Fifth European Seminar on
Fusarium Mycotoxins Taxonomy and Pathogenicity

September 1-5, 1997
Szeged, Hungary

First announcement

Dear Colleague,

As decided in Martina Franca in 1995, the 5th Seminar will be held in the Cereal Research Institute, Szeged, Hungary.

The organising Committee of the 5th European Fusarium Seminar on Fusarium - Mycotoxins, Taxonomy and Pathogenicity cordially invites you to attend the Seminar to be held in Szeged, Sept. 1-5, 1997. The aim of the Seminar is to bring together various specialists (including mycologists, chemists, plant pathologists, plant breeders, geneticists, veterinarians and mycotoxicologists) to present and to discuss recent advances in the area of Fusarium - Mycotoxins, Taxonomy and Pathogenicity.

Various social events and tours are planned for seminar participants.

The Seminar will consist of sessions of papers and posters on the following topics:

1. Natural occurrence of toxins (in food, feeds and infected plants) and national and international surveillance programs.
2. Biochemistry, chemistry and detection methods
3. Toxicity, bioassays and significance in human and animal health.
4. Significance in plant diseases, breeding and host resistance.
5. Fungal taxonomy and ecology of toxigenic species
6. Molecular genetic in the plants and pathogens.

There will be a registration fee of USA $ 300 for the workshop. This will cover the cost preparing the bookt of abstract, the cost of publishing the papers in the Cereal Research Communications as special issue and some social events.

The second announcement will be sent to those who sent an answer for the first announcement.

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FUSARIUM TOXINS IN URUGUAY:HEAD BLIGHT,TOXIN LEVELS AND GRAIN QUALITY

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Wheat and maize rank second and third in area and production among the developing world's basic foods. Together they provide about one fourth of the calories consumed in low income countries. *Fusarium spp* invades grain commodities in the field and during storage in Uruguay producing mycotoxins of which deoxynivalenol (DON) is the most prevalent. *F. graminearum* is the most common toxicogenic species affecting wheat and other small grains, causing scab, which due to temperate and humid weather conditions can be quite significant both economically and sanitary.

The last four harvests (crop sesons 1993-94, 94-95,95-96 and 96-97) were evaluated for the natural occurrence of *Fusarium* toxins in the main Uruguayan crops: wheat, barley, corn, and their effect on these grains, their by-products and food quality. The toxins analyzed were DON, fumonisins B1 and B2 (FB1, FB2), and zearalenone (ZEA). Analyses were performed by HPLC as previously described (1,2).

DON was the predominant toxin, most commonly present and with greater incidence in all grains. Concentrations of DON were generally higher than those of ZEA but not of FB1. The predominant role of DON in wheat of European, Argentinian and North American origin has been extensively reported and our data confirm this predominance. All harvests considered, total DON level was highest for wheat and secondly for barley (Fig.1).

Data on samples collected show that DON values in the crop seasons were different. Marked differences in toxin levels were detected between harvests coinciding with elevated moisture periods where *Fusarium* Head Blight (FHB) was epidemic. The development of fusaria and other pathogenic fungi in crops is strongly influenced by weather conditions, specially rainfall. Wheat and barley crops suffered a great loss in the last few years due to this disease and 1993 and 1994 were considered epidemic in our region. The 94-95 crop season was prominent in FHB for Uruguayan wheat and DON was present with the highest incidence with levels over 2000 ng/g. Factors determining disease development included favorable climate, temperature and humidity.

Association of *Fusarium* field infection and toxin content was determined and related to quality of grain products. For wheat, crop sesons 93-94 and 94-95 were the ones with more DON positive samples, coinciding with heavy rain periods at time of heading to flowering stage. The second crop season was the one with higher number of positive samples probably due to cumulative effects of *Fusarium* and toxin residues in the field. DON positive samples for feed coincide with the peak years for this toxin in wheat reaching maximum levels in 94-95 and continuing into the 95-96 season. The values obtained for feed are to be expected as grain used in its manufacture is generally of lower quality and with a larger percentage of toxin contaminated ingredients. In these positive samples for feed we see delayed peaks following the preceding season's high values for wheat pointing to the common practice of using left-over wheat materials from the previous harvest.

In barley, the 93-94 crop season was the first in the last decade to show extensive *Fusarium* damage. This brought strict sanitary control through monitoring programs and storage measures, the results of which were evidenced in the low values of the 94-95 crop season. However, the following two periods,95-96 and 96-97, again show increased levels calling for continuous control efforts.

Fumonisin contamination in corn and corn- products varied from non-detectable to over 6000

ng/g in direct correlation to the processing technologies used (Fig.2). Values were highest in feed samples and unprocessed corn and lowest in processed corn and snacks . Corn-based feed showed FB1 levels related to those of corn harvested in rainy years. Feed values reached a maximum of 6342 ng/g coinciding with high values for unprocessed corn. These levels were also reflected in higher FB1 content of processed corn products which were presumably manufuactured from corn with greater contamination. In contrast DON levels did not show appreciable change in corn or its by-products comparing harvest seasons. ZEA levels were considerable only in barley and mixed feed, drawing attention to their use for animal consumption and its possible deleterious estrogenic effects. Locally, spent barley and feed are used extensively in animal nutrition.

We can conclude that DON and FB1 are the most relevant toxins with regards to grain quality, impairing food, feed and seed quality of wheat, barley, corn and their by-products. Effects in livestock from feed contaminated with more than one toxin should be considered. Co-occurrence is frequent and additive or synergistic interactions could be of concern for animal as well as human health. These results stress the need for continued screening of grains and grain products for *Fusarium* toxins in Uruguay specially in years with high precipitation. Breeding wheat for FHB resistance with the objectives of combining field tolerance and disease spread into spike with low DON content and good agronomic background are integral parts of our current joint national research projects.

1. Piñeiro, M.S. et al. 1996. Mycotoxin producing potential of *Fusarium graminearum* isolates from Uruguayan barley. Mycopathologia 132:167-172.
2. Piñeiro, M.S. et al. 1996. Evaluation of fumonisin levels in Uruguayan corn products. Abstract AOAC Int. Annual Meeting, p.56.

FIGURE 1 Deoxynivalenol Levels

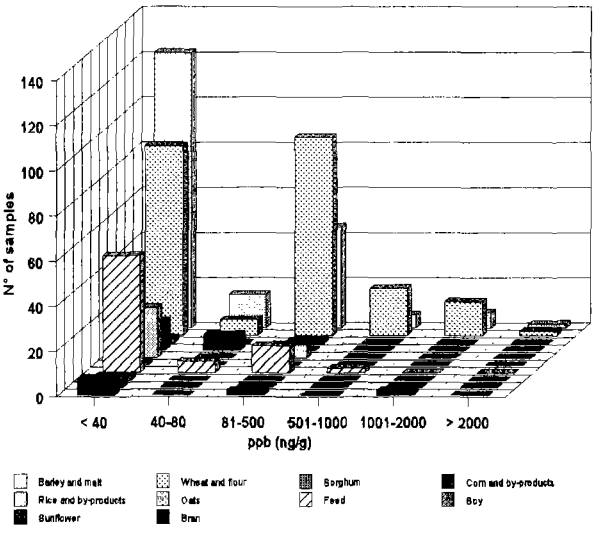

FIGURE 2 Fumonisin B1 Levels