

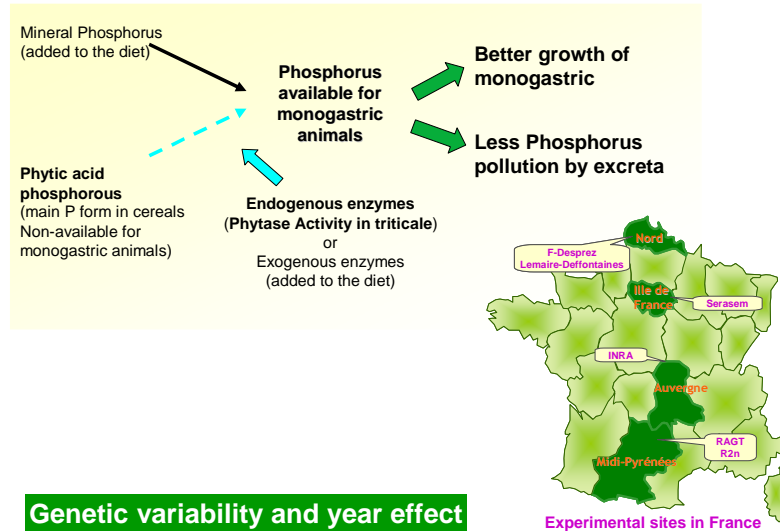
High phytase activity: an advantage of some triticale cultivars for feeding monogastric animals

Bouguennec A. ¹, Vilarinho M. ², Blanc P. ³, Delhaye J.M. ³, Havegeer H. ³, Le Goff J.P. ³, Lonnet P. ³, Balfourier F. ¹

¹ INRA-UBP UMR 1095 Génétique, Diversité et Ecophysiologie des Céréales, 234 avenue du Brézat, domaine de Crouelle, 63100 Clermont-Ferrand France <http://www1.clermont.inra.fr/umr1095>

² ARVALIS - Institut du végétal, Poulaine, 41100 Villerable France <http://www.arvalisinstitutduvegetal.fr>

³ GIE TRITICALE, 7 rue Coq-héron, 75030 Paris Cedex France (Agri-Obtentions, Florimont-Desprez, Lemaire-Deffontaines, RAGT R2n, Serasem)



As a high phytase activity can lead to environmental and feeding advantages, this trait had been studied on triticale lines and cultivars registered in France.

Material and methods

2005: a collection of 65 cultivars registered in France } 41 common cultivars
2006: a collection of 67 cultivars registered in France }

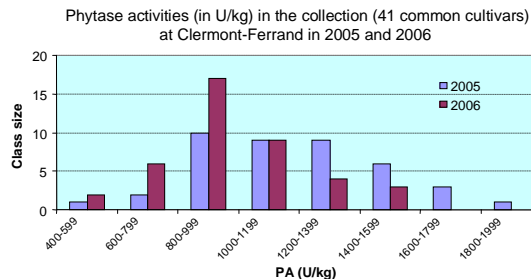
2005: trial network of 10 lines in 4 locations

2006: trial network of 9 lines in 3 locations

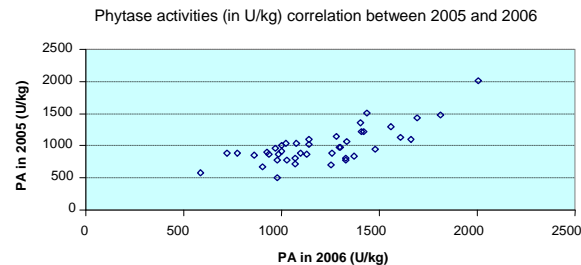
Lines studied: check cultivars and octoploid x hexaploid derived lines

Phytase activity (PA) measured by INZO^o laboratory

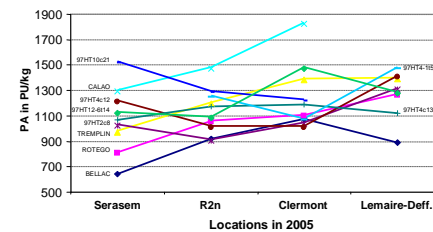
Genetic variability and year effect



- a wide range of variation: from 1 to 3
- a year effect but with good correlation between years

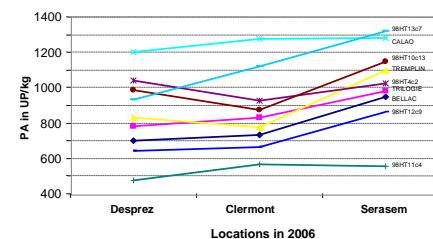


Genetic and environmental effects



Genetic and environmental effects and G x E interactions for 2005 and 2006 are shown on these graphs.

Experimental locations are ordered by increasing phytase activity means. Genotypes in different sites are joined. The crossing lines show the importance of interactions.



In 2006 (3 sites), the few crossing lines indicated moderate G x E interactions, whereas in 2005 (4 sites), interactions were more important.

However, in both cases, we were able to identify low phytase activity lines (eg Bellac or 98HT11c4) or high phytase activity lines (eg Calao or 98HT13c7)

- Genetic effect
- Environmental effect
- Moderate G x E interactions

Conclusion and perspectives

- Possibility to select for high phytase activity triticale genotypes
- Genetic studies to develop by low x high phytase activity cultivars crosses