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POTASSIUM IS REQUIRED FOR WHEAT NUTRITION IN MOROCCO

H. Boulal/IPNI Image

Field day organized for Moroccan wheat growers.

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Potassium (K) has the potential to play a critical role for Morocco's wheat production. Over the past 20 years, fertilizer recommendations for wheat in Morocco have led to large-scale use of fertilizer products containing nitrogen (N) and phosphorus (P), but no K. The consensus has been that soils are well supplied with K and there is no need for its application. However, this lack of K input is causing continuous soil K drawdown with every harvest, and symptoms of K deficiency have started to be observed in Morocco's wheat fields. The increasing acceptance of high-yielding varieties has aggravated the problem due to greater rates of depletion of soil K.

On-farm field trials conducted in rain-fed and irrigated areas of Morocco show that wheat grain yields are significantly affected if K is overlooked **(Figure 1)**. Over four cropping seasons (from 2013-14 to 2016-17), the omission of K significantly decreased the grain yield in both rain-fed and irrigated fields. Both bread wheat and durum wheat were significantly affected by an absence of K fertilization. Grain yield losses ranged between 11 and 18% for bread wheat, and 9 and 22% for durum wheat. In total, 82% of bread wheat trials and 74% of durum wheat trials showed positive response to K.

Potassium stimulates several physiological processes in the plant such as photosynthesis, respiration, and many enzymatic activities. Appropriate K nutrition alleviates water stress by controlling the water balance in the

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> *"…82% of bread wheat trials and 74% of durum wheat trials showed positive response to K."*

leaves through the regulation of stomatal openings. Inadequate plant-available soil K early in the season also limits N uptake and compromises both yield and protein. Also, adequate K application can reduce the incidence and impact of certain crop diseases.

Maximum economic benefit from K application depends on the selection of the right source (i.e, compound versus single K fertilizer), applied at the right rate and right time to match peak physiological demand, and at the right place so roots can have easy access the nutrient.

Farmers and crop advisers need to be aware on the risks for a significant decline in grain yield potential when K is not applied.

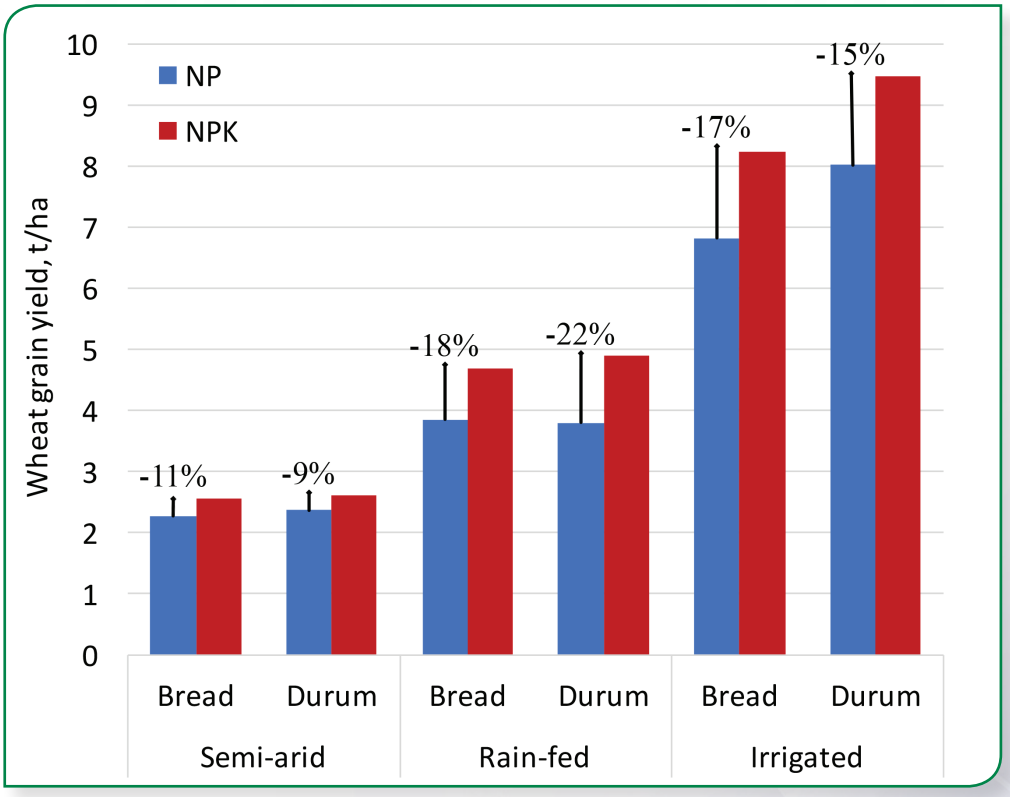

Figure 1. *Effect of K omission on the grain yield of bread wheat and durum wheat in semi-arid, favorable rain-fed, and irrigated areas of Morocco. Data based on four cropping seasons (2013-14 to 2016-17).*

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