

# **WP 4 Field experiments with artificial *Fusarium* inoculation**

## **Partners:**

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# The material used for field experiments with artificial *Fusarium* inoculation

- 330 accessions
- 11 standard cultivars replicated in five repetitions inoculated and two repetitions noninoculated
- 2 spring wheat cultivars in two repetitions (1 inoculated and 1 noninoculated).

# The methods used for field experiments with artificial *Fusarium* inoculation

1. Field design
2. Inoculation method with *Fusarium* sp. in the field
3. Descriptors evaluated for experimental field in WP4
4. Method of harvesting and distribution for dehulling and analyses by ELISA for DON and T-2 toxin.

# FIELD DESIGN, PROTOCOL OF FIELD WORK

Design of the experimental layout included 12 blocks with 40 plots between that 11 standards in five replications inoculated and two replications noninoculated, 2 cultivars of the spring wheat one inoculated another noninoculated. Every block included the marker plots with maize that is a crop conducive for *Fusarium*. The plot size was 2.5m<sup>2</sup> (1,7m length x 1,5 width). In each plot, nine rows, with distances between rows 14 cm, have been manually sowed, in period 11-21 April 2008.



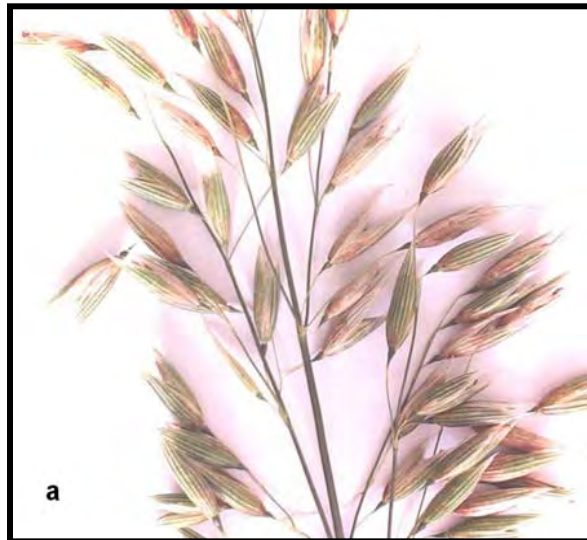
## PROTOCOL OF INOCULATION WITH *FUSARIUM* IN THE FIELD

The inoculation was effectuated in period 24 June-21 July 2008 with inoculum produced by P3 using isolates *F.culmorum*, *F.graminearum*, *F.sporotrichioides*, *F.langsethiae* and *F.avenaceum*. Suspension was produced through washing three kg of dried material before the inoculations. Inoculation was done at three dates around flowering of the plants, by spraying with spore suspension early morning. Weather conditions in the second half of July were very bad, it was rainy and windy. Two days before and after inoculation, plots were irrigated.

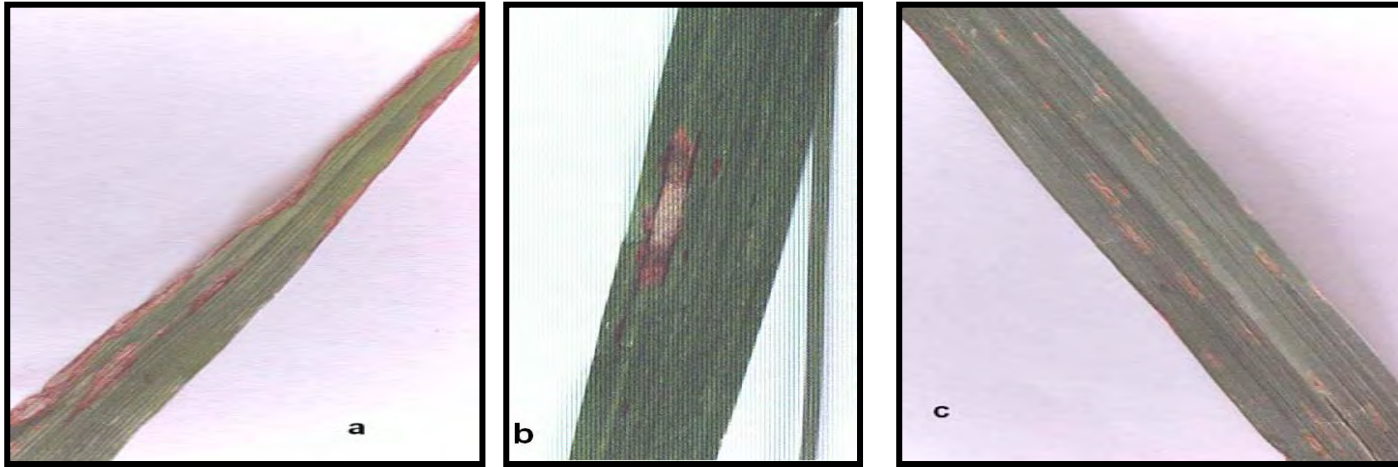


## DESCRIPTORS EVALUATED FOR EXPERIMENTAL FIELD IN WP4

1. Days to heading: the number of days from sowing to heading .
2. Days to maturity: the number of days from sowing to maturity (the sowing for all accessions made in period of 11-21 April 2008, but the harvesting in period of 8-13 August 2008).
3. Number of panicles along one meter in two neighbouring rows per plot.
4. Crop height
5. Panicle length in cm (average of five main panicles)
6. Panicle shape
7. Infection of panicles with *Fusarium* (1: no symptoms – 9: severe symptoms in all spikelets )



8. Score of other diseases : on plants, the following diseases were produced by fungi as: *Septoria avenae*, *Drechslera sp.*, *Puccinia coronata var.avenae* that were assessed according to the keys of W.C. James (1971).



9. Lodging at imature and mature stage (1=no lodging; ....9=100% lodging area)
10. Thousand kernel weight: 100- kernel samples were count manually and weighed in g in triplicate.



11. Test weight (kg/hl or g/250ml).

12. Lemma color (1: white; 6: black)



13. Percentage of *Fusarium* infected kernels by sorting 3 x 100 kernels (from TKW-measurement): 1 = healthy, 2= with grey tips, 3= damaged (small, thin, discoloured).



## The method of harvesting and distribution for dehulling and analyses by ELISA for DON and T-2 toxin.

- All accessions tested of infection with *Fusarium sp.* through artificial inoculation were manually harvested in the period of 8-13 August 2008 except accession CPVO20040482 (FRA 261) and some wild accessions were harvested on 5 September 2008. Harvested plants were threshed at Laboratory thresher and then winnowed for removing the straw or panicle parts. Wild species were manually cleaned only.
- 125 accessions of oat and 2 cultivars of spring wheat with low infection of *Fusarium sp.* were sent to the Partner 15 ( WP5-*Fusarium* and mycotoxin analysis). Grains for analysis (20 g mixed sample without straw or panicle parts) was milled through a 1mm sieve for ELISA tests.
- 77 accessions of standard cultivars (inoculated/noninoculated) in two replications (154 samples) were send to the Partner 3 for dehulling.