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IPW9 ZÜRICH



2019

ABSTRACTS

The IPW9 abstracts in this electronic abstract book are sorted as follows:

The **7 keynote lectures**, ordered chronologically according to the program

The **68 oral presentations** in the 14 parallel sessions, ordered chronologically according to the program

The **102 posters**, ordered by theme and within each theme according to the numbered posters list in the program booklet

Presenting authors are indicated in **bold**.

Some abstracts have been edited for style and layout but never in their content, which remains responsibility of the authors.

Parallel Sessions

- 2.1 Efficient P use in agroecosystems – P utilization by plants**
- 2.2 Optimizing regional and national P cycles – Governance**

Phosphorus partitioning and accumulation in durum wheat plants as affected by post-anthesis phosphorus supply

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Phosphorus (P) management in cropping systems is an important component to secure future food demand. P export with harvested grain is a key step in P cycle in agroecosystems. To improve P use efficiency, plant P uptake and allocation need to be better understood. In wheat, the accumulation of P in grain can originate from both exogenous and endogenous P sources.

The aim of this study was to investigate the effect of P supply in post-anthesis period on P partitioning and remobilization in two durum wheat varieties, Dakter and Sculptur. Wheat plants were grown in quarter-strength, Pi-sufficient (+P) Hoagland's nutrient solution until anthesis. From anthesis, half of plants were transferred on nutrient solution lacking Pi (-P). A set of control plants was maintained on the complete nutrient solution (+P). P uptake, remobilization, and agronomic traits related to yield and grain P were determined.

Grain yield was affected by P deprivation only for Dakter. Harvest index was not affected by P treatment and ranged from 50% for Dakter to 61% for Sculptur. Throughout grain filling period, P contents increased in both treatments with a significantly higher increase under +P condition. P deprivation treatment resulted in an enhanced remobilization of P from source organs, mainly leaves, roots and stems (35%, 20% and 17% respectively) to the growing grains in both varieties. P harvest index (PHI) of both varieties responded in the same way to P deprivation treatment by a significant increasing in PHI, ranging from 55% in P sufficient supply and 87% in P deprivation treatment. In term of PUE, Sculptur was more efficient in utilizing the absorbed P than Dakter. PUE increased significantly in P deprivation treatment.

Our results suggest that under post-anthesis P deprivation, endogenous P source remobilization can sustain grain growth with minor yield penalties. Thus, optimizing endogenous P remobilization would improve P use efficiency and thereby reduce the need for P fertilization.

Further research will concentrate on determining the relative contribution of exogenous and endogenous P source to grain P using isotope tracer technique.

Keywords: phosphorus, remobilization, grain filling