

Pomegranate fertilization with potassium and phosphorus

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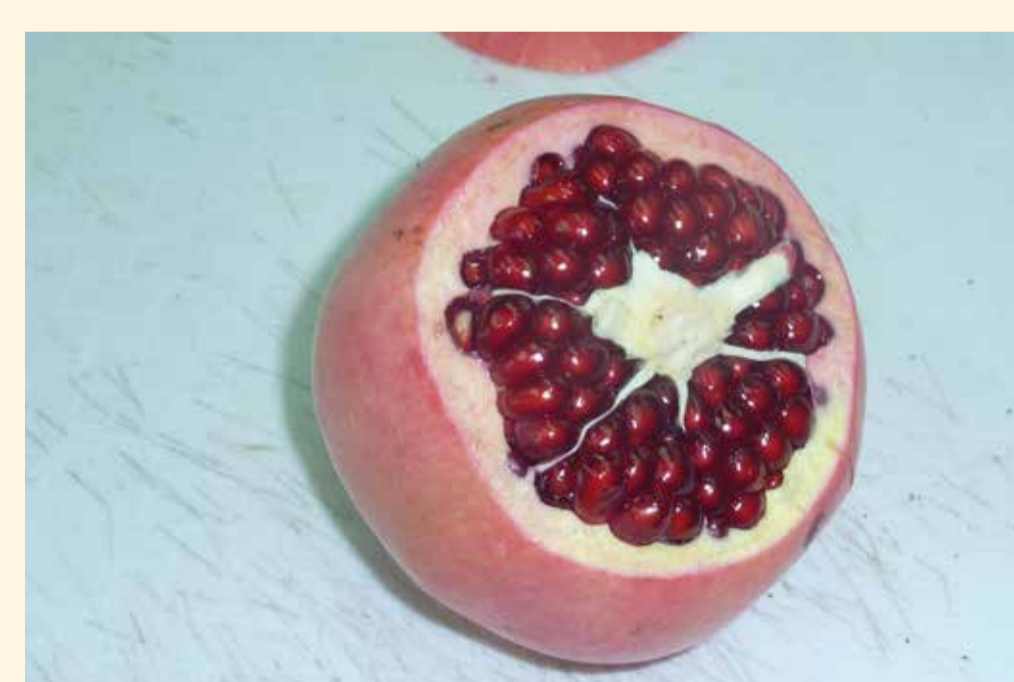
INTRODUCTION

Pomegranate has been grown as an orchard crop for thousands of years. In the last two decades, consumers have become increasingly aware of this fruit's health properties; consequently, a rapid increase in demand has led to a sharp increase in intensive orchard area. Rapid expansion of this crop's volume has created several fundamental knowledge gaps in its management, one of the most severe being its fertilization requirements. The objective of the current study was to evaluate the response (growth, yield and fruit quality) of pomegranate to different level of N, P and K.



MATERIALS AND METHODS

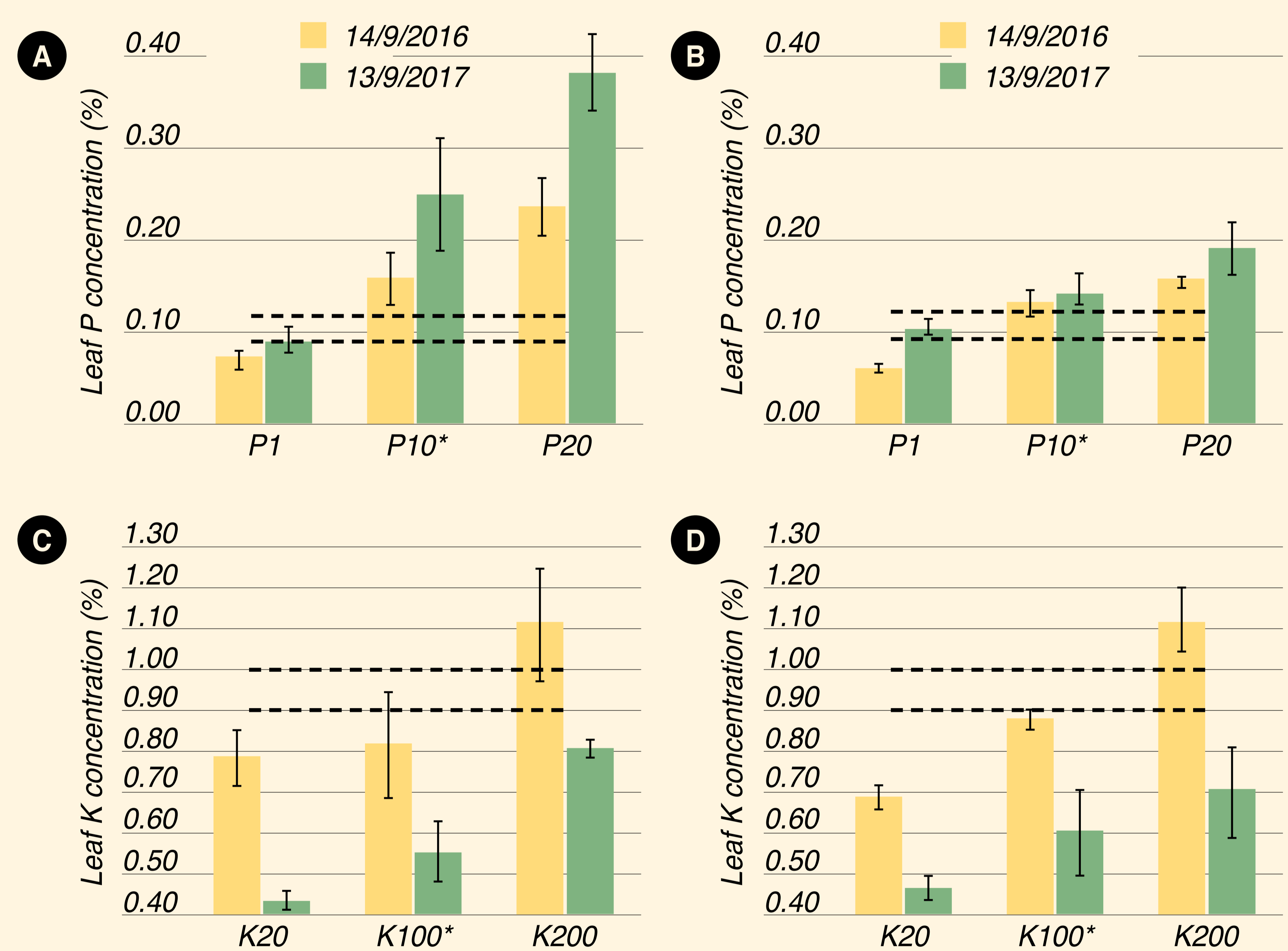
The experiment is conducted at the Gilat Research Center. Two-year-old 'Wonderful' and 'Emek' pomegranate plants were planted on July, 2015 in 500-L containers filled with perlite growing media. Three levels of phosphorous (P); 1, 10 and 20 ppm, and three levels of potassium (K); 20, 100 and 200 ppm, are being tested. All trees receive 20 ppm Ca, 24 ppm Mg and 84 ppm S in accordance with common practice with other crops. Microelements were initially supplied by adding 0.1% Koratin, switching later to Barkoret.



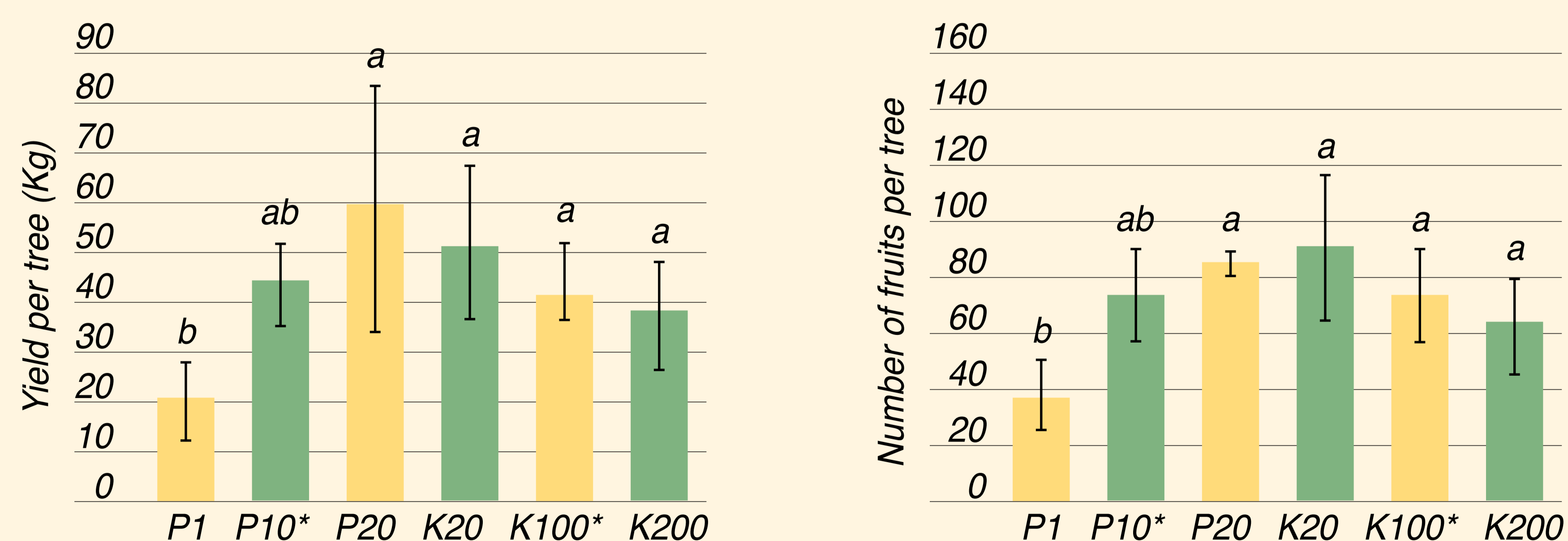
RESULTS

Leaf sampling in September was after fruit harvest in 'Emek' and before harvest in 'Wonderful'. We added lines to represent the recommended acceptable values according to the Israeli Extension Service. In general, for the same treatments, 'Emek' exhibit higher mineral leaf levels. For P, the lowest treatment (P1), which caused a clear reduction in yield and quality parameters, was at the lower threshold for 'Emek' and at medium level in 'Wonderful', which might indicate the necessity to increase the threshold values for adequate P in pomegranate. As for K, trees with leaf levels indicating clear deficiency (K20 and K100) according to accepted values, actually provided full yield, which might indicate a necessity to reduce threshold values.

The effect of fertilization treatment on N, P and K concentration in leaves, A—'Emek'- P; B-'Wonderful'-P; C-'Emek'- K; D 'Wonderful'- K. The dashed line indicates the recommended upper and lower thresholds indicating sufficient level of the elements in leaves.



Yield parameters for 2017 harvest, 'Wonderful' – number of fruit per tree (left) and total fruit weight (right).



* Common treatment
Different letters indicate on significant differences between treatments ($P < 0.05$)