

# Effect of seed treatment on wheat canopy and production (I)

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## Objective

To verify if the seed treatment plays a relevant role on the production and quality of winter common wheat and, in case of a positive result, to explain the main effects of a seed treatment.

## Experimental design (2013)

To respond to this question, a field experiment was set up in North Italy (44° 50' N, 7° 40' E; altitude 245 m), in a sandy-medium textured soil.

4 treatments were compared following a factorial design (split plot) with 4 replicates: 2 seed dressings x 2 varieties

- Seed treatment with CELEST® (a.i. fludioxonil)
- Seed treatment with VIBRANCE® (a.i. sedaxane)
- Wheat variety for biomass (cv Altezza)
- Wheat variety for milling (cv Arezzo)

## Measurements

**Canopy:** plant density, canopy greenness<sup>1</sup>

**Crop diseases:** Seedling blight, Septoria Tritici Blotch (STB)

**Production and quality:** yield, test weight (TW), grain protein content (GPC), gluten

<sup>1</sup>A hand-held optical sensing device, GreenSeekerTM® (Trimble©, Sunnyvale), was used to measure the relative active photosynthetic biomass from stem elongation to the end of grain filling stage. The device measures the Normalized Difference Vegetation Index (NDVI) values, (Rouse et al., 1973) which is calculated as follows:

$$NDVI = \frac{R_{NIR} - R_{Red}}{R_{NIR} + R_{Red}}$$

where  $R_{NIR}$  stands for the NIR radiation reflectance and  $R_{Red}$  for the visible red radiation reflectance.

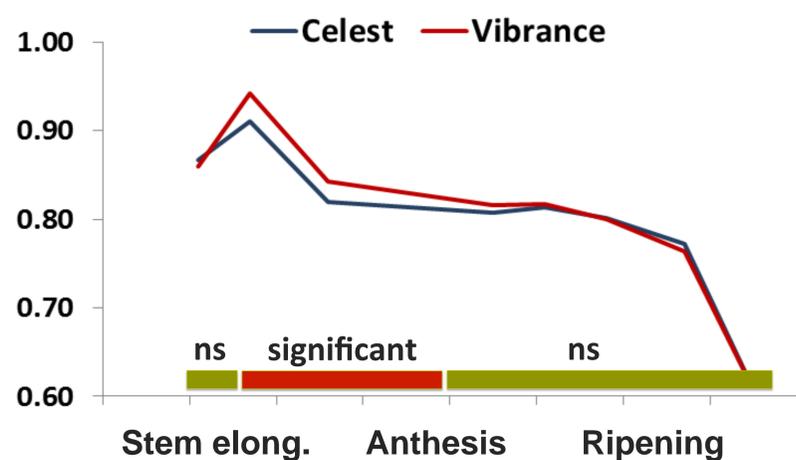
## Results

- Canopy was significantly influenced by VIBRANCE® seed dressing during stem elongation (**Figure 1**);
- Very low occurrence of seedlings blight in the experiment;
- VIBRANCE® has reduced the STB severity evaluated at early booting (**Figure 2**);
- VIBRANCE® has increased grain yield of both varieties (**Figure 3**);
- VIBRANCE® has reduced slightly proteins and gluten content as a consequence of the higher production.

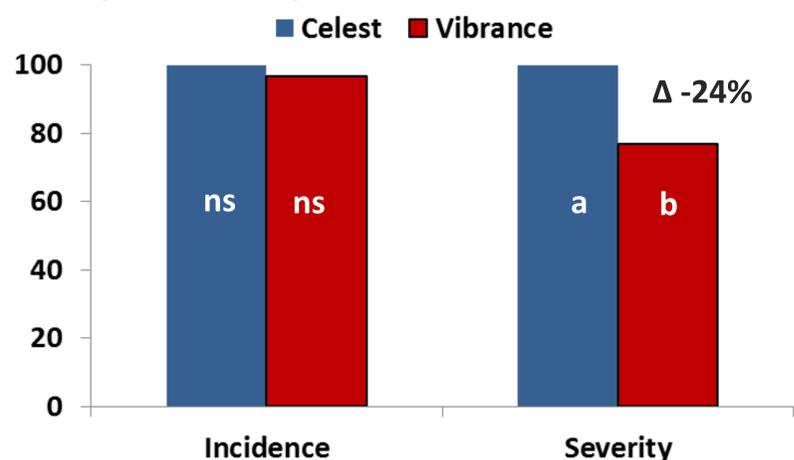
## Conclusions

In an ordinary condition without a severe seedling blight infection, VIBRANCE® has shown to increase the canopy greenness, probably because it has enhanced health and growth of the root system. The higher greenness implies a more effective photosynthesis and thus a higher grain yield.

**Figure 1. Effect of seed treatment on canopy greenness from stem elongation to the end of ripening (NDVI, mean of 2 varieties)**



**Figure 2. Effect of seed treatment on Septoria tritici blotch (Celest=100)**



**Figure 3. Effect of seed treatment on yield (t ha<sup>-1</sup>)**

