. « Inter-generic cytoplasmic hybridization in *Cruciferae* by protoplast fusion ». *Molecular and General Genetics*, 191, 244-250.
- PELLETIER G., 1998. « Use of haplo-diploidisation for plant breeding ». In CHUPEAU Y., CABOCHE M. & HENRY Y. (eds). *Androgenesis and Haploid Plants*. Versailles, Springer/INRA Éditions.
- PENNAZIO S., 1997. « History of plant viral diseases ». *Rivista di Biologia/biology forum*, 90, 67-82.
- RAQUIN C., 1985. « Induction of haploid plants by *in vitro* culture of *Petunia* ovaries pollinated with irradiated pollen ». *Zeitschrift für Pflanzenzüchtung*, 94, 166-169.
- RAQUIN C., 1984. *Étude de l'androgénèse de Petunia hybrida (hort.) et recherche de conditions d'obtention de plantes haploïdes*. Thèse d'État. Orsay, 138 p.
- SAN NOEUM L.H., 1976. « Haploïdes d'*Hordeum vulgare* L. par culture *in vitro* d'ovaires non fécondés ». *Annales de l'amélioration des plantes*, 26, 751-754.
- STEWART E., MAPES M.O. & MEARS K., 1958. « Growth and organized development of cultured cells ». *American Journal of Botany*, 45, 705-708.
- TÉOULÉ É., 1983. « Hybridation somatique entre *Medicago sativa* L et *Medicago falcata* L ». *Comptes rendus de l'Académie des sciences Paris*, 297, 13-16.
- WAARA S. & GLIMELIUS K., 1995. « The potential of somatic hybridization in crop breeding ». *Euphytica*, 85, 217-233.
- WENZEL G., 1980. « Protoplast techniques incorporated in breeding programs ». In FERENCZY L. & FARKAS G.L. (eds). *Advances in Protoplast Research*. Oxford, Pergamon Press. 327-340.

### *La transgénèse végétale*, Georges PELLETIER

- BECHTOLD N., ELLIS S. & PELLETIER G., 1993. « *In planta Agrobacterium* mediated gene transfer by infiltration of adult *Arabidopsis thaliana* plants ». *Comptes rendus de l'Académie des sciences Paris, Life Science*, 316, 1194-1199.
- BEVAN M., 1984. « Binary *Agrobacterium* vectors for plant transformation ». *Nucleic Acids Research*, 12, 8711-8721.
- CHILTON M.D., DRUMMOND M., MERLO D., SCIACY D., MONTOYA A., GORDON M. & NESTER E., 1977. « Stable incorporation of plasmid DNA into higher plant cells : the molecular basis of crown gall tumorigenesis ». *Cell*, 11, 263-271.
- CLOUGH S.J. & BENT A., 1998. « Floral dip : a simplified method for *Agrobacterium*-mediated transformation of *Arabidopsis thaliana* ». *Plant Journal* 16, 735-743.
- D'HALLUIN K., VANDERSTRATEN C., STALS E., CORNELISEN M. & RUITER R., 2008. « Homologous recombination : a basis for targeted genome optimization in crop species such as maize ». *Plant Biotechnology Journal*, 6, 93-102.
- GUYON P., CHILTON M.D., PETIT A. & TEMPÉ J., 1980. « Agropine in «null-type» crown-gall tumors : evidence for generality of the opine concept ». *Proceedings of the National Academy of Sciences USA*, 77, 2693-2697.
- HOYKAAS P. & SCHILPEROORT R., 1992. « *Agrobacterium* and plant genetic engineering ». *Plant Molecular Biology*, 19, 15-38.
- HORSCH R., FRY J., HOFFMANN N., EICHOLTZ D., ROGERS S. & FRALEY R., 1985. « A simple and general method for transferring genes into plants ». *Science*, 227, 1229-1231.



- KEELING P.J. & PALMER J.D., 2008. « Horizontal gene transfer in eukaryotic evolution ». *Nature Reviews Genetics*, 9, 605-618.
- KLEIN T.M., ARENTZEN R., LEWIS P.A. & FITZPATRICK-McELLIOT S., 1992. « Transformation of microbes, plants and animals by particle bombardment ». *Biotechnology*, 10, 286-291.
- LATERROT H. & PHILOUZE J., 2003. « Tomates ». In *Histoires de légumes. De l'origine à l'orée du XXI<sup>e</sup> siècle*, M. Pitrat & C. Foury (dir.). Paris, INRA Éditions, 266-276.
- MCBRIDE K.E., SVAB Z., SCHAAF D.J., HOGAN P.S., STALKER D.M. & MALIGA P., 1995. « Amplification of a chimeric *Bacillus* gene in chloroplasts leads to an extraordinary level of an insecticidal protein in tobacco ». *Biotechnology*, 13, 362-365.
- PASZKOWSKI J., SHILLITO R.D., SAUL M., MANDAK V., HOHN B. & POTRYKUS I., 1984. « Direct gene transfer to plants ». *EMBO Journal*, 3, 2717-2722.
- RUMPHO M.E., WORFUL J.M., LEE J. *et al.*, 2009. « Horizontal gene transfer of the algal nuclear gene *psbO* to the photosynthetic sea slug *Elysia chlorotica* ». *Proceedings of the National Academy of Sciences USA*, 105, 17867-17871.
- SHUKLA V.K., DOYON Y., MILLER J.C. *et al.*, 2009. « Precise genome modification in the crop species *Zea mays* using zinc-finger nucleases ». *Nature*, 459, 437-441.
- WHITE F., GARFINKEL D., HUFFMAN G., GORDON M. & NESTER E., 1983. « Sequences homologous to *Agrobacterium rhizogenes* T-DNA in the genomes of uninfected plants ». *Nature*, 301, 348-350.
- YOSHIDA S., MARUYAMA S., NOZAKI H. & SHIRASU K., 2010. « Horizontal gene transfer by the parasitic plant *Striga hermonthica* ». *Science*, 328, 1128.
- ZALE J.M., AGARWAL S., LOAR S. & STEBER C.M., 2009. « Evidence for stable transformation of wheat by floral dip in *Agrobacterium tumefaciens* ». *Plant Cell Reports*, 28, 903-913.
- ZUPAN J. & ZAMBRYSKI P., 1997. « The *Agrobacterium* DNA transfer complex ». *Critical Reviews in Plant Sciences*, 16, 279-295.

### *Le métabolome*, Alain PARIS

- ALI K., MALTESE F., ZYPRIAN E., REX M., CHOI Y.H. & VERPOORTE R., 2009. « NMR metabolic fingerprinting based identification of grapevine metabolites associated with downy mildew resistance ». *J. Agric. Food Chem.*, 57 (20), 9599-9606.
- ALLWOOD J.W., ERBAN A., DE KONING S., DUNN W.B., LUEDEMANN A., LOMMEN A., KAY L., LÖSCHER R., KOPKA J. & GOODACRE R., 2009. « Inter-laboratory reproductibility of fast gas chromatography-electron impact-time of flight mass spectrometry (GC-EI-TOF/MS) based plant metabolomics ». *Metabolomics*, 5 (4) 479-496.
- ALLWOOD J.W. & GOODACRE R., 2010. « An introduction to liquid chromatography-mass spectrometry instrumentation applied in plant metabolomic analyses ». *Phytochem. Anal.*, 21 (1), 33-47.
- ARBONA V., IGLESIAS D.J., TALÓN M. & GÓMEZ-CADENAS A., 2009. « Plant phenotype demarcation using nontargeted LC-MS and GC-MS metabolite profiling ». *J Agric Food Chem*, 57 (16), 7338-7347.
- BAILEY N.J., OVEN M., HOLMES E., NICHOLSON J.K. & ZENK M.H., 2003. « Metabolomic analysis of the consequences of cadmium exposure in *Silene cucubalus* cell cultures via <sup>1</sup>H NMR spectroscopy and chemometrics ». *Phytochemistry*, 62 (6), 851-858.

- BAXTER C.J., REDESTIG H., SCHAUER N., REPSILBER D., PATIL K.R., NIELSEN J., SELBIG J., LIU J., FERNIE A.R. & SWEETLOVE L.J., 2007. « The metabolic response of heterotrophic *Arabidopsis* cells to oxidative stress ». *Plant. Physiol.*, 143 (1), 312-325.
- CATCHPOLE G.S., BECKMANN M., ENOT D.P., MONDHE M., ZYWICKI B., TAYLOR J., HARDY N., SMITH A., KING R.D., KELL D.B., FIEHN O. & DRAPER J., 2005. Hierarchical metabolomics demonstrates substantial compositional similarity between genetically modified and conventional potato crops. *Proc. Nat. Acad. Sci. USA*, 102 (40), 14458-14462.
- COEN M., HOLMES E., LINDON J.C. & NICHOLSON J.K., 2008. « NMR-based metabolic profiling and metabonomic approaches to problems in molecular toxicology ». *Chem. Res. Toxicol.*, 21 (1), 9-27.
- DOBSON G., SHEPHERD T., VERRALL S.R., GRIFFITHS W.D., RAMSAY G., MCNICOL J.W., DAVIES H.V. & STEWART D., 2010. « A metabolomics study of cultivated potato (*Solanum tuberosum*) groups *Andigena*, *Phureja*, *Stenotomum*, and *Tuberosum* using gas chromatography-mass spectrometry ». *J. Agric. Food Chem.*, 58 (2), 1214-1223.
- DOBSON G., SHEPHERD T., VERRALL S.R., CONNER S., MCNICOL J.W., RAMSAY G., SHEPHERD L.V., DAVIES H.V. & STEWART D., 2008. « Phytochemical diversity in tubers of potato cultivars and landraces using a GC-MS metabolomics approach ». *J Agric Food Chem*, 56 (21), 10280-10291.
- DUCRUIX C., JUNOT C., FIÉVET J.B., VILLIERS F., EZAN E. & BOURGUIGNON J., 2006. « New insights into the regulation of phytochelatin biosynthesis in *A. thaliana* cells from metabolite profiling analyses ». *Biochimie*, 88 (11), 1733-1742.
- DUMAS M.E., CANLET C., ANDRÉ F., VERCAUTEREN J. & PARIS A., 2002. « Metabonomic assessment of physiological disruptions using  $^1\text{H}$ - $^{13}\text{C}$  HMBC-NMR spectroscopy combined with pattern recognition procedures performed on filtered variables ». *Anal. Chem.*, 74 (10), 2261-2273.
- FERNIE A.R., TRETHERWEY R.N., KROTZKY A.J. & WILLMITZER L., 2004. « Metabolite profiling: from diagnostics to systems biology ». *Nat. Rev. Mol. Cell. Biol.*, 5 (9), 763-769.
- FIEHN O., KOPKA J., DÖRMANN P., ALTMANN T., TRETHERWEY R.N. & WILLMITZER L., 2000. « Metabolite profiling for plant functional genomics ». *Nat. Biotechnol.*, 18 (11), 1157-1161.
- KANG J., CHOI M.Y., KANG S., KWON H.N., WEN H., LEE C.H., PARK M., WIKLUND S., KIM H.J., KWON S.W. & PARK S., 2008. « Application of a  $^1\text{H}$  nuclear magnetic resonance (NMR) metabolomics approach combined with orthogonal projections to latent structure-discriminant analysis as an efficient tool for discriminating between Korean and Chinese herbal medicines ». *J Agric Food Chem*, 56 (24), 11589-11595.
- KIM H.K. & VERPOORTE R., 2010. « Sample preparation for plant metabolomics ». *Phytochem. Anal.*, 21 (1), 4-13.
- KU K.M., CHOI J.N., KIM J., KIM J.K., YOO L.G., LEE S.J., HONG Y.S. & LEE C.H., 2010. « Metabolomics analysis reveals the compositional differences of shade grown tea (*Camellia sinensis* L.) ». *J. Agric. Food Chem.*, 58 (1), 418-426.
- KUSANO M., FUKUSHIMA A., KOBAYASHI M., HAYASHI N., JONSSON P., MORITZ T., EBANA K. & SAITO K., 2007. « Application of a metabolomic method combining one-dimensional and two-dimensional gas chromatography-time-of-flight/mass spectrometry to metabolic phenotyping of natural variants in rice ». *J. Chromatogr. B. Analyt. Technol. Biomed. Life Sci.*, 855 (1), 71-79.
- LEVANDI T., LEON C., KALJURAND M., GARCIA-CAÑAS V. & CIFUENTES A., 2008. « Capillary electrophoresis time-of-flight mass spectrometry for comparative metabolomics of transgenic versus conventional maize ». *Anal Chem.*, 80 (16), 6329-6335.

- LÊ CAO K.-A., GONZÁLEZ I. & DÉJEAN S., 2009. « integrOmics : an R package to unravel relationships between two omics data sets ». *Bioinformatics*, 25 (21), 2855-2856.
- NAOUMKINA M.A., ZHAO Q., GALLEGU-GIRALDO L., DAI X., ZHAO P.X. & DIXON R.A., 2010. « Genome-wide analysis of phenylpropanoid defence pathways ». *Mol. Plant. Pathol.*, 11 (6), 829-46.
- PRESTES R.A., COLNAGO L.A., FORATO L.A., CARRILHO E., BASSANEZI R.B. & WULFF N.A., 2009. « Nuclear magnetic resonance characterization of metabolite disorder in orange trees caused by citrus sudden death disease ». *Mol. Plant. Pathol.*, 10 (1), 51-7.
- ROESSNER U., LUEDEMANN A., BRUST D., FIEHN O., LINKE T., WILLMITZER L. & FERNIE A., 2001. « Metabolic profiling allows comprehensive phenotyping of genetically or environmentally modified plant systems ». *Plant Cell*, 13 (1), 11-29.
- ROUX A., LISON D., JUNOT C. & HEILIER J.F., 2010. « Applications of liquid chromatography coupled to mass spectrometry-based metabolomics in clinical chemistry and toxicology : a review ». *Clin. Biochem.*, doi:10.1016/j.clinbiochem.2010.08.016.
- SAITO K. & MATSUDA F., 2010. « Metabolomics for functional genomics, systems biology, and biotechnology ». *Annu. Rev. Plant. Biol.*, 61, 463-489.
- SHU X.L., FRANK T., SHU Q.Y. & ENGEL K.H., 2008. « Metabolite profiling of germinating rice seeds ». *J. Agric. Food Chem.*, 56 (24), 11612-11620.
- SHULAEV V., CORTES D., MILLER G. & MITTLER R., 2008. « Metabolomics for plant stress response ». *Physiol. Plant.*, 132 (2), 199-208.
- TIKUNOV Y., LOMMEN A., DE VOS C.H., VERHOEVEN H.A., BINO R.J., HALL R.D. & BOVY A.G., 2005. « A novel approach for nontargeted data analysis for metabolomics. Large-scale profiling of tomato fruit volatiles ». *Plant. Physiol.*, 139 (3), 1125-1137.
- TOHGE T. & FERNIE A.R., 2010. « Combining genetic diversity, informatics and metabolomics to facilitate annotation of plant gene function ». *Nat. Protoc.*, 5 (6), 1210-1227.
- TRYGG J., HOLMES E. & LUNDSTEDT T., 2007. « Chemometrics in metabonomics ». *J. Proteome Res.*, 6 (2), 469-479.
- VESELKOV K.A., LINDON J.C., EBBELS T.M., CROCKFORD D., VOLYNKIN V.V., HOLMES E., DAVIES D.B. & NICHOLSON J.K., 2009. « Recursive segment-wise peak alignment of biological (1)h NMR spectra for improved metabolic biomarker recovery ». *Anal. Chem.*, 81 (1), 56-66.
- WARD J.L., BAKER J.M., MILLER S.J., DEBORDE C., MAUCOURT M., BIAIS B., ROLIN D., MOING A., MOCO S., VERVOORT J., LOMMEN A., SCHÄFER H., HUMPFER E. & BEALE M.H., 2010. « An inter-laboratory comparison demonstrates that [H]-NMR metabolite fingerprinting is a robust technique for collaborative plant metabolomic data collection ». *Metabolomics*, 6 (2), 263-273.
- WECKWERTH W., 2003. « Metabolomics in systems biology ». *Annu. Rev. Plant Biol.*, 54, 669-689.

### *La protéomique des plantes*, Norbert ROLLAND et Marcel KUNTZ

- AGRAWAL G.K., BOURGUIGNON J., ROLLAND N., EPHRITIKHINE G., FERRO M., JAQUINOD M., ALEXIOU K.G., CHARDOT T., CHAKRABORTY N., JOLIVET P., DOONAN J.H. & RAKWAL R., 2011. « Plant organelle proteomics : collaborating for optimal cell function ». *Mass Spectrometry Reviews*, in press PMID: 21038434 (DOI: 10.1002/mas.20301).
- BARROS E.L.S., ANTONEN M.J., VAN DIJK J.P., RÖHLIG R.M., KOK E.J. & ENGEL K.H., 2010. « Comparison of two GM maize varieties with a near-isogenic non-GM variety using transcriptomics, proteomics and metabolomics ». *Plant Biotechnology Journal*, 8, 436-451.

- BATISTA R., MARTINS I., JENO P., RICARDO C.P. & OLIVEIRA M.M., 2007. « A proteomic study to identify soya allergens - the human response to transgenic versus non-transgenic soya samples ». *International Archives of Allergy and Immunology*, 144 (1), 29-38.
- CHEN H.C., BODULOVIC G., HALL P.J., MOORE A., HIGGINS T.J.V., DJORDJEVIC M.A. & ROLFE B.G., 2009. « Unintended changes in protein expression revealed by proteomic analysis of seeds from transgenic pea expressing a bean alpha-amylase inhibitor gene ». *Proteomics*, 9 (18), 4406-4415.
- JOSHI H.J., HIRSCH-HOFFMANN M., BAERENFALLER K., GRUISSEM W., BAGINSKY S., SCHMIDT R., SCHULZE W.X., SUN Q., VAN WIJK K.J., EGELHOFER V., WIENKOOP S., WECKWERTH W., BRULEY C., ROLLAND N., TOYODA T., NAKAGAMI H., JONES A.M., BRIGGS S.P., CASTLEDEN I., TANZ S.K., MILLAR A.H. & HEAZLEWOOD J.L., 2011. « MASC P Gator : An aggregation portal for the visualization of *Arabidopsis* proteomics data ». *Plant Physiology*, 155, 259-270.
- LEHESRANTA SATU J., DAVIES H.V., SHEPHERD L.V.T., NUNAN N., MCNICOL J.W., AURIOLA S., KOISTINEN K.M., SUOMALAINEN S., KOKKO H.I. & KÄRENLAMPI S.O., 2005. « Comparison of Tuber Proteomes of Potato Varieties, Landraces, and Genetically Modified Lines ». *Plant Physiology*, 138, 1690-1699.
- RICROCH A., BERGÉ J.B. & KUNTZ M., 2011. « Evaluation of genetically engineered crops using transcriptomic, proteomic and metabolomic profiling techniques ». *Plant Physiology*, vol. 155. Published on February 24, 2011; 10.1104/pp.111.173609.
- RUEBELT M.C., LIPP M., REYNOLDS T.L., ASTWOOD J.D., ENGEL K.H. & JANY K.D., 2006. « Application of two-dimensional gel electrophoresis to interrogate alterations in the proteome of genetically modified crops. 2 Assessing natural variability ». *Journal of Agricultural and Food Chemistry*, 54 (6), 2162-2168.
- WASINGER V.C., CORDWELL S.J., CERPA-POLJAK A., YAN J.X., GOOLEY A.A., WILKINS M.R., DUNCAN M.W., HARRIS R., WILLIAMS K.L. & HUMPHERY-SMITH I., 1995. « Progress with gene-product mapping of the Mollicutes : *Mycoplasma genitalium* ». *Electrophoresis*, 7 (7), 1090-94.
- WIENKOOP S., BAGINSKY S. & WECKWERTH W., 2010. « *Arabidopsis thaliana* as a model organism for plant proteome research ». *Journal of Proteomics*, 73 (11), 2239-48.

### *Les techniques d'analyse de la structure et du fonctionnement des génomes de plantes*, Michel DELSENY et Michel CABOCHE

- ALONSO J.M., STEPANOVA A.N., LEISSE T.J. *et al.*, 2003. « Genome-Wide Insertional Mutagenesis of *Arabidopsis thaliana* ». *Science*, 301, 653-657.
- ALTSCHUL S.F., MADDEN T.L., SCHAEFFER A.A., ZHANG J., ZHANG Z., MILLER W., LIPMAN, D., 1997. « Gapped BLAST and PSI-BLAST : a new generation of protein database search programs ». *Nucl. Acids Res.*, 25, 3389-3402.
- ARGOUT X., SALSE J., AURY J.M. *et al.*, 2011. « The genome of *Theobroma cacao* ». *Nature Genet.*, 43, 101-108.
- BECHTOLD N., ELLIS J., PELLETIER G., 1993. « *In planta* Agrobacterium mediated gene transfer by infiltration of adult *Arabidopsis thaliana* plants ». *C. R. Acad. Sci. Paris Life Sci.*, 316, 1194-1199.
- CHAN A.P., CRABTREE J., ZHAO Q. *et al.*, 2010. « Draft sequence of the oil seed species *Ricinus communis* ». *Nature Biotechnol.*, 28, 951-959.

- DELSENY M., HAN B., HSING Y.I., 2010. « High throughput DNA sequencing : the new sequencing revolution ». *Plant Sci.*, 179, 407-422.
- GAGNOT S., TAMBY J.-P., MARTIN-MAGNIETTE M.-L. *et al.*, 2008. « CATdb : a public access to Arabidopsis transcriptome data from the URGV-CATMA platform ». *Nucl. Acids Res.*, 36, D986-990.
- HUANG S., LI R., ZHANG Z. *et al.*, 2009. « The genome of the cucumber, *Cucumis sativus* L ». *Nature Genet.*, 41, 1275-1281.
- International Rice Genome Sequencing Project, 2005. « The map-based sequence of the rice genome ». *Nature*, 436, 793-800.
- HUANG X., WEI X., SANG T. *et al.*, 2010. « Genome-wide association studies of 14 agronomic traits in rice landraces ». *Nature Genet.*, 42, 961-67.
- JAILLON O., AURY J.-M., NOËL B. *et al.*, 2007. « The grapevine genome sequence suggests ancestral hexaploidization in major angiosperm phyla ». *Nature*, 449, 463-467.
- LUKASHIN A.V., BORODOVSKY M., 1998. « GeneMark. HMM : new solutions for gene finding ». *Nucl. Acids Res.*, 26, 1107-1115.
- LUO M.C., THOMAS C., YOU F. *et al.*, 2003. « High-throughput fingerprinting of bacterial artificial chromosomes using the snapshot labeling kit and sizing of restriction fragments by capillary electrophoresis ». *Genomics*, 82, 378-389.
- MING R., HOU S., FENG Y. *et al.*, 2008. « The draft genome of the transgenic tropical fruit tree Papaya (*Carica papaya* Linnaeus) ». *Nature*, 452, 991-996.
- PATERSON A.H., BOWERS J.E., BRUGMANN R. *et al.*, 2009. « The *Sorghum bicolor* genome and the diversification of grasses ». *Nature*, 457, 551-556.
- SAMSON F., BRUNAUD V., DUCHÊNE S., DE OLIVEIRA Y., CABOCHE M., LECHARNY A. & AUBOURG S., 2004. « FLAGdb++ : a database for the functional analysis of the Arabidopsis genome ». *Nucl. Acids Res.*, 32, D347-350.
- SALSE J., ABROUK M., BOLOT S., GUILHOT N., COURCELLE E., FARAUT T., WAUGH R., CLOSE T.J., MESSING J., FEUILLET C., 2009. « Reconstruction of monocotyledonous proto-chromosomes reveals faster evolution in plants than in animals ». *Proc. Nat. Acad. Sci. USA*, 106, 14908-14913.
- SANGER F., AIR G.M., BARRELL B.G., BROWN N.L., COULSON A.R., FIDDES J.C., HUTCHISON III C.A., SLOCOMBE P.M., SMITH. M., 1977. « Nucleotide sequence of bacteriophage phi X174 DNA ». *Nature*, 265, 687-695.
- SCHMUTZ J., CANNON S.B., SCHLUETER J. *et al.*, 2010. « Genome sequence of the palaeopolyploid soybean ». *Nature*, 463, 178-183.
- SCHNEEBERGER K., OSSOWSKI S., LANZ C. *et al.*, 2009. « SHOREmap : simultaneous mapping and mutation identification by deep sequencing ». *Nature Meth.*, 6, 550-551.
- SMITH N.A., SINGH S.P., WANG M.B., STOUTJESDIK P.A., GREEN A.G., WATERHOUSE P.M., 2000. « Gene expression : Total silencing by intron-spliced hairpin RNAs ». *Nature*, 407, 319-320.
- SCHNABLE P.S., WARE D., FULTON R.S. *et al.*, 2009. « The B73 maize genome : complexity, diversity and dynamics ». *Science*, 326, 1112-1115.
- SHULAEV V., SARGENT D.J., CROWHURST R.N. *et al.*, 2011. « The genome of woodland strawberry (*Fragaria vesca*) ». *Nature Genet.*, 43, 109-116.
- SWARBRECK D., WILKS C., LAMESCH P. *et al.*, 2008. « The Arabidopsis Information Resource (TAIR) : gene structure and function annotation ». *Nucl. Acids Res.*, 36, D1009-1014.

- The Arabidopsis Genome Initiative, 2000. « Analysis of the genome sequence of the flowering plant *Arabidopsis thaliana* ». *Nature*, 408, 796-815.
- The International *Brachypodium* Initiative, 2009. « Genome sequence analysis of the model grass *Brachypodium distachyon* : insights into grass genome evolution ». *Nature*, 463, 763-768.
- TILL BJ., REYNOLDS S.H., GREEN E.A., HENIKOFF S., 2003. « Large-Scale Discovery of Induced Point Mutations With High-Throughput TILLING ». *Genome Res.*, 13, 524-530.
- TRIQUES K., STURBOIS B., GALLAIS S. *et al.*, 2007. « Characterization of *Arabidopsis thaliana* mismatch specific endonucleases : application to mutation discovery by TILLING in pea ». *Plant J.*, 51, 1116-1125.
- TUSKAN G.A., DIFAZIO S., JANSSON S. *et al.*, 2006. « The genome of black cottonwood *Populus trichocarpa* (Torr. & Gray) ». *Science*, 313, 1596-1616.
- VELASCO R., ZHARKIKH A., AFFOURTIT J. *et al.*, 2010. « The genome of the domesticated apple (*Malus x domestica* Borkh.) ». *Nature Genetics*, 42, 833-839.

### *Cartographie de QTL, génétique d'association et applications en sélection*, Alain CHARCOSSET et Laurence MOREAU

- ATWELL S., HUANG Y.S., VILHJALMSSON B.J., WILLEMS G., HORTON M., LI Y., MENG D.Z., PLATT A., TARONE A.M., HU T.T., JIANG R., MULIYATI N.W., ZHANG X., AMER M.A., BAXTER I., BRACHI B., CHORY J., DEAN C., DEBIEU M., DE MEAUX J., ECKER J.R., FAURE N., KNISKERN J.M., JONES J.D.G., MICHAEL T., NEMRI A., ROUX F., SALT D.E., TANG C.L., TODESCO M., TRAW M.B., WEIGEL D., MARJORAM P., BOREVITZ J.O., BERGELSON J. & NORDBORG M., 2010. « Genome-wide association study of 107 phenotypes in *Arabidopsis thaliana* inbred lines ». *Nature*, 465 (7298), 627-631.
- BEAVIS W.D., 1994. « The power and deceit of QTL experiments. Lessons from comparative QTL studies ». In Wilkinson D.B. (ed.), *49th annual corn and sorghum research conference*. Chicago, American Seed Trade Association, p. 250-266.
- BELO A., ZHENG P., LUCK S., SHEN B., MEYER D.J., LI B., TINGEY S. & RAFALSKI A., 2007. « Whole genome scan detects an allelic variant of *fad2* associated with increased oleic acid levels in maize ». *Mol. Genet. Genomics* : DOI 10.1007/s00438-00007-00289-y.
- BERNARDO R., 2004. « What proportion of declared QTL in plants are false ? ». *Theoretical and Applied Genetics*, 109 (2), 419-424.
- BERNARDO R. & YU J.M., 2007. « Prospects for genomewide selection for quantitative traits in maize ». *Crop Science*, 47 (3), 1082-1090.
- BLANC G., 2006. *Sélection assistée par marqueurs (SAM) dans un dispositif multiparental connecté. Application au maïs et approche par simulations*. Paris, AgroParisTech, 150 p.
- BLANC G., CHARCOSSET A., VEYRIERAS J.-B., GALLAIS A. & MOREAU L., 2008. « Marker-assisted selection efficiency in multiple connected populations : a simulation study based on the results of a QTL detection experiment in maize ». *Euphytica*, 161 (1), 71-84.
- BONNIN I., ROUSSET M., MADUR D., SOURDILLE P., DUPUITS L., BRUNEL D. & GOLDRINGER I., 2008. « FT genome A and D polymorphisms are associated with the variation of earliness components in hexaploid wheat ». *Theoretical and Applied Genetics*, 116 (3), 383-394.

- BUCKLER E.S., HOLLAND J.B., BRADBURY P.J., ACHARYA C.B., BROWN P.J., BROWNE C., ERSOZ E., FLINT-GARCIA S., GARCIA A., GLAUBITZ J.C., GOODMAN M.M., HARJES C., GUILL K., KROON D.E., LARSSON S., LEPAK N.K., LI H.H., MITCHELL S.E., PRESSOR G., PEIFFER J.A., ROSAS M.O., ROCHEFORD T.R., ROMAY M.C., ROMERO S., SALVO S., VILLEDA H.S., DA SILVA H.S., SUN Q., TIAN F., UPADYAYULA N., WARE D., YATES H., YU J.M., ZHANG Z.W., KRESOVICH S. & McMULLEN M.D., 2009. « The Genetic Architecture of Maize Flowering Time ». *Science*, 325 (5941), 714-718.
- CAVANAGH C., MORELL M., MACKAY I. & POWELL W., 2008. « From mutations to MAGIC : resources for gene discovery, validation and delivery in crop plants ». *Curr. Opin. Plant Biol.*, 11 (2), 215-221.
- CHARDON F., VIRLON B., MOREAU L., FALQUE M., JOETS J., DECOUSSET L., MURIGNEUX A. & CHARCOSSET A., 2004. « Genetic architecture of flowering time in maize as inferred from quantitative trait loci meta-analysis and synteny conservation with the rice genome ». *Genetics*, 168 (4), 2169-2185.
- CROSSA J., BURGUENO J., DREISIGACKER S., VARGAS M., HERRERA-FOESSEL S.A., LILLEMOM M., SINGH R.P., TRETOWAN R., WARBURTON M., FRANCO J., REYNOLDS M., CROUCH J.H. & ORTIZ R., 2007. « Association analysis of historical bread wheat germplasm using additive genetic covariance of relatives and population structure ». *Genetics*, 177 (3), 1889-1913.
- DARVASI A. & SOLLER M., 1995. « Advanced Intercross Lines, an Experimental Population for Fine Genetic-Mapping ». *Genetics*, 141 (3), 1199-1207.
- DARVASI A. & SOLLER M., 1997. « A simple method to calculate resolving power and confidence interval of QTL map location ». *Behavior Genetics*, 27 (2), 125-132.
- DARWIN C., 1859. *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*. London, John Murray.
- EATHINGTON S.R., CROSBIE T.M., EDWARDS M.D., REITER R. & BULL J.K., 2007. « Molecular markers in a commercial breeding program ». *Crop Science*, 47 (S3), S154-163.
- FRISCH M. & MELCHINGER A.E., 2005. « Selection theory for marker-assisted backcrossing ». *Genetics*, 170 (2), 909-917.
- GALLAIS A., 1990. *Théorie de la sélection en amélioration des plantes*. Paris, Masson.
- GIMELFARB A. & LANDE R., 1994. « Simulation of Marker Assisted Selection in Hybrid Populations ». *Genetical Research*, 63 (1), 39-47.
- GORE M.A., CHIA J.M., ELSHIRE R.J., SUN Q., ERSOZ E.S., HURWITZ B.L., PEIFFER J.A., McMULLEN M.D., GRILLS G.S., ROSS-IBARRA J., WARE D.H. & BUCKLER E.S., 2009. « A First-Generation Haplotype Map of Maize ». *Science*, 326 (5956), 1115-1117.
- HARJES C.E., ROCHEFORD T.R., BAI L., BRUTNELL T.P., KANDIANIS C.B., SOWINSKI S.G., STAPLETON A.E., VALLABHANENI R., WILLIAMS M., WURTZEL E.T., YAN J. & BUCKLER E.S., 2008. « Natural Genetic Variation in Lycopene Epsilon Cyclase Tapped for Maize Biofortification ». *Science*, 319 (5861), 330-333.
- HEFFNER E.L., SORRELLS M.E. & JANNINK J.L., 2009. « Genomic Selection for Crop Improvement ». *Crop Science*, 49 (1), 1-12.
- HOSPITAL F., 2005. « Selection in backcross programmes ». *Philosophical Transactions of the Royal Society B-Biological Sciences*, 360 (1459), 1503-1511.
- HOSPITAL F. & CHARCOSSET A., 1997. « Marker-assisted introgression of quantitative trait loci ». *Genetics*, 147 (3), 1469-1485.

- HOSPITAL F., GOLDRINGER I. & OPENSHAW S., 2000. « Efficient marker-based recurrent selection for multiple quantitative trait loci ». *Genetical Research*, 75 (3), 357-368.
- HOSPITAL F., MOREAU L., LACOUDRE F., CHARCOSSET A. & GALLAIS A., 1997. « More on the efficiency of marker-assisted selection ». *Theoretical and Applied Genetics*, 95 (8), 1181-1189.
- HUANG Y.F., MADUR D., COMBES V., KY C.L., COUBRICHE D., JAMIN P., JOUANNE S., DUMAS F., BOUTY E., BERTIN P., CHARCOSSET A. & MOREAU L., 2010. « The Genetic Architecture of Grain Yield and Related Traits in Zea maize L. Revealed by Comparing Intermated and Conventional Populations ». *Genetics*, 186 (1), 395-U612.
- JANNINK J.L., LORENZ A.J. & IWATA H., 2010. « Genomic selection in plant breeding : from theory to practice ». *Briefings in Functional Genomics*, 9 (2), 166-177.
- JANSEN R.C., 1993. « Interval mapping of multiple quantitative trait loci ». *Genetics*, 135 (1), 205-211.
- JOHNSON R., 2004. « Marker-Assisted selection ». In Janick J. (ed.), *Plant Breeding review*. Hoboken, John Wiley, 293-309.
- KRAAKMAN A.T.W., NIKS R.E., VAN DEN BERG P., STAM P. & VAN EEUWIJK F.A., 2004. « Linkage disequilibrium mapping of yield and yield stability in modern spring barley cultivars ». *Genetics*, 168 (1), 435-446.
- LANDE R. & THOMPSON R., 1990. « Efficiency of Marker-Assisted Selection in the Improvement of Quantitative Traits ». *Genetics*, 124 (3), 743-756.
- LANDER E.S. & BOTSTEIN D., 1989. « Mapping mendelian factors underlying quantitative traits using rflp linkage maps ». *Genetics*, 121 (1), 185-199.
- METZKER M.L., 2010. « Applications of next-generation sequencing technologies - the next generation. Nature Reviews ». *Genetics*, 11 (1), 31-46.
- MEUWISSEN T.H.E., HAYES B.J. & GODDARD M.E., 2001. « Prediction of total genetic value using genome-wide dense marker maps ». *Genetics*, 157 (4), 1819-1829.
- MÉZARD C., VIGNARD J., DROUAUD J. & MERCIER R., 2007. « The road to crossovers : plants have their say ». *Trends in Genetics*, 23 (2), 91-99.
- MOREAU L., CHARCOSSET A., HOSPITAL F. & GALLAIS A., 1998. « Marker-assisted selection efficiency in populations of finite size ». *Genetics*, 148 (3), 1353-1365.
- MYLES S., PEIFFER J., BROWN P.J., ERSOZ E.S., ZHANG Z.W., COSTICH D.E. & BUCKLER E.S., 2009. « Association Mapping : Critical Considerations Shift from Genotyping to Experimental Design ». *Plant Cell*, 21 (8), 2194-2202.
- PATERSON A.H., LANDER E.S., HEWITT J.D., PETERSON S., LINCOLN S.E. & TANKSLEY S.D., 1988. « Resolution of quantitative traits into Mendelian factors by using a complete linkage map of restriction fragment length polymorphisms ». *Nature*, 335.
- PERKEL J., 2008. « SNP genotyping : six technologies that keyed a revolution ». *Nature Methods*, 5 (5), 447-453.
- RAFALSKI A., 2002. « Applications of single nucleotide polymorphisms in crop genetics ». *Curr. Opin. Plant Biol.*, 5 (2), 94-100.
- RAFALSKI J.A., 2010. « Association genetics in crop improvement ». *Curr. Opin. Plant Biol.*, 13 (2), 174-180.
- SALVI S. & TUBEROSA R., 2005. « To clone or not to clone plant QTLs : present and future challenges ». *Trends in Plant Science*, 10 (6), 297-304.



- SAX K., 1923. « The association of size differences with seed-coat pattern and pigmentation in *Phaseolus vulgaris* ». *Genetics*, 8 (6), 552-560.
- SERVIN B. & HOSPITAL F., 2002. « Optimal positioning of markers to control genetic background in marker-assisted backcrossing ». *Journal of Heredity*, 93 (3), 214-217.
- SERVIN B., MARTIN O.C., MÉZARD M. & HOSPITAL F., 2004. « Toward a theory of marker-assisted gene pyramiding ». *Genetics*, 168 (1), 513-523.
- STICH B., 2009. « Comparison of Mating Designs for Establishing Nested Association Mapping Populations in Maize and *Arabidopsis thaliana* ». *Genetics*, 183 (4), 1525-1534.
- THORNSBERRY J.M., GOODMAN M.M., DOEBLEY J., KRESOVICH S., NIELSEN D. & BUCKLER E.S., 2001. « Dwarf8 polymorphisms associate with variation in flowering time ». *Nat. genet.*, 28 (3) 286-289.
- VISSCHER P.M., HALEY C.S. & THOMPSON R., 1996. « Marker-assisted introgression in backcross breeding programs ». *Genetics*, 144 (4), 1923-1932.
- WHITTAKER J.C., THOMPSON R. & DENHAM M.C., 2000. « Marker-assisted selection using ridge regression ». *Genetical Research*, 75 (2), 249-252.
- YU J., HOLLAND J.B., McMULLEN M.D. & BUCKLER E.S., 2008. « Genetic Design and Statistical Power of Nested Association Mapping in Maize ». *Genetics*, 178 (1), 539-551.
- YU J.M., PRESSOIR G., BRIGGS W.H., BI I.V., YAMASAKI M., DOEBLEY J.F., McMULLEN M.D., GAUT B.S., NIELSEN D.M., HOLLAND J.B., KRESOVICH S. & BUCKLER E.S., 2006. « A unified mixed-model method for association mapping that accounts for multiple levels of relatedness ». *Nature Genetics*, 38 (2), 203-208.
- ZENG Z.B., 1994. « Precision mapping of quantitative trait loci ». *Genetics*, 136 (4), 1457-1468.

## *La gestion de la durabilité des PGM résistantes à certains insectes,*

Jean-Baptiste BERGÉ et Agnès RICOCH

- ALI M.I. & LUTTRELL R.G., 2007. « Susceptibility of Bollworm and Tobacco Budworm (Lepidoptera: Noctuidae) to Cry2Ab2 Insecticidal Protein ». *Journal of Economic Entomology*, 100 (3), 921-931.
- ANDOW D.A. & IVES A.R., 2002. « Monitoring And Adaptive Resistance Management ». *Ecological Applications*, 12, 1378-1390.
- ASHOURI A., 2004. « Seasonal occurrence and relative abundance of aphids on potato plants with classical and transgenic characters of resistance to Colorado potato beetle *Leptinotarsa decemlineata* (Say) ». *Communications in Agricultural and Applied Biological Sciences*, 69, 3, 273-80.
- BACHELER J.S., 1999. « Pest fluctuations and trends in North Carolina cotton ». *Proceedings Beltwide Cotton Conferences*, Orlando, Florida, USA, 3-7 January, 1999 : Volume 2.
- BENBROOK C., 2010. « Genetically engineered crops increase pesticide use in United States ». *Pesticides News*, 87, 12-14.
- BERGÉ J.-B. & RICOCH A., 2010. « Emergence of Minor Pests Becoming Major Pests in GE Cotton in China : What Are The Reasons ? What Are The Alternatives Solutions to This Change of Status ? A Review of The Scientific Literature ». *GM Crops*, 1, 4, 1-4. Open access.
- BETZ F.S., HAMMOND B.G. & FUCHS R.L., 2000. « Safety and advantages of *Bacillus thuringiensis*-protected plants to control insect pests ». *Regulatory Toxicology And Pharmacology*, 32, 156-173.

- BLINKA E.L., BRADLEY J.R. & VAN DUYN J., 2005. « Spatial and Temporal Occurrence of Brown Stinkbug (*Euschistus servus*, Say) in Eastern North Carolina Agroecosystems ». *The Beltwide Cotton Conferences*, January 4-7, 2005.
- BHOSLE B.B., BHEDE B.V., PATAIT D.D. & PATANGE N.R., 2009. « Effectiveness of IPM packages in Bt cotton in Marathwada region. National Symposium on "Bt-Cotton : Opportunities and Prospects" ». *Crop Improvement And Biotechnology*. November 17-19, 2009. Central Institute for Cotton Research, Nagpur. <http://crdaindia.com/wp-content/downloads/n4b83b02020aa5.pdf>.
- BOYD M.L., 2004. « Management of insect pests on Bt cotton in southeast Missouri ». International Meeting of the Economic Science Association (ESA), June 11-14, 2004, at the University of Amsterdam, The Netherlands.
- BROOKES G. & BARFOOT P., 2010. « Global impact of biotech crops : Environmental effects, 1996-2008. *AgBioForum*, 13, 1, 76-94.
- CARRIÈRE Y., CROWDER D.W. & TABASHNIK B.E., 2010. « Evolutionary ecology of insect adaptation to Bt crops ». *Evolutionary Applications*, 3, 5-6, 561-573.
- CHANG T., CHEN L., CHEN S., CAI H., LIU X., XIAO G. & ZHU Z., 2003. « Transformation of tobacco with genes encoding *Helianthus tuberosus* agglutinin (HTA) confers resistance to peach-potato aphid (*Myzus persicae*) ». *Transgenic Research*, 12, 5, 607-614.
- CHRISTELLER J.T., MARKWICK N.P., BURGESS E.P.J. & MALONE L.A., 2010. « The Use of Biotin-Binding Proteins for Insect Control ». *Journal of Economic Entomology*, 103, 2, 497-508.
- CLIVE J., 2010. « Global Status of Commercialized Biotech/GM Crops : 2009 - The first fourteen years, 1996 to 2009 ». *ISAAA Brief*, 41-2009 : Executive Summary. <http://www.isaaa.org/resources/publications/briefs/41/executivesummary/default.asp>
- CLOUTIER C., BOUDREAU S. & MICHAUD D., 2008. « Impact de pommes de terre résistantes au doryphore sur les arthropodes non visés : une méta-analyse des facteurs possiblement en cause dans l'échec d'une plante transgénique Bt ». *Cahiers d'études et de recherches francophones / Agricultures*, 17, 4, 388-394.
- Committee on the Impact of Biotechnology on Farm-Level Economics and Sustainability, 2010. « The Impact of Genetically Engineered Crops on Farm Sustainability in the United States ». National Research Council, Tuesday, April 13, 2010, 11:00 am-12:30 pm – Lecture Room, 2101 Constitution Avenue NW, Washington, DC - Report Release and Public Briefing (Ntl Academic Press). [http://www.nap.edu/catalog.php?record\\_id=12804](http://www.nap.edu/catalog.php?record_id=12804)
- CUI JINJIE, LUO JUNYU, WANG CHUNYI, MA YAN & CHUNHUA L., 2004. « Population dynamics of main pest and enemies in transgenic CryIaC + CpTI cotton field ». *Cotton Science*, 16, 2.
- DEGUINE J.-P., FERRON P. & RUSSELL D., 2008. « Sustainable pest management for cotton production. A review ». *Agronomy for Sustainable Development*, 28, 113-137.
- DOWNES S., PARKER T.L. & MAHON R.J., 2009. « Frequency of Alleles Conferring Resistance to the *Bacillus thuringiensis* Toxins Cry1Ac and Cry2Ab in Australian Populations of *Helicoverpa punctigera* (Lepidoptera: Noctuidae) from 2002 to 2006 ». *Journal of Economic Entomology*, 102, 2 : 733-742.
- DOWNES S., MAHON R.J., ROSSITER L., KAUTER G., LEVEN T., FITT G. & BAKER G., 2010. « Adaptive management of pest resistance by *Helicoverpa species* (Noctuidae) in Australia to the Cry2Ab Bt toxin in Bollgard II cotton ». *Evolutionary Applications*, 3 (5-6), 574-584.
- ENGELS H., BOURGUET D., CAGÁ L., MANACHINI B., SCHUPHAN I., STODOLA J., MICOUD A., BRAZIER C., MOTTET C. & ANDOW D.A., 2010. « Evaluating Resistance to Bt Toxin Cry1Ab by F2

- Screen in European Populations of *Ostrinia nubilalis* (Lepidoptera: Crambidae) ». *Journal of Economic Entomology*, 103, 5, 1803-1809.
- ERVINA D.E., GLENN L. & JUSSAUME JR R.A., 2010. « Are biotechnology and sustainable agriculture compatible ? ». *Renewable Agriculture and Food Systems*, 25, 143-157.
- FERNANDEZ-CORNEJO J., NEHRING R., NEWCOMB SINHA E., GRUBE A., & VIALOU A., 2009. « Assessing Recent Trends in Pesticide Use in U.S. Agriculture ». Agricultural and Applied Economics Association. Annual Meeting, July 26-28, 2009, Milwaukee, Wisconsin.
- FITT G.P., MARES C.L., LLEWELLYN D.J., 1994. « Field evaluation and potential ecological impact of transgenic cottons (*Gossypium hirsutum*) in Australia ». *Biocontrol Science and Technology*, 4, 535-548.
- HARRINGTON J., BYRNE P.F., PEAIRS E.B., NISSEN S.J. & WESTRA P., 2010. « Perceived consequences of herbicide-tolerant and insect-resistant crops on integrated pest management strategies in the western United States. Results of an online survey ». *AgBioForum*, 12 (3 & 4), 412-421.
- HARRIS F.A., FURR R.E. JR. & CALHOUN D.S., 1996. « Cotton insect management in transgenic *Bt* cotton in the Mississippi Delta 1992-1995 ». *Proceedings Beltwide Cotton Conferences*, Nashville, TN, USA, 2.
- JALALI S.K., LALITHA Y., KAMATH S.P., MOHAN K.S. & HEAD G.P., 2010. « Baseline sensitivity of lepidopteran corn pests in India to Cry1Ab insecticidal protein of *Bacillus thuringiensis* ». *Pest Management Science*, 66 (8), 809-815.
- KHADI B.M., 2006. « Impact of *Bt*-cotton on agriculture in India ». In Ninth International Symposium on Biosafety of Genetically Modified Organisms Biosafety Research and Environmental Risk Assessment. Jeju Island, Korea, 96-100.
- KISHI M., 2005. « The health impact of pesticides : what do we know now ? ». In Pretty Jules (ed.), *The pesticide detox. Toward a more sustainable agriculture*. Earthscan, 23-38.
- KRANTHI S., DHAWAD C.S., NAIDU S., BHAROSE A., CHAUDHARY A., SANGODE V., NEHARE S.K., BAJAJ S.R. & KRANTHI K.R., 2009. « Susceptibility of the cotton bollworm, *Helicoverpa armigera* (Hubner) (Lepidoptera: Noctuidae) to the *Bacillus thuringiensis* toxin Cry2Ab before and after the introduction of Bollgard-II ». *Crop Protection*, 28, 5, 371-375.
- LI G., HONGQIANG F., YULIN G., WYCKHUYS K.A.G. & KONGMING W., 2010. « Frequency of *Bt* Resistance Alleles in *Helicoverpa armigera* in the Xinjiang Cotton-Planting Region of China ». *Environmental Entomology*, 39, 5, 1698-1704.
- LI L.L., WANG Z.Y., HE K.L., BAI S.X. & HUA L., 2007. « Effects of transgenic corn expressing *Bacillus thuringiensis* cry1Ab toxin on population increase of *Rhopalosiphum maidis* Fitch ». *Ying Yong Sheng Tai Xue Bao*, 18, 5, 1077-80.
- LIU F., XU Z., ZHU Y.C., HUANG F., WANG Y., LI H., LI H., GAO C., ZHOU W. & SHEN J., 2010. « Evidence of field-evolved resistance to Cry1Ac-expressing *Bt* cotton in *Helicoverpa armigera* (Lepidoptera: Noctuidae) in northern China ». *Pest Management Science*, 66, 2, 155-116.
- LU Y., W. KONGMING, J. YUYING, X. BING, L. PING, F. HONGQIANG, WYCKHUYS K.A.G. & YUYUAN G., 2010. « Mirid Bug Outbreaks in Multiple Crops Correlated with Wide-Scale Adoption of *Bt* Cotton in China ». *Science*, 328, 5982, 1151-1154.
- LUNDGREN J.G., GASSMANN A.J., BERNAL J., DUAN J.J. & RUBERSON J., 2009. « Ecological compatibility of GM crops and biological control ». *Crop Protection*, 28, 12, 1017-30.
- NARANJO S.E. & HELLMICH R.L., 2007. « Integrating GM crops in IPM with emphasis on biological control systems ». 3<sup>rd</sup> EIGMO meeting « Ecological Impact of Genetically Modified Organisms (EIGMO) », 23-25 May 2007, Warsaw, Poland.

- PILCHER C.D., RICE M.E., HIGGINS R.A., STEFFEY K.L., HELLMICH R.L., WITKOWSKI J., CALVIN D., OSTLIE K.R. & GRAY M., 2002. « Biotechnology and the European corn borer : measuring historical farmer perceptions and adoption of transgenic Bt corn as a pest management strategy ». *Journal of Economic Entomology*, 95, 5, 878-892.
- PRASHANT M., ASHUTOSH P., MANISH T., CHANDRASHEKAR K., SIDHU O.P., ASIF M.H., DEBASIS C., SINGH P.K., TRIVEDI P.K., PRAVENDRA N. & RAKESH T., 2010. « Modulation of transcriptome and metabolome of tobacco by *Arabidopsis* transcription factor, AtMYB12, leads to insect resistance ». *Plant Physiology*, 152, 4.
- QAIM M., 2010. « Benefits of Genetically Modified Crops for the Poor. Household Income, Nutrition, and Health ». *New Biotechnol.*, 2010 Jul. 16. doi:10.1016/j.nbt.2010.07.009
- RINGLAND J. & PRASANTH G., 2010. « Analysis of sustainable pest control using a pesticide and a screened refuge ». *Evolutionary Applications*, online.
- SHARMA H.C. & PAMPAPATHY G., 2006. « Influence of transgenic cotton on the relative abundance and damage by target and non-target insect pests under different protection regimes in India ». *Crop Protection*, 25, 8, 800-813.
- STORER N.P., BABCOCK J.M., SCHLENZ M., MEADE T., THOMPSON G.D., BING J.W., HUCKABA & RANDY M., 2010. « Discovery and Characterization of Field Resistance to Bt Maize : *Spodoptera frugiperda* (Lepidoptera: Noctuidae) in Puerto Rico ». *Entomological Society of America*, 103, 4, 1031-1038.
- TABASHNIK B.E, VAN RENSBURG J. & CARRIÈRE Y., 2009. « Field-Evolved Insect Resistance to Bt Crops : Definition, Theory, and Data ». *Journal of Economic Entomology*, 102, 6, 2011-2025.
- TABASHNIK B.E., GASSMANN A.J., CROWDER D.W. & CARRIÈRE Y., 2008. « Insect resistance to Bt crops : evidence versus theory ». *Nature Biotechnology*, 26, 199-202.
- TABASHNIK B.E., VAN RENSBURG J. & CARRIÈRE Y., 2009. « Field-Evolved Insect Resistance to Bt Crops : Definition, Theory, and Data ». *Journal of Economic Entomology*, 102 (6), 2011-2025.
- US EPA, 2007. « EPA approves Natural Refuge for Insect Resistance Management in Bollgard II Cotton ». <http://www.epa.gov/oppbppd1/biopesticides/pips/index.htm>.
- US EPA, 2008. « Pesticide Fact Sheet. U.S. Environmental Protection Agency ». <http://www.epa.gov/oppbppd1/biopesticides/pips/smartstax-factsheet.pdf>.
- WANG E.M., HALL J.T. & WAGNER G.J., 2004. « Transgenic *Nicotiana tabacum* L. with enhanced trichome exudate cembratrieneols has reduced aphid infestation in the field ». *Molecular Breeding*, 13 (1), 49-57.
- WANG Z.J., HAI L. J.K, HUANG JI-KUN, HU R.F., ROZELLE S. & PRAY C., 2009. « Bt Cotton in China : Are Secondary Insect Infestations Offsetting the Benefits in Farmer Fields ? ». *Agricultural Sciences in China*, 8 (1), 83-90.
- [http://www.sciencedirect.com/science?\\_ob=MIimg&\\_imagekey=B82XG-4VfMC51-D-1&\\_cdi=33030&\\_direct=4296857&\\_orig=browse&\\_coverDate=01%2F31%2F2009&\\_sk=999919998&view=c&wchp=dGLbVtz-zSkzS&md5=c0d6eed43877deab352eb034a7eae14&ie=/sdarticle.pdf](http://www.sciencedirect.com/science?_ob=MIimg&_imagekey=B82XG-4VfMC51-D-1&_cdi=33030&_direct=4296857&_orig=browse&_coverDate=01%2F31%2F2009&_sk=999919998&view=c&wchp=dGLbVtz-zSkzS&md5=c0d6eed43877deab352eb034a7eae14&ie=/sdarticle.pdf)
- WHITEHOUSE M.E.A., WILSON L.J., FITT G.P. & CONSTABLE G.A., 2009. « Integrated pest management and the effects of transgenic cotton on insect communities in Australia : lessons from the past and future directions ». Proceedings of the 3rd International Symposium on Biological Control of Arthropods, Christchurch, New Zealand, 8-13 February, 2009.

- YANHUI L., W. KONGMING, J. YUYING, X. BING, L. PING, F. HONGQIANG, WYCKHUYS K.A.G. & YUYUAN G., 2010. « Mirid Bug Outbreaks in Multiple Crops Correlated with Wide-Scale Adoption of Bt Cotton in China ». *Science*, 328 (5982), 1151-1154. <http://www.sciencemag.org/cgi/content/full/328/5982/1151>
- YAO J., PANG Y., QI H., WANG B., ZHAO X., KONG W., SUN X. & TANG K., 2003. « Transgenic tobacco expressing *Pinellia ternata* agglutinin confers enhanced resistance to aphids ». *Transgenic Research*, 12 (6), 715-722.
- YAO JIANHONG, ZHAO XIUYUN, QI HUA XIONG, WAN BINGLIANG, CHEN FEI, SUN XIAOFEN, YU SHANQIAN & TANG KEXUAN, 2004. « Transgenic tobacco expressing an *Arisaema heterophyllum* agglutinin gene displays enhanced resistance to aphids ». *Canadian Journal of Plant Science*, 84 (3), 785-790.
- YARASI B., SADUMPATI V., IMMANNI C.P., VUDEM D.R. & KHAREEDU V.R., 2008. « Transgenic rice expressing *Allium sativum* leaf agglutinin (ASAL) exhibits high-level resistance against major sap-sucking pests ». *BMC Plant Biology*, 14 (8), 102.
- YENAGI B.S., PATIL V.C., BIRADAR D.P. & KHADI B.M., 2010. « Geographical variability in susceptibility of cotton bollworm (*Helicoverpa armigera*) to Bt toxin across northern Karnataka cotton ecosystem ». *Journal of Entomological Research*, 34, 1.
- ZHANG YANG, ZHANG SHUAI & CUI J-J 2010. « Frequency of Bt Resistance Alleles in *Helicoverpa armigera* Populations from the Yellow River Cotton-farming Region of China ». *Cotton Science*, 22 (4), 297-303.
- ZHAO C.Y., YUAN Z.Q., QIN H.M. & TIAN Y.C., 2001. « Studies on transgenic tobacco plants expressing two kinds of insect resistant genes ». *Sheng Wu Gong Cheng Xue Bao*, 17 (3), 273-277.
- ZHOU H.X., GUO J.Y. & WAN F.H., 2004. « Effect of transgenic Cry1Ac + CpTI cotton (SGK321) on population dynamics of pests and their natural enemies ». *Acta Entomologica Sinica*, 47, 538-542 (article en chinois et résumé en anglais).
- ZHOU Y., TIAN Y., WU B. & MANG K., 1998. « Inhibition effect of transgenic tobacco plants expressing snowdrop lectin on the population development of *Myzus persicae* ». *Chinese Journal of Biotechnology*, 14 (1), 9-16.
- ZHOU Y.G., TIAN Y.C. & MANG K.Q., 2001. « Cloning of AHA gene from *Amaranthus hypochondriacus* and its aphid inhibitory effect in transgenic tobacco plants » (article en chinois). *Sheng Wu Gong Cheng Xue Bao*, 17 (1), 34-39.

### *Les cultures tolérantes à certains herbicides : adoption, impacts et développement d'adventices résistantes*, Sylvie BONNY

- ALEXANDER C., 2006. « Farmer decisions to adopt genetically modified crops ». *CAB Reviews*, (045) 2006/1 1-9. doi: 10.1079/PAVSNNR20061045.
- ASA (American Soybean Association), 2001. *Conservation Tillage Study*. Saint-Louis, Missouri, ASA.
- BARNES R.L., 2000. « Why the American Soybean Association supports transgenic soybeans ». *Pest Management Science*, 56 (7), 580-583.
- BENBROOK C.M., 2009. *Impacts of Genetically Engineered Crops on Pesticide Use in the United States. The First Thirteen Years*. Boulder, CO: The Organic Center.

- BONNY S., 2008a. « Genetically modified glyphosate-tolerant soybean in the USA : adoption factors, impacts and prospects ». *Agronomy for Sustainable Development*, 28 (1), 21-32.
- BONNY S., 2008b. « Les cultures transgéniques tolérantes à un herbicide permettent-elles de réduire l'usage des pesticides ? Le cas du soja et du maïs aux États-Unis ». *Innovations agronomiques*, (3) 193-212.  
<http://www.inra.fr/ciag/content/download/3323/30073/version/1/file/15-Bonny.pdf>
- BONNY S., 2009. « Issues, impacts and prospects of the first transgenic crops tolerant to an herbicide. The case of glyphosate-tolerant soybean in the USA ». 27. International Conference of Agricultural Economists. Pékin. <http://purl.umn.edu/51449>
- BORGGAARD O.K. & GIMSING A.L., 2008. « Fate of glyphosate in soil and the possibility of leaching to ground and surface waters : a review ». *Pest Manag Sci*, 64 (4) 441-456.
- BRADSHAW L.D., PADGETTE S.R., KIMBALL S.L. & WELLS B.H., 1997. « Perspectives on glyphosate resistance ». *Weed Technology*, 11 (1), 189-198.
- BULLOCK D. & NITSI E., 2001. « Roundup Ready Soybean Technology and Farm Production Costs : Measuring the Incentive to adopt genetically modified seeds ». *American Behavioral Scientist*, 44 (8), 1283-1301. DOI: 10.1177/00027640121956827.
- CARPENTER J., 2010. « Peer-reviewed surveys indicate positive impact of commercialized GM crops ». *Nature Biotechnology*, 28 (4), 319-21.
- CARPENTER J. & GIANESSI L., 1999. « Herbicide-Tolerant Soybeans : Why Growers are adopting Roundup Ready Varieties ». *AgBioForum*, 2 (2), 65-72.
- CARPENTER J.E. & GIANESSI L., 2010. « Economic impacts of glyphosate-resistant weeds ». In V.K. NANDULA (ed.), *op. cit.*, p. 297-312.
- CERDEIRA A.L. & DUKE S.O., 2006. « The Current Status And Environmental Impact Of Glyphosate Resistant Crops. A Review ». *Journal of Environmental Quality*, 35 (5), 1633-1658. DOI: 10.2134/jeq2005.0378.
- CTIC, 2010. *Facilitating Conservation Farming Practices and Enhancing Environmental Sustainability with Agricultural Biotechnology*. West Lafayette (Indiana), CTIC (Conservation Technology Information Center).
- DEVILLERS J., FARRET R., GIRARDIN P., RIVIÈRE J.-L. & SOULAS G., 2005. *Indicateurs pour évaluer les risques liés à l'utilisation des pesticides*. Paris, Lavoisier, Tec&Doc.
- DUKE S.O. & POWLES S.B., 2008 (ed.). « Glyphosate-Resistant Weeds and Crops ». *Pest Management Science, Special Issue*, 64 (4), 317-496.
- DUKE S.O. & CERDEIRA A.L., 2010. « Transgenic crops for herbicide resistance ». In KOLE C. *et al.*, *Transgenic Crop Plants*. Volume 2 : « Utilization and Biosafety ». Berlin, Springer, p. 106-139.
- ERVIN D.E., 2010. *The Impact of Genetically Engineered Crops on Farm Sustainability in the United States*. Washington, DC, The National Academies Press, National Research Council.
- FAWCETT R. & TOWER D., 2002. *Conservation Tillage and Plant Biotechnology. How New Technologies Can Improve the Environment By Reducing the Need to Plow*. West Lafayette (Indiana), CTIC.
- FENG P.C.C. *et al.*, 2010. « Glyphosate-Resistant Crops. Developing the Next Generation Products ». In V.K. NANDULA (ed.), *op. cit.*, p. 45-66.
- FERNANDEZ-CORNEJO J. & CASWELL M., 2006. « The First Decade of Genetically Engineered Crops in the United States ». *Economic Information Bulletin*, (11). Washington, USDA ERS.

- FERNANDEZ-CORNEJO J., HENDRICKS C. & MISHRA A., 2005. « Technology Adoption and Off-Farm Household Income. The Case of Herbicide-Tolerant Soybeans ». *Journal of Agricultural & Applied Economics*, 37 (3), 549-563.
- FERNANDEZ-CORNEJO J. & MCBRIDE W.D., 2000. « Genetically Engineered Crops for pest management in US agriculture: farm level effects ». Washington, USDA ERS, Report 786.
- FERNANDEZ-CORNEJO J. & MCBRIDE W.D., 2002. « Adoption of Bioengineered Crops ». Washington, USDA, Economic Research Service. Agricultural Economic Report AER 810.
- FOREMAN L. & LIVEZEY J., 2002. « Characteristics and Production Costs of U.S. Soybean Farms ». *Statistical Bulletin* N SB 974-4. Washington, USDA-ERS.
- GERWICK C., 2010. « Thirty years of herbicide discovery : surveying the past and contemplating the future ». *Agrow World Crop Protection News*, (600), 24 sept. 2010.
- GIANESSI L.P., 2008. « Economic impacts of glyphosate-resistant crops ». *Pest Management Science, Special Issue*, 64 (4), 346-352. DOI: 10.1002/ps.1490.
- HEAP I., 2010. « International survey of herbicide resistant weeds, Herbicide Resistance Action Committee and Weed Science Society of America ». [www.weedscience.org](http://www.weedscience.org)
- JAMES C., 2009. « Global Status of Commercialized Biotech/GM Crops: 2009 ». *ISAAA Briefs* N 41. Ithaca, NY, ISAAA (International Service for the Acquisition of Agri-biotech Applications).
- KOVACH J., PETZOLDT C., DEGNI J. & TETTE J., 1992. « A Method to Measure the Environmental Impact of Pesticides ». *New York's Food and Life Sciences Bulletin*, 139 : 1-8. <http://www.nysipm.cornell.edu/publications/eiq/>
- MARRA M.C., PIGGOTT N.E. & CARLSON G.A., 2004. « The Net Benefits, Including Convenience, of Roundup Ready® Soybeans. Results from a National Survey, NSF Center for Integrated Pest Management ». *Technical Bulletin*, 2004-3, Raleigh, NC, 40 p.
- MARSH S.P. & LLEWELLYN R.S. & POWLES S.B., 2006. « Social costs of herbicide resistance : the case of resistance to glyphosate ». International Association of Agricultural Economists Conference. Gold Coast, Australia.
- McBride W.D. & BROOKS N., 2000. « Survey Evidence on Producer Use and Costs of Genetically Modified Seed ». *Agribusiness*, 16 (1), 6-20.
- MENSAH E.C. & MAYSAMI R.C., 2010. « Revisiting the synergy between no-till and roundup ready soybean technology ». *Journal of Development and Agricultural Economics*, 2 (3), 065-077.
- NANDULA V.K. (ed.), 2010. *Glyphosate Resistance in Crops and Weeds. History, Development, and Management*. Hoboken, New Jersey, Wiley.
- OERKE E.C., 2005. « Crop losses to pests ». *Journal of Agricultural Science*, 144 (1), 31-43. DOI:10.1017/S0021859605005708
- OWEN M.D.K. & ZELAYA I.A., 2005. « Herbicide-resistant crops and weed resistance to herbicides ». *Pest Management Science*, 61 (3), 301-311. DOI: 10.1002/ps.1015.
- POWLES S.B., 2008. « Evolved glyphosate-resistant weeds around the world : lessons to be learnt ». *Pest Management Science*, 64 (4), 360-65. DOI:10.1002/ps.1525.
- QAIM M., 2009. « The Economics of Genetically Modified Crops ». *Annual Review of Resource Economics*, (1), 665-94.
- SERVICE R.F., 2007. « A Growing Threat Down on the Farm ». *Science*, 316 (5828), 114-117.
- SURGAN M., CONDON M. & COX C., 2010. « Pesticide Risk Indicators : Unidentified Inert Ingredients Compromise Their Integrity and Utility ». *Environmental Management*, 45 (4), 834-841.

- USDA ERS, 2010a. *Commodity Costs and Returns*. USDA Economic Research Service.
- USDA ERS, 2010b. *Adoption of Genetically Engineered Crops in the U.S.* Data sets, USDA Economic Research Service. <http://www.ers.usda.gov/Data/BiotechCrops/> July 2010.
- USDA NASS, 1991-2007. *Agricultural Chemical Usage. 1990 to 2006 Field Crops Summary. Annual publication*. Cornell University, USDA Economics, Statistics and Market Information System, Albert R. Mann Library.
- USDA NASS, 1992-2010. *Agricultural Prices. Annual publication*. Washington DC, USDA National Agricultural Statistics Service.
- WALTZ E., 2010. « Glyphosate resistance threatens Roundup hegemony ». *Nature Biotechnology*, 28 (6), 537-538.

## *Les PGM résistantes aux maladies virales et cryptogamiques,*

Marc FUCHS

- AGRIOS G., 2005. *Plant Pathology*. 5<sup>th</sup> ed. San Diego, CA, Elsevier-Academic PresA.
- ANAND A., ZHOU T., TRICK H., GILL B., BOCKU W. & MUTHUKRISHNAN S., 2003. « Greenhouse and field testing of transgenic wheat plants stably expressing genes for thaumatin-like protein, chitinase and glucanase against *Fusarium graminearum* ». *Journal of Experimental Botany*, 54 (383), 1101-1111.
- ANURADHA T.S., DIVYA K., JAMI S.K. & KIRTO P.B., 2008. « Transgenic tobacco and peanut plants expressing a mustard defensin show resistance to fungal pathogens ». *Plant Cell Reports*, 27 (11), 1777-1786.
- BERROCAL-LOBO M. & MOLINA A., 2004. « ETHYLENE RESPONSE FACTOR 1 mediates *Arabidopsis* resistance to the soil-borne fungus *Fusarium oxysporum* ». *Molecular Plant-Microbe Interactions*, 17 (17), 763-770.
- BOLAR J.P., NORELLI J.L., HARMAN G.E., BROWN S.K. & ALDWINCKLE H.S., 2001. « Synergistic activity of endochitinase and exochitinase from *Trichoderma atroviride* (*T. harzianum*) against the pathogenic fungus (*Venturia inaequalis*) in transgenic apple plants ». *Transgenic Research*, 10 (6), 533-543.
- BROGLIE K., CHET I., HOLLIDAY M., CRESSMAN R., BIDDLE P., KNOWLTON S., MAUVAIS C.J. & BROGLIE R., 1991. « Transgenic plants with enhanced resistance to the fungal pathogen *Rhizoctonia solani* ». *Science*, 254 (5035), 1194-1197.
- CAMBRA M., CAPOTE N., MYRTA A. & LLÁCER G., 2006. « *Plum pox virus* and the estimated costs associated with sharka disease ». *EPPO Bulletin*, 36 (2), 202-204.
- CHAN Y., PRASAD V., SANJAYA, CHEN K., LIU P., CHAN M. & CHENG C., 2005. « Transgenic tomato plants expressing an *Arabidopsis* thionin (*Thi2.1*) driven by fruit-inactive promoter battle against phytopathogenic attack ». *Planta*, 221 (3), 386-393.
- CHINCHOLKAR S.B. & MUKERJI K.G., 2007. *Biological control of plant diseases*. Binghamton, NY, Haworth Press, In.
- CSROBA T., PANTALEO V. & BURGYÁN J., 2009. « RNA silencing : an antiviral mechanism ». In G. LOEBENSTEIN, CARR J.P. (eds). *Advances in Virus Research*, vol. 75, *Natural and engineered resistance to plant viruses*. Academic Press, San Diego, CA, p. 35-71.
- DELERIS A., GALLEGU-BARTOLOME J., BAO J., KASSCHAU K.D., CARRINGTON J.C. & VOINNET O., 2006. « Hierarchical action and inhibition of plant dicer-like proteins in antiviral defense ». *Science*, 313 (5783), 68-71.



- DESIDERIO A., ARACRI B., LECKIE F., MATTEI B., SALVI G., TIGELAAR H., VAN ROEKEL J.S., BAULCOMBE D.C., MELCHERS L.S., DE LORENZO G. & CERVONE F., 1997. « Polygalacturonase-inhibiting proteins (PGIPs) with different specificities are expressed in *Phaseolus vulgaris* ». *Molecular Plant-Microbe Interactions*, 10 (7), 852-860.
- DESJARDINS, A.E., 2006. « *Fusarium* mycotoxins ». *Chemistry, Genetics, and Biology* : American Phytopathological Society Press, St. Paul, MN.
- DIAZ-PENDÓN J.A. & DING S-W., 2008. « Direct and indirect roles of viral suppressors of RNA silencing in pathogenesis ». *Annual Review of Phytopathology*, 46, 303-326.
- EPPLE P., APEL K. & BOHLMANN H., 1997. « Overexpression of an endogenous thionin enhances resistance of *Arabidopsis* against *Fusarium oxysporum* ». *Plant Cell*, 9 (4), 509-520.
- FRY W., 2008. « *Phytophthora infestans*, the crop (and R gene) destroyer ». *Molecular Plant Pathology*, 9 (3), 385-302.
- FUCHS M., 2008. « Les plantes transgéniques et la lutte contre les virus phytopathogènes : état de l'art et perspectives ». *Virologie*, 12 (1), 27-37.
- FUCHS M. & GONSALVES D., 2007. « Safety of virus-resistant transgenic plants two decades after their introduction : Lessons from realistic field risk assessment studies ». *Annual Review of Phytopathology*, 45, 173-02.
- GOTTULA J. & FUCHS M., 2009. « Toward a quarter century of pathogen-derived resistance and practical approaches to engineered virus resistance in crops ». In G. LOEBENSTEIN, J.P. CARR, (eds). *Natural and engineered resistance to plant viruses*, San Diego, CA, Academic Press, p. 161-183.
- GONSALVES D., 1998. « Control of Papaya ringspot virus in papaya : a case study ». *Annual Review of Phytopathology*, 36, 415-437.
- GURR S.J. & RUSHTON P.J., 2005. « Engineering plants with increased disease resistance : what are we going to express ? ». *Trends in Biotechnology*, 23 (6), 275-282.
- HU X., BIDNEY D.L., YALPANI N., DUVICK J.P., CRASTA O., FOLKERTS O. & LU G., 2003. « Overexpression of a gene encoding hydrogen peroxide-generating oxalate oxidase evokes defense responses in sunflower ». *Plant Physiology*, 133 (1), 170-181.
- HULL R., 2002. « Economic losses due to plant viruses : disease symptoms and host range ». In R. HULL, (ed.). *Matthew's Plant Virology*, (4<sup>th</sup> Edition). London : Academic Press, p. 47.
- JANNI M., SELLA L., FAVARON F., BLECHL A.E., DE LORENZO, G. & D'OVIDIO R., 2008. « The expression of a bean PGIP in transgenic wheat confers increased resistance to the fungal pathogen *Bipolaris sorokiniana* ». *Molecular Plant-Microbe Interactions*, 21 (2), 171-178.
- JAYARAJ J. & PUNJA Z., 2007. « Combined expression of chitinase and lipid transfer protein genes in transgenic carrot plants enhances resistance to foliar fungal pathogens ». *Plant Cell Reports*, 26 (9), 1539-1546.
- JHA S. & CHATTOO B.B., 2010. « Expression of a plant defensin in rice confers resistance to fungal phytopathogens ». *Transgenic Research*, 19 (3), 373-384.
- JOHNSON S.R., STROM S. & GRILLO K., 2007. « Quantification of the impacts on US agriculture of biotechnology-derived crops planted in 2006 ». National Center for Food and Agriculture policy. <http://www.ncfap.org>.
- KNOX, R.E. & CLARKE F.R., 2007. « Molecular breeding approaches for enhanced resistance against fungal pathogens ». In Z.K. PUNJA, S.H. DE BOER, H. SANFAÇON (eds). *Biotechnology and plant disease management*, Cambridge, MA, CAB International, 321-357.

- LINDBO J.A. & DOUGHERTY W.G., 2005. « Plant pathology and RNAi : a brief history ». *Annual Review Phytopathology*, 43, 191-04.
- LECOQ H., MOURY B., DESBIEZ C., PALLOIX A. & PITRAT M., 2004. « Durable virus resistance in plants through conventional approaches : a challenge ». *Virus Research*, 100 (1), 31-39.
- LIN W.C., LU C.F., WU J.W., CHENG M.L., LIN Y.M., YANG N.S., BLACK L., GREEN S.K., WANG J.F. & CHENG C.P., 2004. « Transgenic tomato plants expressing the Arabidopsis NPR1 gene display enhanced resistance to a spectrum of fungal and bacterial diseases ». *Transgenic Research*, 13 (6), 567-581.
- LORITO M., WOO S.L., GARCIA FERNANDEZ I., COLUCCI G., HARMAN G., PINTOR-TOROS J., FILIPPONE E., MUCCIFORA S., LAWRENCE C., ZOINA A., TUZUN S. & SCALA F., 1998. « Genes from mycoparasitic fungi as a source for improving plant resistance to fungal pathogens ». *Proceedings of the National Academy of Sciences USA*, 95 (14), 12734-12739.
- MAKANDAR R., ESSIG J.S., SCHAPAUGH M.A., TRICK H.N. & SHAH J., 2006. « Genetically engineered resistance to Fusarium head blight in wheat by expression of Arabidopsis NPR1 ». *Molecular Plant-Microbe Interactions*, 19 (2), 123-129.
- MAZIAH M., SARIAH M. & SREERAMANAN S., 2007. « Transgenic banana rastali (AAB) with  $\beta$  1, 3-glucanase gene for tolerance to fusarium wilt race 1 disease via *Agrobacterium*-mediated transformation system ». *Plant Pathology Journal*, 6 (4), 271-282.
- NÖLKE G., FISCHER R. & SHILLBERG S., 2004. « Antibody-based pathogen resistance in plants ». *Journal of Plant Pathology*, 86 (1), 5-17.
- POWELL ABEL P., NELSON R.S., DE B., HOFFMAN N., ROGERS S.G., FRALEY R.T. & BEACHY R.N., 1986. « Delay of disease development in transgenic plants that express the tobacco mosaic virus coat protein gene ». *Science*, 232 (4751), 738-743.
- POWELL A.L., VAN KAN J., TEN HAVE A., VISSER J., GREVE L.C., BENNETT A.B. & LABAVITCH J.M., 2000. « Transgenic expression of pear PGIP in tomato limits fungal colonization ». *Molecular Plant-Microbe Interactions*, 13 (9), 942-950.
- PRINS M., LAIMER M., NORIS E., SCHUBERT J., WASENEGGER M. & TEPFER M., 2008. « Strategies for antiviral resistance in transgenic plants ». *Molecular Plant Pathology*, 9 (1), 73-83.
- PUNJA Z., RAHARJO S., 1996. « Response of transgenic cucumber and carrot plants expressing different chitinase enzymes to inoculation with fungal pathogens ». *Plant Disease*, 80 (9), 999-1005.
- QU F., YE X. & MORRIS T.J., 2008. « Arabidopsis DRB4, AGO1, AGO7, and RDR6 participate in a DCL4-initiated antiviral RNA silencing pathway negatively regulated by DCL1 ». *Proceedings of the National Academy of Sciences USA*, 105 (38), 14732-14737.
- QU S., LIU G., ZHOU B., BELLIZZI M., ZENG L., DAI L., HAN B. & WANG G.L., 2006. « The broad-spectrum blast resistance gene *Pi9* encodes a nucleotide binding site-leucine-rich repeat protein and is a member of a multigene family in rice ». *Genetics*, 172 (3), 1901-1914.
- RUIZ-FERRER V. & VOINNET O., 2009. « Roles of plant small RNAs in biotic stress responses ». *Annual Review of Plant Biology*, 60, 485-510.
- SANFORD J.C. & JOHNSTON S.A., 1985. « The concept of parasite-derived resistance-deriving resistance genes from the parasite's own genome ». *Journal of Theoretical Biology*, 113 (2), 395-405.
- SAROWAR S., JIN KIM DEOK KIM K., KOOK HWANG B., HAN OK S. & SHEOP SHIN J., 2009. « Overexpression of lipid transfer protein (LTP) genes enhances resistance to plant pathogens and

- LTP functions in long-distance systemic signaling in tobacco ». *Plant Cell Reports*, 28 (3), 419-427.
- SCHNEIDER M., DROZ E., MALNOE P., CHATOT C., BONNEL E. & MÉTRAUX J-P., 2002. « Transgenic potato plants expressing oxalate oxidase have increased resistance to oomycete and bacterial pathogens ». *Potato Research*, 45 (2-4), 177-185.
- SÉRÉMÉ D., LACOMBE S., VIGNOLS F., KONATÉ G., TRAORÉ A.F. & BRUGIDOU C., 2009. « Les supprimeurs du RNA silencing des phytovirus : caractérisation et mode d'action », *Virologie*, 13 (6), 305-316.
- STUIVER M.H., 2006. « Engineering fungal resistance in crops ». In N. HALFOR, (ed.). *Plant Biotechnology : Current and future applications of genetically modified crops*, West Sussex, England, Wiley and Sons Ltd, p. 225-239.
- TANGUY A.-M., CORITON O., ABÉLARD P., DEDRYVER F. & JAHIER J., 2005. « Structure of *Aegilops ventricosa* chromosome 6N<sup>V</sup>, the donor of wheat genes *Yr17*, *Lr35*, *Sr38*, and *Cre5* ». *Genome*, 48 (3), 541-546.
- VOINNET O., 2008. « Post-transcriptional RNA silencing in plant-microbe interactions : a touch of robustness and versatility ». *Current Opinion in Plant Biology*, 11 (5), 464-470.
- WALZ A., ZINGEN-SELL I., LOEFFER M. & SAUER M., 2008. « Expression of an oxalate oxidase gene in tomato and severity of disease caused by *Botrytis cinerea* and *Sclerotinia sclerotiorum* ». *Plant Pathology*, 57 (3), 453-458.
- WU G., SHORTT B.J., LAWRENCE E.B., LEVINE E.B., FITZSIMMONS K.C. & SHAH D.M., 1995. « Disease resistance conferred by expression of a gene encoding H<sub>2</sub>O<sub>2</sub>-generating glucose oxidase in transgenic potato plants ». *Plant Cell*, 7 (9), 1357-1368.
- XING T., 2007. « Signal transduction pathways and disease resistant genes and their applications to fungal disease control ». In Z.K. PUNJA, S.H. DE BOER, H. SANFAON, (eds). *Biotechnology and plant disease managemet.*, Cambridge, MA, CAB International, pp. 1-15.
- ZIEBELL H. & CARR J.P., 2010. « Cross-Protecton. A Century of Mystery ». In G. LOEBENSTEIN, J.P. CARR, (eds). *Advances in Virus Research*, vol. 76, *Natural and engineered resistance to plant viruses.*, San Diego, CA, Academic PreA, pp. 211-264.
- ZHU Y.J., TANG C.S. & MOORE P., 2005. « Increased disease resistance in papaya by transforming a pathogen-inducible stilbene synthase gene ». *Acta Horticulturae*, 692, 107-114.
- ZUO K., QIN J., ZHAO J., LING H., ZHANG L., CAO Y. & TANG K., 2007. « Over-expression *GbERF2* transcription factor in tobacco enhances brown spots disease resistance by activating expression of downstream genes ». *Gene*, 391 (1-2), 80-90.

## *Des plantes transgéniques pour une meilleure utilisation de l'azote,*

Bertrand HIREL et André GALLAIS

- AMEZIANE R., BERNHARD K. & LIGHTFOOT D., 2000. « Expression of the bacterial *gdhA* gene encoding a NADPH glutamate dehydrogenase in tobacco affects plant growth and development ». *Plant Soil*, 221, 47-57.
- BI Y.M., KANT S., CLARK J., GIDDA S., MING F., XU J., ROCHON A., SHELPI B.J., HAO L., ZHAO R., MULLEN R.T., ZHU T. & ROTHSTEIN S.J., 2009. « Increased nitrogen use efficiency in transgenic rice plants over-expressing a nitrogen-responsive early nodulin gene identified from rice expression profiling ». *Plant Cell Environ.*, 32, 1749-1760.

- CHARPENTIER M. & OLDROYD G., 2010. « How close are we to nitrogen-fixing cereal ? ». *Current Opinion in Plant Biology*, 13, 556-564.
- CHIHKOVA S., ARELLANO J., VANCE C.P. & HERNANDEZ G., 2001. « Transgenic tobacco plants that overexpress alfalfa NADH-glutamate synthase have higher carbon and nitrogen content ». *J. Exp. Bot.*, 52, 2079-2087.
- DJENNANE S., CHAUVIN J.E., QUILLERÉ I., MEYER C. & CHUPEAU Y., 2002. « Introduction and expression of a deregulated tobacco nitrate reductase gene in potato lead to highly reduced nitrate levels in transgenic tubers ». *Transgenic Research*, 11, 175-184.
- DJENNANE S., QUILLERÉ I., LEYDECKER M.-T., MEYER C. & CHAUVIN J.E., 2004. « Expression of a deregulated tobacco nitrate reductase gene in potato increases biomass production and decreases nitrate concentration in all organs ». *Planta*, 219, 884-893.
- DUBOIS V., BOTTON E., MEYER C., RIEU A., BEDU M., MAISONNEUVE B. & MAZIER M., 2005. « Systematic silencing of a tobacco nitrate reductase transgene in lettuce (*Lactuca sativa* L.) ». *J. Exp. Bot.*, 56, 2379-2388.
- FUENTES S.I., ALEN D.J., ORTIZ-LOPEZ A. & HERNANDEZ G., 2001. « Overexpression of cytosolic glutamine synthetase increases photosynthesis and growth at low nitrogen concentrations ». *J. Exp. Bot.*, 52, 1071-1081.
- GALLAIS A. & HIREL B., 2004. « An approach of the genetics of nitrogen use efficiency in maize ». *J. Exp. Bot.*, 55, 295-306.
- GOOD A.G., JOHNSON S.J., DE PAUW M., CARROLL R.T., SAVODIV N., VIDMAR J., LU Z., TAYLOR G. & STROEHER V., 2007. « Engineering nitrogen use efficiency with alanine aminotransferase ». *Can. J. Bot.*, 85, 252-262.
- HABASH D.Z., MASSIAH A.J., RONG H.L., WALLSGROVE R.M. & LEIGH R.A., 2001. « The role of cytosolic glutamine synthetase in wheat ». *Ann. Appl. Biol.*, 138, 83-89.
- HIREL B. & LEA P.J., 2001. « Ammonia assimilation ». In *Plant Nitrogen*. INRA, Springer. p. 79-99.
- HIREL B., GALLAIS A., BERTIN P., QUILLERÉ I., BOURDONCLE W., ATTAGNANT C., DELLY C., GOUY A., CADIOU S., RETAILLAU C. & FALQUE M., 2001. « Towards a better understanding of the genetic and physiological basis for nitrogen use efficiency in maize ». *Plant Physiol.*, 125, 1258-1270.
- HIREL B., LE GOUIS J., NEY B. & GALLAIS A., 2007. « The challenge of improving nitrogen use efficiency in crop plants : towards a more central role for genetic variability and quantitative genetics within integrated approaches ». *J. Exp. Bot.*, 58, 2369-2387.
- HODGE A., ROBINSON D. & FITTER A., 2000. « Are microorganisms more effective than plants at competing for nitrogen ? ». *Trends Plant Sci.*, 5, 304-308.
- LAM H.M., WONG P., CHAN H.K., YAM K.M., CHEN L., CHOW C.M. & CORUZZI G.M., 2003. « Overexpression of the ASN1 gene enhances nitrogen status in seeds of *Arabidopsis* ». *Plant Physiol.*, 132, 926-935.
- LIAN X., WANG S., ZHANG J., FENG Q., ZHANG L., FAN D., LI X., YUAN D., HAN B. & ZHANG Q., 2006. « Expression profiles of 10422 genes at early stage of low nitrogen stress in rice assayed using a cDNA microarray ». *Plant Mol. Biol.*, 60, 617-631.
- MAN H.M., BORIEL R., EL-KHATIB R. & KIRBY E.G., 2005. « Characterization of transgenic poplar with ectopic expression of pine cytosolic glutamine synthetase under conditions of varying nitrogen ability ». *New Phytol.*, 167, 31-39.

- MARTIN A., LEE J., KICHEY T., GERENTES D., ZIVY M., TATOU C., BALLIAU T., VALOT B., DAVANTURE M., DUBOIS F., TERCE-LAFORGUE T., COQUE M., GALLAIS A., GONZALEZ-MORO M.B., BETHENCOURT L., QUILLERÉ I., HABASH D.Z., LEA P.J., CHARCOSSET A., PEREZ P., MURIGNEUX A., SAKAKIBARA H., EDWARDS K.J. & HIREL B., 2006. « Two cytosolic glutamine synthetase isoforms of maize (*Zea mays* L.) are specifically involved in the control of grain production ». *The Plant Cell*, 18, 3252-3274.
- MASCLAUX C., QUILLERÉ I., GALLAIS A. & HIREL B., 2001. « The challenge of remobilisation in plant nitrogen economy. A survey of physio-agronomic and molecular approaches ». *Annals of Appl. Biol.*, 138, 69-81.
- MASOOD QURAISHI U., ABROUK M., MURAT F., PONT C., BOLOT S., CONFOLENT C., TOURET L., CHARMET G., MURIGNEUX A., GUERREIRO L., LAFARGE S., LE GOUIS J., FEUILLET C. & SALSE J., 2011. « Cross-genome map based dissection of a nitrogen use efficiency ortho-metaQTL in bread wheat unravels concerted cereal genome evolution ». *The Plant Journal* (doi: 10.1111/j.1365-313X.2010.04461.x)
- OLIVEIRA I.C., BREARS T., KNIGHT T.J., CLARK A. & CORUZZI G.M., 2002. « Overexpression of cytosolic glutamine synthetase. Relation to nitrogen, light, and photorespiration ». *Plant Physiol.*, 129, 1170-1180.
- PING JING Z., GALLARDO F., PASCUAL M.B., SAMPALO R., ROMERO J., TORRES DE VAVARRA A. & CANOVAS F.M., 2004. « Improved growth in a field trial of transgenic hybrid poplar overexpressing glutamine synthetase. *New Phytologist*, 164, 137-145.
- QUILLERÉ I., DUFOSSÉ C., ROUX Y., FOYER C.H., CABOCHE M. & MOROT-GAUDRY J.F., 1994. « The effects of deregulation of NR gene expression on growth and nitrogen metabolism of *Nicotiana plumbaginifolia* plants ». *J. Exp. Bot.*, 278, 1205-1211.
- SHRAWAT A.K., CARROLL R.T., DEPAUW M., TAYLOR G.J. & GOOD A.G., 2008. « Genetic engineering of improved nitrogen use efficiency in rice by the tissue specific expression of alanine amino-transferase ». *Plant biotech.*, J., 6, 722-732.
- TABUCHI M., ABIKO T. & YAMAYA T., 2007. « Assimilation of ammonium ions and reutilization of nitrogen in rice (*O. sativa* L.) ». *J. Exp. Bot.*, 58, 2319-2327.
- TILMAN D., CASSMAN K.G., MATSON P.A., NAYLOR R. & POLASKY S., 2002. « Agricultural sustainability and intensive production practices ». *Nature*, 418, 671-677.
- VINCENT R., FRAISIER V., CHAILLOU S., LIMAMI M.A., DELÉENS E., PHILLIPSON B., DOUAT C., BOUTIN J.P. & HIREL B., 1997. « Overexpression of a soybean gene encoding cytosolic glutamine synthetase in shoots of transgenic *Lotus corniculatus* L. plants triggers changes in ammonium assimilation and plant development ». *Planta*, 201, 424-433.
- WANG R., OKAMOTO M., XING X. & CRAWFORD N.M., 2003. « Microarrays analysis of the nitrate response in *Arabidopsis* roots and shoots reveals over 1000 rapidly responding genes and new linkages to glucose, trehalose-6-phosphate, iron, and sulphate metabolism ». *Plant Physiol.*, 132, 556-567.
- YAMAHA T., OBARA M., NAKAJIMA H., SASAKI S., HAYAKAWA T. & SATO T., 2002. « Genetic manipulation and quantitative trait loci mapping for nitrogen recycling in rice ». *J. Exp. Bot.*, 53, 917-925.
- YANAGISAWA S., AKIYAMA A., KISAKA H., UCHIMIYA H. & MIWA T., 2004. « Metabolic engineering with *Dof1* transcription factor in plants : improved nitrogen assimilation and growth under low-nitrogen conditions ». *Proc. Nat. Acad. Sci.*, 101, 7833-7838.

## *L'apport des biotechnologies pour l'amélioration de la tolérance à la sécheresse des céréales*, Laure GAUFICHON, Bernard BACHELIER et

Jean-Louis PRIOUL

- BOLANOS J. & EDMEADES G.O., 1991. « Value of selection for osmotic potential in tropical maize ». *Agronomy Journal*, 83 (6), 948-956.
- BOYER J.S., 1982. « Plant productivity and environment ». *Science*, 218 (4571), 443-448.
- BYRNE P.F., BOLANOS J., EDMEADES G.O. & EATON D.L., 1995. « Gains from selection under drought versus multilocation testing in related tropical maize populations ». *Crop Sci.*, 35 (1), 63-69.
- CAMPOS H., COOPER A., HABBEN J.E., EDMEADES G.O. & SCHUSSLER J.R., 2004. « Improving drought tolerance in maize : a view from industry ». *Field Crops Research*, 90 (1), 19-34.
- CHENG M., FRY J.E., PANG S., ZHOU H., HIRONAKA C.M., DUNCAN D.R., CONNER T.W. & WAN Y., 1997. « Genetic Transformation of Wheat Mediated by *Agrobacterium tumefaciens* ». *Plant Physiology*, 115 (3), 971-980.
- COURTOIS B., 2009. « Rice root genetic architecture : Meta-analysis from a drought QTL database ». *Rice*, 2, 15-34.
- DUBOUZET J.G., SAKUMA Y., ITO Y., KASUGA M., DUBOUZET E.G., MIURA S., SEKI M., SHINOZAKI K. & YAMAGUCHI-SHINOZAKI K., 2003. « OsDREB genes in rice, *Oryza sativa* L., encode transcription activators that function in drought-, high-salt- and cold-responsive gene expression ». *Plant Journal*, 33 (4), 751-763.
- DUVICK D.N., 2005. « The contribution of breeding to yield advances in maize (*Zea mays* L.) ». *Advance in Agronomy*, 86, 83-145.
- EDMEADES G.O., BOLANOS J., HERNANDEZ M. & BELLO S., 1993. « Causes for silk delay in a low land tropical maize population ». *Crop Science*, 33, 1029-1035.
- EDMEADES G.O., 2008. « Tolérance à la sécheresse chez le maïs : une nouvelle réalité ». In C. JAMES, *Global Status of Commercialized Biotech/GM Crops*. Ithaca, NY, ISAAA Brief No. 39. ISAAA.
- GALLAIS A., 1989. *Théorie de la sélection en amélioration des plantes*. Paris, Masson.
- GAMBÍN B.L., BORRÁS L. & OTEGUI M.E., 2006. « Source-sink relations and kernel weight differences in maize temperate hybrids ». *Field Crops Research*, 95, 316-326.
- GAUFICHON L., PRIOUL J.L. & BACHELIER B., 2010. « L'amélioration génétique de la tolérance à la sécheresse des plantes cultivées ». Fondation FARM : [http://www.fondation-farm.org/zoe\\_fic/etude\\_secheresse\\_complete.pdf](http://www.fondation-farm.org/zoe_fic/etude_secheresse_complete.pdf).
- GORDON-KAMM W.J., SPENCER T.M., MANGANO M.L., ADAMS T.R., DAINES R.J., START W.G., O'BRIEN J.V., CHAMBERS S.A., ADAMS W.R. Jr., WILLETTS N.G., RICE T.B., MACKAY C.J., KRUEGER R.W., KAUSCH A.P. & LEMAUX P.G., 1990. « Transformation of Maize Cells and Regeneration of Fertile Transgenic Plants ». *The Plant Cell*, 2 (7), 603-618.
- GOULD J., DEVEY M., HASEGAWA O., ULIAN E.C., PETERSON G. & SMITH R.H., 1991. « Transformation of *Zea mays* L. Using *Agrobacterium tumefaciens* and the Shoot Apex ». *Plant Physiology*, 95 (2), 426-34.
- HELENTJARIS T., 1987. « A genetic linkage map for maize based on RFLPs ». *Trends in genetics*, 3 (8), 217-221.
- HELENTJARIS T., 1988. « Use of RFLP analysis to identify genes involved in complex traits of agronomic importance ». In R. T. FRALEY, N. M. FREY & J. SCHELL eds, *Genetic improvements of agriculturally important crops : progress and issues*, Cold Spring Harbor Laboratory, p. 27-30.

- HUANG X.Q., BORNER A., RODER M.S. & GANAL M.W., 2002. « Assessing genetic diversity of wheat (*Triticum aestivum* L.) germplasm using microsatellite markers ». *Theoretical and Applied Genetics*, 105 (5), 699-707.
- ITO Y., KATSURA K., MARUYAMA K., TAJI T., KOBAYASHI M., SEKI M., SHINOZAKI K. & YAMAGUCHI-SHINOZAKI K., 2006. « Functional analysis of rice DREB1/CBF-type transcription factors involved in cold-responsive gene expression in transgenic rice ». *Plant and Cell Physiology*, 47 (1), 141-153.
- REYNOLDS M.P., RAJARAM S. & SAYRE K.D., 1999. « Physiological and genetic changes of irrigated wheat in the post-Green Revolution period and approaches for meeting projected global demand ». *Crop science*, 39 (6), 1611-1621.
- RIBAUT J.M., HOISINGTON D.A., DEUTSCH J.A., JIANG C. & GONZALEZ-DE-LEON D., 1996. « Identification of quantitative trait loci under drought conditions in tropical maize. 1. Flowering parameters and the anthesis-silking interval ». *Theoretical and Applied Genetics*, 92 (7), 905-914.
- RIBAUT J.M., JIANG C., GONZALEZ-DE-LEON D., EDMEADES G.O. & HOISINGTON D.A., 1997. « Identification of quantitative trait loci under drought conditions in tropical maize. 2. Yield components and marker-assisted selection strategies ». *Theoretical and Applied Genetics*, 94 (6/7), 887-896.
- RIBAUT J.M. & HOISINGTON D., 1998. « Marker-assisted selection : new tools and strategies ». *Trends in Plant Science*, 3 (6), 236-239.
- SHINOZAKI K. & YAMAGUCHI-SHINOZAKI K., 2007. « Gene networks involved in drought stress response and tolerance ». *Journal of Experimental Botany*, 58 (2), 221-7.
- TOLLENAAR M., DWYER L.M. & STEWART D.W., 1992. « Ear and kernel formation in maize hybrids representing three decades of grain yield improvement in Ontario ». *Crop Science*, 32 (2), 432-438.
- TOLLENAAR M. & WU J., 1999. « Yield improvement in temperate maize is attributable to greater stress tolerance ». *Crop Science*, 39 (6), 1597-1604.
- VASIL V., SRIVASTAVA V., CASTILLO A.M., FROMM M.E. & VASIL I.K., 1993. « Rapid production of transgenic wheat plants by direct bombardment of cultured immature embryos ». *Bio technology*, 11 (13), 1553-1558.
- VINOD M.S., SHARMA N., MANJUNATH K., KANBAR A., PRAKASH N.B. & SHASHIDHAR H.E., 2006. « Candidate genes for drought tolerance and improved productivity in rice (*Oryza sativa* L.) ». *J Biosci*, 31 (1), 69-74.
- WESTGATE M.E. & BOYER J.S., 1986a. « Silk and pollen water potentials in maize ». *Crop Science*, 26 (5), 947-951.
- WESTGATE M.E. & BOYER J.S., 1986b. « Water status of the developing grain of maize ». *Agronomy Journal*, 78 (4), 714-719.
- ZHANG J., NGUYEN H.T. & BLUM A., 1999. « Genetic analysis of osmotic adjustment in crop plants ». *Journal of Experimental Botany*, 50 (332), 291-302.

## RÉFÉRENCES INTERNET

- Projet international de séquençage du génome du riz (2005) :  
[http://rgp.dna.affrc.go.jp/IRGSP/nature436\\_793-800/nature05.html](http://rgp.dna.affrc.go.jp/IRGSP/nature436_793-800/nature05.html)  
 NERICA (2002) : <http://www.warda.org/NERICA%20flyer/ari%20-%20fr.htm>  
 Generation Challenge Program : [http://www.generationcp.org/who\\_we\\_are](http://www.generationcp.org/who_we_are)  
 International Wheat Genome Sequencing Consortium : <http://www.wheatgenome.org/>

*L'apport des biotechnologies végétales aux pays en développement,*  
Mame-Oureye SY et Claudine FRANCHE

- AJBILOU A., MARANON T., ARROYA J. & ATER M., 2008. « Structure et diversité des subéraies du nord-ouest du Maroc ». *Annales de la recherche forestière au Maroc*, 39, 36-42.
- AL-BABILI S. & BEYER P., 2005. « Golden Rice – five years on the road – five years to go ? ». *Trends in Biotechnology*, 10 (12), 565-573.
- DELSENY M., 2009. « Le séquençage des génomes de plantes : les acquis ». *Cahiers de l'Agriculture*, 18 (6), 461-467.
- DOMMERMUES Y., DUHOUX E. & DIEM H.G., 1999. *Les Arbres fixateurs d'azote. Caractéristiques fondamentales et rôle dans l'aménagement des écosystèmes méditerranéens et tropicaux*. Dumas.
- FAO, 2006. « Un trésor enfoui : la pomme de terre ». *Focus*. <http://www.fao.org/ag/fr/magazine/0611sp1.htm>.
- FAO, 2009. *FAO biotechnologies in developing countries (FAO-BioDeC)* [http://www.fao.org/biotech/inventory\\_admin/dep/default.asp](http://www.fao.org/biotech/inventory_admin/dep/default.asp).
- FITZGERALD M., MCCOUCH S.R. & HALL R.D., 2009. « Not just a grain of rice : the quest for quality ». *Trends in Plant Science*, 14 (3), 133-139.
- HOFIS J.-L. & BERTI F., 2006. « Les cotonniers (*Gossypium hirsutum* L.) génétiquement modifiés, Bt : quel avenir pour la petite agriculture en Afrique francophone ? ». *Biotechnology, Agronomy, Society and Environment*, 10 (4), 335-343.
- ISHII K. & KAMBOU S., 2007. « *In vitro* culture of an African multipurpose tree species : *Adansonia digitata* ». *Propagation of Ornamental Plants*, 7 (2), 62-67.
- JAMES C., 2009. *Global status of commercialized biotech/GM crops. Executive summary (ISAAA Brief No. 41)*. Ithaca, NY, ISAAA.
- MUTANDWA E., 2008. « Performance of tissue-cultured sweet potatoes among smallholder farmers in Zimbabwe ». *AgBioForum*, 11 (1), 48-57.
- OKUSU H., 2009. « Biotechnology research in the CGIAR : an overview ». *AgBioForum*, 12 (1), 70-77.
- ROY B., NOREN S.K., MANDAL A.B. & BASU A.K., 2010. « Genetic engineering for abiotic stress tolerance in agricultural crops ». *Biotechnology*, 9, 1-22.
- TAKESHIMA, H., 2010. « Prospects for development of genetically modified cassava in Sub-Saharan Africa ». *AgBioForum*, 13 (1), 63-75.
- TAYLOR N., CHAVARRIAGA P., RAEMAKERS K., SIRTUNGA D. & ZHANG P., 2004. « Development and application of transgenic technologies in cassava ». *Plant Molecular Biology*, 56 (4), 671-688.
- VARSHNEY R.K., GLASZMANN J.-C., LEUNG H. & RIBAUT J.-M., 2010. « More genomic resources for less-studied crops ». *Trends in Biotechnology*, 28 (9), 452-460.
- WOLSON R., 2007. « Assessing the prospects for the adoption of biofortified crops in South Africa ». *AgBioForum*, 10 (3), 184-191.
- ZHONG C., ZHANG Y., CHEN Y., JIANG Q., CHEN Z., LIANG J., PINYOPUSARERK K., FRANCHE C. & BOGUSZ D., 2010. « Casuarina research in China ». *Symbiosis*, 50 (1-2), 107-114.
- ZHU C., NAQVI S., GOMEZ-GALERA S., PELACHO A.M., CAPELL T. & CHRISTOU P., 2007. « Transgenic strategies for the nutritional enhancement of plants ». *Trends in Plant Science*, 12 (12), 548-555.



*L'intérêt des PGM pour la qualité des productions agricoles : le maïs Bt*, Catherine REGNAULT-ROGER et Marc DÉLOS

- Agence française de sécurité sanitaire des aliments (AFSSA), 2004. « OGM et alimentation : peut-on identifier et évaluer les bénéfices pour la santé ? ». <http://www.afssa.fr/Documents/BIOT-Ra-BeneficesOGM.pdf>, 67 p. [en ligne 24/10/10].
- BILY A., REID L.M., TAYLOR J.H., JOHNSTON D., MALOUIN C., BURT A.J., BAKAN B., REGNAULT-ROGER C., PAULS K.P., ARNASON J.T. & PHILOGÈNE B.J.R., 2003. « Dehydrodimers of Ferulic Acid in Maize Grain Pericarp : Resistance Factors to *Fusarium graminearum* ». *Phytopathology*, 93, 712-719.
- CHAUHAN Y.S., WRIGHT G.C. & RACHAPUTI N.C., (2008) « Modelling climatic risks of aflatoxin contamination in maize ». *Australian Journal of Experimental Agriculture*, 48, 358-366
- CLEMENTS M.J., CAMPBELL K.W., MARAGOS C.-M., PILCHER C., HEADRICK J.M., PATAKY J.K. & WHITE D.G., 2003. « Influence of Cry1Ab protein and hybrid genotype on fumonisin contamination and *Fusarium* ear rot of corn ». *Crop Science*, 43, 1283-1293.
- DÉLOS M., 2009. *Mémento d'assistance technique pour la mise en œuvre de bonnes pratiques agricoles – Volet Santé de végétaux, Mesures applicables aux grandes cultures*. Document de travail à caractère interne, v. 109, MAP, 423 p.
- DÉLOS M., WEISSENBERGER A., MICOUD A. & REGNAULT-ROGER C., 2008. « Finalité et premier bilan de la Commission de biovigilance : illustration pour la surveillance des ravageurs ». *Actes 8<sup>e</sup> Conférence internationale sur les ravageurs en agriculture*. AFPP, 22-23 octobre 2008, Montpellier, France, CD-Rom. ISBN 2-905550-02-3.
- European Food Safety Authority (EFSA), 2004. « Opinion of the Scientific Panel on Contaminants in the Food Chain on a request from the Commission related to Aflatoxin B1 as undesirable substance in animal feed ». *The EFSA Journal*, 39, 1-27.
- FENG-QIN L., XUE-YUN L. & TAKUMI Y., 1999. « Mycotoxins (Trichothecenes, Zearalenone and Fumonisins) in cereals associated with human red-mold intoxications stored since 1989 and 1991 in China ». *Nat. Toxins*, 7, 93-97
- FOLCHER L., DÉLOS M., MARENJE E., JARRY M., WEISSENBERGER A., EYCHENNE N. & REGNAULT-ROGER C., 2010. « Lower mycotoxin levels in Bt maize grain ». *Agron. Sustain. Dev.*, 30,711-719.
- FOLCHER L., WEISSENBERGER A., FROMENT A., GIRGENTI G. & JENN C., 2010. « Maïs, pyrale et DON, six ans d'études ». *Phytoma*, 636, 26-29
- FOLCHER L., WEISSENBERGER A., EYCHENNE N., CASTELIN H., TSCHERSCHKE P., JARRY M., DÉLOS M. & REGNAULT-ROGER C., 2006a « Moyens alternatifs et gestion de la pyrale du maïs : lutte prophylactique ou prédéfinie ». *Actes 3<sup>e</sup> Conférence internationale sur les moyens alternatifs contre les organismes nuisibles aux végétaux*. AFPP, Lille, 13, 14 et 15 mars 2006, CD-Rom. ISBN 2-905550-03-1.
- FOLCHER L., EYCHENNE N., WEISSENBERGER A., JARRY M., REGNAULT-ROGER C. & DÉLOS M., 2006b. « Study of effects of Bt maize (*Zea mays* L.) events on lepidoptera *Ostrinia nubilalis*, *Sesamia nonagrioides* in southwestern France ». *Comm. Agric. Appl. Biol. Sci.*, 71 (2a), 227-232.
- FOLCHER L., JARRY M., WEISSENBERGER A., EYCHENNE N., DÉLOS M. & REGNAULT-ROGER C., 2009. « Bio-control of *Ostrinia nubilalis* and *Sesamia nonagrioides* by Bt maize in southwestern France. Search of biological indicators by model-based approach for managing mycotoxin risks ». *Insect Pathogens and Insect Parasitic Nematodes IOBC/wprs Bulletin*, 45, 487-490.

- FOLCHER L., JARRY M., WEISSENBARGER A., GÉRAULT F., EYCHENNE N., DÉLOS M. & REGNAULT-ROGER C., 2009. « Comparative activity of agrochemical treatments on mycotoxin levels with regard to corn borers and *Fusarium* mycoflora in maize (*Zea mays* L.) fields ». *Crop Prot.*, 28, 302-308.
- HAMMOND B.G., CAMPBELL K.W., PILCHER C.D., DEGOOYER T.A., ROBINSON A.E., McMILLEN B.L., SPANGLER S.M., RIORDAN S.G., RICE L.G. & RICHARD J.L., 2004. « Lower fumonisin mycotoxin levels in the grain of Bt corn grown in the United States in 2000-2002 ». *J. Agr. Food Chem.*, 52 (5), 1390-1397.
- International Agency for Research on Cancer (IARC), 2002. *Aflatoxins Summary & Evaluation* », Volume 82. <http://www.inchem.org/documents/iarc/vol82/82-04.html> [en ligne 24/10/10].
- IOOS R., BELHADJ A. & MENEZ M., 2004. « Occurrence and distribution of *Microdochium nivale* and *Fusarium* species isolated from barley, durum and soft wheat grains in France from 2000 to 2002 ». *Mycopathologia*, 158, 351-362.
- JAMES C., 2010. *2009 ISAAA Report on Global Status of Biotech/GM Crops*, <http://www.isaaa.org> [en ligne 24/10/10]
- Journal officiel de l'Union européenne (JOUE), 2006. Règlement (CE) n° 1188/2006 de la Commission du 19 décembre 2006, 19.12.2006, L364 /5.
- Journal officiel de l'Union européenne (JOUE), 2007. Règlement (CE) n° 1126/2007 de la Commission du 28 septembre 2007, 29.9.2007, L255 /14.
- MAGAN N. & OLSEN M., 2004. *Mycotoxins in Food*. Cambridge, Woodhead Publishing.
- MAGG T., MELCHINGER A.E., KLEIN D. & BOHN M., 2002. « Relationship between European Corn Borer resistance and concentration of mycotoxins produced by *Fusarium* spp. in grains of transgenic Bt maize hybrids, their isogenic counterparts, and commercial varieties ». *Plant Breeding*, 121, 146-154.
- MARASAS W.F., 1996. « Fumonisin. History, World-Wide Occurrence and Impact ». In Jackson L. (ed.). *New York, Fumonisin in Food* Plenum Press.
- Maiz'Europ, 2010. « Marché et économie », <http://www.agpm.com/pages/index.php> [en ligne 24/10/10].
- MUNKVOLD G.P., HELLMICH R.L. & RICE L.G., 1999. « Comparison of fumonisin concentration in kernel of transgenic Bt maize hybrids and non transgenic hybrids ». *Plant Dis.*, 83, 130-138.
- PAPST C., UTZ H.F., MELCHINGER E., EDER J., MAGG T., KLEIN D. & BOHN M., 2004. « Mycotoxins produced by *Fusarium* spp. in Isogenic Bt vs. non-Bt Maize Hybrids under European Corn Borer Pressure ». *Agron. J.*, 97, 1219-1224.
- PAYNE G.A., CASSEL D.K. & ADKINS C.R., 1986. « Reduction of aflatoxin contamination in corn by irrigation and tillage ». *Phytopathology*, 76, 679-684.
- PAZZI F., LENER M., COLOMBO L. & MONASTRA G., 2006. « Bt maize and mycotoxins : the current state of research ». *Ann. Microbiol.*, 56 (3), 223-230.
- PFOHL-LESZKOWICZ A., 1999. *Les Mycotoxines dans l'alimentation. Évaluation et gestion du risque*. Paris, Tec & Doc-Lavoisier, 468 p.
- RAYMOND S.L., SMITH T.K. & SWAMY H.L.V.N., 2005. « Effects of feeding a blend of grains naturally contaminated with *Fusarium* mycotoxins on feed intake, metabolism, and indices of athletic performance of exercised horses ». *J. Anim. Sci.*, 83, 1267-1273.

- WEISSENBERGER A., IOOS R., FOLCHER L., REGNAULT-ROGER C., ROSE S., GÉRAULT F., EYCHENNE N. & DÉLOS M., 2006. « Mycotoxines en maïs : état des lieux en France et premiers éléments de gestion ». *Actes 8<sup>e</sup> Conférence internationale sur les maladies des plantes*. AFPP, Tours, 5-6 décembre 2006, CD-Rom. ISBN 2-905550-07-4.
- WILD C.P. & HALL A.J., 1996. « Epidemiology of mycotoxin-related diseases ». In HOWARD J.D., MILLER D. (eds), *The Mycota VI : Human and animal relationships*. Berlin, Springer-Verlag, 213-227.

*La qualité des produits : des innovations quantitatives et qualitatives apportées par les biotechnologies*, Pierre BARRET et Gérard PASCAL

- BAUCHER M., CHABBERT B., PILATE G., VAN DOORSSELAERE J., TOLLIER M.-T., PETIT-CONIL M., CORNU D., MONTIES B., VAN MONTAGU M., INZÉ D., JOUANIN L. & BOERJAN W., 1996. « Red xylem and higher lignin extractability by down-regulating a cinnamyl alcohol dehydrogenase in poplar ». *Plant Physiology*, 112, 1479-1490.
- BENBOUZA H., LACAPE J.-M., JACQUEMIN J.-M., COURTOIS B., DIOUF F.B.H., SARR D., KONAN N., BAUDOIN J.-P. & MERGEAI G., 2010. « Introgression of the *low-gossypol seed & high-gossypol plant* trait in upland cotton : analysis of [(*Gossypium hirsutum* x *G. raimondii*)<sup>2</sup> x *G. sturtianum*] trispecific hybrid and selected derivatives using mapped SSRs ». *Molecular Breeding*, 25, 273-286.
- BUKENYA J.O. & WRIGHT N.R., 2007. « Determinants of consumer attitudes and purchase intentions with regard to genetically modified tomatoes ». *Agribusiness*, 23, 117-130.
- DE VETTEN N., WOLTERS A., RAEMAKERS K., VAN DER MEER I., TER STEGE R., HEERES E., HEERES P. & VISSER T., 2003. « A transformation method for obtaining marker-free plants of a cross-pollinating and vegetatively propagated crop ». *Nature Biotechnology*, 21, 439-442.
- DIRETTO G., TAVAZZA R., WELSH R., PIZZICHINI D., MOURGUES F., PAPACCHIOLI V., BEYER P. & GIULIANO G., 2006. « Metabolic engineering of potato tuber carotenoids through tuber-specific silencing of lycopene epsilon cyclase ». *BMC Plant Biology*, 6, 13.
- DIRETTO G., WELSH R., TAVAZZA R., MOURGUES F., PIZZICHINI D. & BEYER P., GIULIANO G., 2007. « Silencing of beta-carotene hydroxylase increases total carotenoid and beta-carotene levels in potato tubers ». *BMC Plant Biology*, 7, 11.
- ENSERINK M., 2008. « Tough lessons from golden rice ». *Science*, 320, 468-471.
- GODWIN I.D., WILLIAMS S.B., PANDIT P.S. & LAIDLAW H.K.C., 2009. « Multifunctional grains for the future : genetic engineering for enhanced and novel cereal quality ». *In Vitro Cellular and Developmental Biology - Plant*, 45, 383-399.
- GSCHWENDTNER S., REICHMANN M., MÜLLER M., RADI V., MUNCH J.C. & SCHLOTTER M., 2010. « Effects of genetically modified amylopectin-accumulating potato plants on the abundance of beneficial and pathogenic microorganisms in the rhizosphere ». *Plant Soil*, 335, 413-422.
- HARJES C.E., ROCHEFORD T.R., BAI L., BRUTNELL T.P., BERMUDEZ KANDIANIS C., SOWINSKI S.G., STAPLETON A.E., VALLABHANENI R., WILLIAMS M., WURTZEL E.T., YAN J. & BUCKLER E.S., 2008. « Natural genetic variation in Lycopene Epsilon Cyclase tapped for maize biofortification ». *Science*, 319, 330-333.
- HOFVANDER P., ANDERSSON M., LARSSON C.T. & LARSON H.L., 2004. « Field performance and starch characteristics of high-amylose potatoes obtained by antisense gene targeting of two branching enzymes ». *Plant Biotechnology Journal*, 2, 311-320.

- HOVENKAMP-HERMELINK J.H.M., JACOBSEN E., PONSTEIN A.S., VISSER R.G.F., VOS-SCHEPERKEUTER G.H., BIJMOLT E.W., DE VRIES J.N., WITHOLT B. & FEENSTRA W.J., 1987. « Isolation of an amylase-free starch mutant of the potato (*Solanum tuberosum* L.) ». *Theoretical and Applied Genetics*, 75, 217-221.
- HU W.J., HARDING S.A., LUNG J., POPKO J.L., RALPH J., STOKKE D.D., TSAI C.J. & CHIANG V.L., 1999. « Repression of lignin biosynthesis promotes cellulose accumulation and growth in transgenic trees ». *Nature Biotechnology*, 17, 808-812.
- ILARDI V. & BARBA M., 2001. « Assessment of functional transgene flow in tomato fields ». *Molecular Breeding*, 8, 311-315.
- KRAMER M.G. & REDENBAUGH K., 1994. « Commercialization of a tomato with an antisense polygalacturonase gene : The FLAVR SAVR™ tomato story ». *Euphytica*, 79, 293-297.
- KUIPERS A.G.J., SOPPE W.J.J., JACOBSEN E. & VISSER R.G.F., 1994. « Field evaluation of transgenic potato plants expressing an antisense granule-bound starch synthase gene : increase of the antisense effect during tuber growth ». *Plant Molecular Biology*, 26, 1759-1773.
- KUIPERS A.G.J., SOPPE W.J.J., JACOBSEN E. & VISSER R.G.F., 1995. « Factors affecting the inhibition by antisense RNA of granule-bound starch synthase gene expression in potato ». *Molecular and General Genetics*, 246, 745-755.
- KULL B., SALAMINI F. & ROHDE H., 1995. « Genetic engineering of potato starch composition : inhibition of amylose biosynthesis in tubers from transgenic potato lines by the expression of antisense sequences of the gene for granule-bound starch synthase ». *Journal of Genetics and Breeding*, 49, 69-76.
- LAPIERRE C., POLLET B., PETIT-CONIL M., TOVAL G., ROMERO J., PILATE G., LEPLÉ J.-C., BOERJAN W., FERRET V., DE NADAI V. & JOUANIN L., 1999. « Structural alterations of lignins in transgenic poplars with depressed cinnamyl alcohol dehydrogenase or caffeic acid O-methyltransferase activity have an opposite impact on the efficiency of industrial kraft pulping ». *Plant Physiology*, 119, 153-163.
- NAKAMURA T., YAMAMORI M., HIRANO H., HIDAKA S. & NAGAMINE T., 1995. « Production of waxy (amylose-free) wheats ». *Molecular and General Genetics*, 248, 253-259.
- NAQVI S., ZHU C., FARRE G., RAMESSAR K., BASSIE L., BREITENBACH J., CONESA D.P., ROS G., SANDMANN G., CAPELL T. & CHRISTOU P., 2009. « Transgenic multivitamin corn through biofortification of endosperm with three vitamins representing three distinct metabolic pathways ». *Proceedings of the National Academy of Sciences USA*, 106, 7762-7767.
- NAQVI S., ZHU C., FARRE G., SANDMANN G., CAPELL T. & CHRISTOU P., 2010. « Synergistic metabolism in hybrid corn indicates bottlenecks in the carotenoid pathway and leads to the accumulation of extraordinary levels of the nutritionally important carotenoid zeaxanthin ». *Plant Biotechnology Journal*, no. doi, 10.1111/j.1467-7652.2010.00554.x
- PAINÉ J.A., SHIPTON C.A., CHAGGAR S., HOWELLS R.M., KENNEDY M.J., VERNON G., WRIGHT S.Y., HINCHLIFFE E., ADAMS J.L., SILVERSTONE A.L. & DRAKE R., 2005. « Improving the nutritional value of Golden Rice through increased pro-vitamin A content ». *Nature Biotechnology*, 23, 482-487.
- PILATE G., GUINEY E., HOLT K., PETIT-CONIL M., LAPIERRE C., LEPLÉ J.-C., POLLET B., MILA I., WEBSTER E.A., MARSTORP H.G., HOPKINS D.W., JOUANIN L., BOERJAN W., SCHUCH W., CORNU D. & HALPIN C., 2002. « Field and pulping performances of transgenic trees with altered lignification ». *Nature Biotechnology*, 20, 607-612.
- PILATE G., 2003. « Peupliers à lignines modifiées, du génie génétique à l'industrie papetière ». *Médecine/ Sciences*, 19, 18-20.

- POTRYKUS I., 2010. « Regulation must be revolutionized ». *Nature*, 466, 561.
- PREISS J., 1991. « Biology and molecular biology of starch synthesis and its regulation ». In B.J. Milfin (ed.), *Oxford Surveys of Cellular and Molecular Biology*, Vol. 7. Oxford University Press, Oxford, UK, p. 59-114.
- REDENBAUGH K., BERNER T., EMLAY D., FRANKOS B., HIATT W., HOUCK C., KRAMER M., MALYJ L., MARTINEAU B., RACHMAN N., RUDENKO L., SANDERS R., SHEEHY R. & WIXTROM R., 1993. « Regulatory issues for commercialization of tomatoes with an antisense polygalacturonase gene ». *In Vitro Cellular & Developmental Biology*, 29, 17-26.
- ROMANO G.B. & SCHEFFLER J.A., 2008. « Lowering seed gossypol content in glanded cotton (*Gossypium hirsutum* L.) lines ». *Plant Breeding*, 127, 619-624.
- SAFFORD R., JOBLING S.A., SIDEBOTTOM C.M., WESTCOTT R.J., COOKE D., TOBER K.J., STRONGITHARM B.H., RUSSELL A.L. & GIDLEY M.J., 1998. « Consequences of antisense RNA inhibition of starch branching enzyme activity on properties of potato starch ». *Carbohydrate Polymers*, 35, 155-168.
- SANDERS R.A. & HIATT W., 2005. « Tomato transgene structure and silencing ». *Nature Biotechnology*, 23, 287-289.
- SCHWALL G.P., SAFFORD R., WESTCOTT R.J., JEFFCOAT R., TAYAL A., SHI Y.C., GIDLEY M.J. & JOBLING S.A., 2000. « Production of very-high-amylose potato starch by inhibition of SBE A and B ». *Nature Biotechnology*, 18, 551-554.
- SHEEHY R.E., KRAMER M., HIATT W.R., 1988. « Reduction of polygalacturonase activity in tomato fruit by antisense RNA ». *Proceedings of the National Academy of Sciences USA*, 85, 8805-8809.
- SHUKLA V.K., DOYON Y., MILLER J.C., DE KELVER R.C., MOEHLE E.A., WORDEN S.E., MITCHELL J.C., ARNOLD N.L., GOPALAN S., MENG X., CHOI V.M., ROCK J.M., WU Y.Y., KATIBAH G.E., ZHIFANG G., MCCASKILL D., SIMPSON M.A., BLAKESLEE B., GREENWALT S.A., BUTLER H.J., HINKLEY S.J., ZHANG L., REBAR E.J., GREGORY P.D. & URNOV F.D., 2009. « Precise genome modification in the crop species *Zea mays* using zinc-finger nucleases ». *Nature*, 459, 437-441
- SOMMER A., 1988. « New imperatives for an old vitamin (A) ». *Journal of Nutrition*, 119, 96-100.
- SUNILKUMAR G., CAMPBELL L.M., PUCKHABER L., STIPANOVIC R.D. & RATHORE K.S., 2006. « Engineering cottonseed for use in human nutrition by tissue-specific reduction of toxic gossypol ». *Proceedings of the National Academy of Sciences USA*, 103, 18054-18059
- TANG G., QIN J., DOLNIKOWSKI G.G., RUSSELL R.M. & GRUSAK M.A., 2009. « Golden rice is an effective source of vitamin A ». *American Journal of Clinical Nutrition*, 89,1-8.
- TOWNSEND J.A., WRIGHT D.A., WINFREY R.J., FU F., MAEDER M.L., JOUNG J.K. & VOYTAS D.F., 2009. « High-frequency modification of plant genes using engineered zinc-finger nucleases ». *Nature*, 459, 442-445.
- VISSER R.G.F., SOMHORST I., KUIPERS G.J., RUYNS N.J., FEENSTRA W.J. & JACOBSEN E., 1991. « Inhibition of the expression of the gene for granule-bound starch synthase in potato by antisense constructs ». *Molecular and General Genetics*, 225, 289-296.
- VOELKER S.L., LACHENBRUCH B., MEINZER F.C., JOURDES M., KI C., PATTEN A.M., DAVIN L.B., LEWIS N.G., TUSKAN G.A., GUNTER L., DECKER S.R., SELIG M.J., SYKES R., HIMMEL M.E., KITIN P., SHEVCHENKO O. & STRAUSS S.H., 2010. « Antisense down-regulation of C4L expression alters lignification, tree growth, and saccharification potential of field-grown poplar ». *Plant Physiology*, 154, 874-886.
- WEST K.P. Jr, HOWARD G.R. & SOMMER A., 1989. « Vitamin A and infection. Public health implications ». *Annual Review of Nutrition*, 9, 63-86.

- WEST K.P., POKHREL R.P., KATZ J., LECLERC B.S., PRADHAN E.K., TIELSCH J.M., SOMMER A., KHATRY S.K., SHRESTHA S.R. & PANDEY M.R., 1991. « Efficacy of vitamin A in reducing preschool child mortality in Nepal ». *The Lancet*, 338, 67-71.
- WEST Jr K.P., 2002. « Extent of vitamin A deficiency among preschool children and women of reproductive age ». *Journal of Nutrition*, 132 (Suppl.), 2857S-2866S.
- YE X., AL-BABILI S., KLÖTI A., ZHANG J., LUCCA P., BEYER P. & POTRYKUS I., 2000. « Engineering the provitamin A ( $\beta$ -carotene) biosynthetic pathway into (carotenoid-free) rice endosperm ». *Science*, 287, 303-305.
- YU B., LYDIATE D.J., YOUNG L.W., SCHÄFER U.A. & HANNOUFA A., 2008. « Enhancing the carotenoid content of *Brassica napus* seeds by down regulating lycopene epsilon cyclase ». *Transgenic Research*, 17, 573-585.

### *La production de protéines biosynthétiques à usage thérapeutique,*

Louis-Marie HOUEBINE et Marc-André D'AOUST

- CADORET J.-P., BARDOR M., LEROUGE P., CABIGLIERA M., HENRIQUEZ V. & CARLIER A., 2008. « Les microalgues : usines cellulaires productrices de molécules commerciales recombinantes ». *Médecine Sciences*, 24, 375-382.
- FLOSS D.M., FALKENBURG D. & CONRAD U., 2007. « Production of vaccines and therapeutic antibodies for veterinary applications in transgenic plants : an overview ». *Transgenic Research*, 16, 315-332.
- GOMORD V., FITCHETTE A.C., MENU-BOUAOUICHE L., SAINT-JORE-DUPAS C., PLASSON C., MICHAUD D., FAYE L., 2010. « Plant-specific glycosylation patterns in the context of therapeutic protein production ». *Plant Biotechnology Journal*, 8, 564-587.
- HE Z., ZHAO Y., MEI G., LI N., CHEN Y., 2010. « Could protein tertiary structure influence mammary transgene expression more than tissue specific codon usage ? ». *Transgenic Research*, 19, 519-533.
- HAMILTON S.R., BOBROWICZ P., BOBROWICZ B., DAVIDSON R.C., LI H., MITCHELL T., NETT J.H., RAUSCH S., STADHEIM T.A., WISCHNEWSKI H., WILDT S. & GERNGROSS T.U., 2003. « Production of complex human glycoproteins in yeast ». *Science*, 301, 1244-1246.
- HOUEBINE L.M., 2008. « Methods to generate transgenic animals ». In *Ethics of Science and Technology Assessment*. Heidelberg, Berlin, New York, Springer-Verlag, p. 31-48.
- HOUEBINE L.M., 2009a. « Design of expression cassettes for the generation of transgenic animals (including insulators) ». In I. Anegón (ed.), *Rat Genomics. Methods in Molecular Biology*. Humana Press, p. 55-69.
- HOUEBINE L.M., 2009b. « Production of pharmaceutical proteins by transgenic animals ». *Comparative Immunology, Microbiology & Infectious Diseases*, 32, 107-121.
- KUROIWA Y., KASINATHAN P., SATHIYASEELAN T., JIAO J.A., MATSUSHITA H., SATHIYASEELAN J., WU H., MELLQUIST J., HAMMITT M., KOSTER J., KAMODA S., TACHIBANA K., ISHIDA I. & ROBL J.M., 2009. Antigen-specific human polyclonal antibodies from hyperimmunized cattle. *Nature Biotechnology*, 27, 173-181.
- LANDRY N., WARD B., TRÉPANIÉ S., MONTOMOLI E., DARGIS M, LAPINI G., VÉZINA L.P., 2010. « Preclinical and clinical development of plant-made virus-like particle vaccine against avian H5N1 influenza ». *PLoS ONE*, 5(12), e15559. doi:10.1371/journal.pone.0015559.
- LUBON H., 1998. « Transgenic animal bioreactors in biotechnology and production of blood proteins ». *Biotechnology Annual Review*, 4, 1-54.

- MASSOUD M., BISCHOFF R., DALEMAN W., POINTU H., ATTAL J., SCHULTZ H., CLESSE D., STINNAKRE M.G., PAVIRANI A. & HOUDEBINE L.M., 1991. « Expression of active recombinant human alpha 1-antitrypsin in transgenic rabbits ». *Journal of Biotechnology*, 18, 193-203.
- MASSOUD M., ATTAL J., THÉPOT D., POINTU H., STINNAKRE M.G., THÉRON M.C., LOPEZ C., HOUDEBINE L.M., 1996. « The deleterious effects of human erythropoietin gene driven by the rabbit whey acidic protein gene promoter in transgenic rabbits ». *Reproduction Nutrition Development*, 36, 555-563.
- MIAO Y., DING Y. & SUN Q.Y., 2008. « Plant Bioreactors for Pharmaceuticals ». *Biotechnology and Genetic Engineering Reviews*, 25, 363-380.
- RAYBOULD A., TUTTLE A., SHORE S. & STONE T., 2010. « Environmental risk assessments for transgenic crops producing output trait enzymes ». *Transgenic Research*, 19, 595-609.
- REHBINDER E., ENGELHARD M., HAGEN K., JÖRGENSEN R.B., PARDO-AVELLANEDA R., SCHNIECKE A. & THIELE F., 2009. « Pharming. Promises and risks of biopharmaceuticals derived from genetically modified plants and animals ». *Ethics of Science and Technology Assessment*. Berlin, Heidelberg, Springer-Verlag.
- RIPOLL P.J. & HOUDEBINE L.M., 2006. « Où en sont les bioréacteurs animaux ? ». *Biofutur*, 21, 32-37.
- SHAALTIEL Y., BARTFELD D., HASHMUELI S., JÖRGENSEN, R.B., PARDO-AVELLANEDA R., SCHIECKE, A. & THIELE F., 2007. « Production of glucocerebrosidase with terminal mannose glycans for enzyme replacement therapy of Gaucher's disease using a plant cell system ». *Plant Biotechnology Journal*, 5, 579-590.
- SPARROW P.A.C., IRWIN J.A., DALE P.J., TWYMAN R.M. & MA J.K.C., 2007. « Pharma-Planta. Road testing the developing regulatory guidelines for plant-made pharmaceuticals ». *Transgenic Research*, 16, 147-161.
- STREATFIELD S.J., 2007. « Approaches to achieve high-level heterologous protein production in plants ». *Plant Biotechnology Journal*, 5, 2-15.
- TWYMAN R.M., SCHILLBERG S. & FISCHER R., 2005. « Transgenic plants in the biopharmaceutical market ». *Expert Opinion on Emerging Drugs*, 10, 185-218.
- VÉZINA L.P., FAYE L., LEROUGE P. *et al.*, 2009. « Transient co-expression for fast and high-yield production of antibodies with human-like N-glycans in plants ». *Plant Biotechnology Journal*, 7, 442-455.

### *Les biotechnologies végétales à l'horizon 2030*, David B. SAWAYA

- ARUNDEL A. & SAWAYA *et al.*, 2009. « Trends in the Application of Biotechnology to Agriculture and Related Natural Resources to 2015 ». *OECD Journal*, 3, 7-112. [www.oecd.org/futures/bioeconomy/2015](http://www.oecd.org/futures/bioeconomy/2015).
- BBC, 2008. « The Cost of Food. Facts and Figures ». [http://news.bbc.co.uk/2/hi/in\\_depth/7284196.stm](http://news.bbc.co.uk/2/hi/in_depth/7284196.stm).
- FAO, 2002. « World Agriculture 2030. Main Findings ». [www.fao.org/english/newsroom/news/2002/7833-en.html](http://www.fao.org/english/newsroom/news/2002/7833-en.html).
- FAO. « Biotechnology in Developing Countries, Bio-dec database ». [www.fao.org/biotech/inventory\\_admin/dep/default.asp](http://www.fao.org/biotech/inventory_admin/dep/default.asp).
- FAO, 2009. « FAOSTAT Database ». [http://faostat.fao.org/..](http://faostat.fao.org/)

- GRAFF G.D., ZILBERMAN D. & BENNET A.B., 2009. « The contraction of agbiotech product quality innovation ». *Nature Biotechnology*, 27, 702-704.
- IPCC (Intergovernmental Panel on Climate Change), 2007. « Climate Change 2007. Synthesis Report. Summary for Policymakers ». [www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr\\_spm.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf).
- JAMES C., 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009 & 2010. « Global Status of Commercialized Biotech/GM Crops ». *ISAAA Brief*, No. 5, 8, 12, 21, 24, 27, 30, 32, 34, 35, 37, 41 & 42. Ithaca, New York.
- KAMAU S., 2010. « Kenya to grow GM cotton on large scale by 2012 ». *The East African*. <http://allafrica.com/stories/201008100401.html>.
- OCDE-FAO, 2008. *Perspectives agricoles de l'OCDE et de la FAO 2008-2017*. Paris, OCDE.
- OCDE, 2009. *La Bioéconomie à l'horizon 2030 : quel programme d'action ?*. Paris, OCDE.
- ONU, 2006. *World Population Prospects : The 2006 Revision*. Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat. <http://esa.un.org/unpp>.
- SAWAYA D. & ARUNDEL A., 2009. « Agricultural biotechnology. A developing challenge ». *Chemistry & Industry*, 6, 16-18.
- VACCARI D., 2009. « Phosphorus Famine : The Threat to Our Food Supply ». *Scientific American Magazine*. [www.scientificamerican.com/article.cfm?id=phosphorus-a-looming-crisis](http://www.scientificamerican.com/article.cfm?id=phosphorus-a-looming-crisis).

## Postface, François HOUILLIER

- BAULCOMBE *et al.*, 2009. *Reaping the Benefits. Science and the Sustainable Intensification of Global Agriculture*. London, The Royal Society, 72 p.
- European Commission, 2010. *EUR 24473 – A decade of EU-funded GMO research (2001-2010)*. Luxembourg, Publications Office of the European Union, 264 p.
- GODFRAY H.C.J., BEDDINGTON J.R., CRUTE I.R., HADDAD L., LAWRENCE D., MUIR J.F., PRETTY J., ROBINSON S., THOMAS S.M. & TOULMIN C., 2010. « Food Security : The Challenge of Feeding 9 Billion People ». *Science*, 327, 812-818.
- GODFRAY H.C.J. *et al.*, 2011. *Foresight. The Future of Food and Farming. Final Project Report*. London, The Government Office for Science, 208 p.
- GUILLOU M. *et al.*, 2010. *Document d'orientation INRA 2010-2020 : une science pour l'impact*. Paris, INRA, 57 p.
- MARIMUTHU MOHAN P.A., JOLIVET S., RAVI M., PEREIRA L., DAVDA I.N., CROMER L., WANG L., NOGUÉ F., CHAN S.W.L., SIDDIQI I. & MERCIER R., 2011. « Synthetic Clonal Reproduction Through Seeds ». *Science*, 331 : 876.
- PAILLARD S., TREYER S. & DORIN B., 2010. *AgriMonde. Scénarios et défis pour nourrir le monde en 2050*. Paris, Éditions Quae, 296 p.
- RICROCH A., BERGÉ J.-B. & MESSÉAN A., 2009. « Revue bibliographique sur la dispersion des transgènes à partir du maïs génétiquement modifié ». *C.R. Acad. Sci. Biologies*, 332, 10, 861-875.
- <ftp://ftp.cordis.europa.eu/pub/fp7/kbbe/docs/a-decade-of-eu-funded-gmo-research>