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

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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
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® laboratory

Genetic variability and year effect

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

Phytase activities (in U/kg) correlation between 2005 and 2006

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