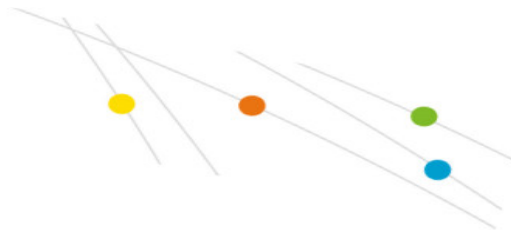


Potassium nitrate and paclobutrazol increased fruit retention and average fruit weight in avocado

The effect of spray application of paclobutrazol (PBZ) + KNO₃, and the addition of paclobutrazol to the soil, during inflorescence development and flowering on new shoot vigour, fruit set and retention, and fruit size and yield at harvest were assessed in Mendez avocado. 90, three-year-old Mendez avocado trees (on “Criyoyo” seedling rootstock) of uniform size and approximately 2 m in height were selected in an irrigated, commercial orchard in the Guadalajara region (Mexico) in early September 2012. In mid-September, when inflorescence development was occurring, 10 inflorescence bearing terminal branches were labeled per tree.

Bearing Mendez avocado trees were sprayed with paclobutrazol (1 or 2%) or paclobutrazol (1 or 2%) + KNO₃ (2%) during inflorescence development and flowering. In addition, soil applications of paclobutrazol were made (3 or 6 ml Austar applied around the trunk). Austar is an Australian paclobutrazol formulation containing 250 g of active ingredient per litre. Spray and soil applications were made on October 1, 2012, when the trees were flowering and the inflorescences were developing. Knap sack sprayers were used in spraying, and full-cover sprays were applied. There were 10 single tree replications of 9 treatments (incl. control) in a Complete Randomized Blocks design.

Paclobutrazol (spray and/or soil application) + KNO₃ spray treatments were effective in reducing new shoot vigour, as determined by total shoot length at harvest on Sep. 5, 2013 (Table 1). These treatments did not reduce the number of fruits present on Jan 5, 2013, or the number of fruits retained at harvest. Individual fruit weight was



increased by 46% (Table 1), this consequently increasing fruit yield. The results indicate that paclobutrazol application at flowering is effective in increasing fruit size but not fruit retention. Spray application was apparently sufficient for this response, as no added benefit was noted in additionally applying PBZ to the soil. Combining PBZ with 2% KNO₃ resulted in an increase in the number of fruits retained until harvest by 32% - when a comparison was drawn with the application of PBZ alone. This contributed to an increase in yield.

Table 1. Least squares means of number of fruits present and total new shoot length on Jan. 5, 2012 or Sep. 5, 2012, and average "individual" fruit weight and total fruit weight at harvest on Sep. 5, for each of the comparisons of relevance.

Treatments used of comparison	Number of fruits on Jan. 5, 2013	Number of fruits retained	Total length new shoots on Sep. 5 (cm)	Average fruit weight at harvest (g)
Control	2,09	0,70	34,6	120
PBZ spray, soil + KNO ₃ (2%)	2,04	0,61	23,3	175
Significance level	0,8926	0,4137	0,0001	0,0002
Spray PBZ at 1 or 2%	2,14	0,57	23,6	171
Spray PBZ at 1 or 2% + KNO ₃ (2%)	1,98	0,75	24,2	173
Significance level	0,6071	0,0621	0,8152	0,8908