



Remobilisation efficiency of coated cereal seeds during germination depends on seed coat composition and size

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Introduction

Coating cereal seeds with hydro-absorbing substance may increase the drought resistance of germination in field grown crops. However coat thickness and composition may affect germination rate and remobilization efficiency of the germinating grain. To test for those effects germination rate, remobilisation efficiency, and carbohydrate partitioning was studied for barley and wheat seeds coated with either hydro-absorbers, humic acid, bi-plantol or a combination of the three under non-stressed conditions

Conclusion and Outlook



- Thick coating was advantageous in barley but not in wheat.
- Coating with absorber alone is not advisable in wheat.
- Coating promoted root development in all treatments.
- Drought experiments in hydroponics and sand will be performed.

Results and Discussion

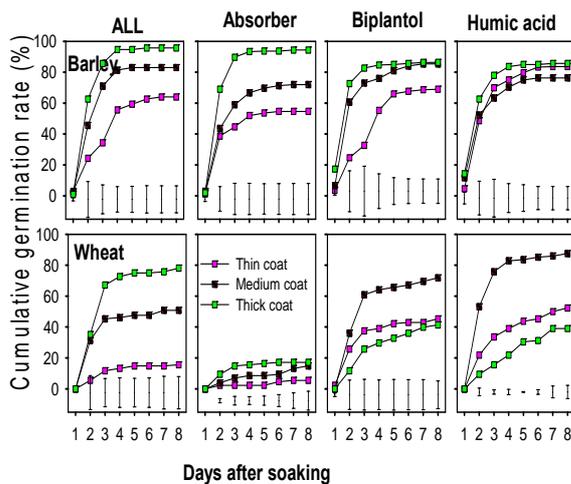


Fig. 1 Effect of coat size on germination rate

- Thick compared to thin coating consistently promoted germination in barley but not in wheat.
- Germination rate in absorber-coated wheat was poor.
- Thick coating with humic acid or Biplantol reduced germination rate in wheat but not in barley.

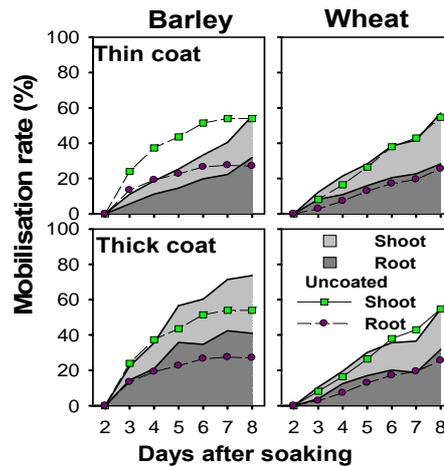


Fig. 2 Effect of coat size on endosperm mobilization rate in seeds coated with ALL

- Mobilization rate of thick compared to thin coated seeds was higher in barley but not in wheat.
- Mobilization rate was higher in thick coated seeds compared to uncoated seeds.

Treatments	Barley	Wheat
Absorber	58 ^b	55 ^a
Biplantol	62 ^a	55 ^a
Humic acid	61 ^a	56 ^a
ALL	58 ^b	56 ^a
Uncoated	52 ^c	44 ^b
LSD _{α=0.05}	2.4	6.0

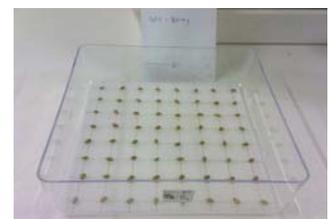
Fig. 3 Effect of coat composition on the share of grain reserves mobilized into roots (%), 8 days after soaking

- Coating promoted root development compared to uncoated seeds.

Notes on material and method

- Treatments involved were: (1) Absorber (2) Biplantol® and (3) Humic acid. (4) ALL: combination of the previous three (5) Uncoated seed
- Grain weight class distribution was done and each treatment was subdivided into 2 categories based on their coat shares namely: Thin coats (coat shares <50% of grain) and thick coats (.. >75% of grain).
- 50 seeds from each category replicated 3 times were placed on moist filter paper (3 x 2.5 cm) in plates and grown in a growth chambers at 25°C in the diurnal mode.

- The number of plants that germinated daily was recorded.
- 3 plants from each plate separated into root and shoot daily, oven dried at 70°C for 24 hours.
- From the dry matter obtained, we calculated mobilization rate and root percentage.
- Graphs were drawn in sigma plot while least significant values were calculated with the aid of the GLM procedure of SAS.



Acknowledgements



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