

POMEGRANATE: *Punica granatum* Wonderful cv

## Evaluation of Insecticides for a Leaffooted Bug in Pomegranates, 2018

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Pomegranate | *Punica granatum*

Leaffooted bug | *Leptoglossus zonatus* (Dallas)

The efficacy of flonicamid was evaluated for registration on pomegranates to control a leaffooted bug, *Leptoglossus zonatus* (commonly called the western leaffooted bug), late in the pomegranate fruit development season. Single-tree plots were established in a ~20-yr-old ‘hedgerow’ planting of ‘Wonderful’ pomegranates that were used as a barrier to separate a 10-acre vineyard from a busy street outside the city limits of Reedley, CA. Treatments were replicated 4 times, using a randomized complete block design. Treatments were applied on 14 Sep 2018, including a water spray control, with R. L. Flomaster Standard 2-Gallon Sprayers (Root-Lowell Manufacturing Co.) at a rate of 75 gal per acre; treatments had a nonionic adjuvant (Dyne-Amic) at a rate of 0.5% VV. Before and after spray applications, leaffooted bug adults were monitored on 10 fruit per tree during the initial three sampling dates (7, 14, and 19 Sep) and then both adults and nymphs were monitored thereafter. The average number of leaffooted bugs per fruit were determined every 5–10 days for the following 6 wk. Treatment effects were compared by ANOVA using  $\sqrt{x + 0.5}$  transformation of the data. Means were separated using Tukey’s HSD test.

Three rates of Beleaf 50SG formulated product were applied, with the above label rate (241 g/a) applied to test for phytotoxicity and were compared with an industry standard (Brigade) and water-only control. Over all sampling periods, 3,426 leaffooted bugs were

recorded on 2,000 fruit samples. The treatment plots were adjusted before spray application, so there were no population differences among treatments, with the 14 Sep treatment averages ranging from  $2.0 \pm 0.6$  to  $3.2 \pm 0.8$  (Table 1). At 5 DAT, the Brigade treatment had significantly lower leaffooted bug counts than all other treatments, the two highest rates of Beleaf (121 and 241 g/acre) were lower than the control and Beleaf 81 g/acre, but only Beleaf 121 g/acre was significantly lower (than Beleaf 81 g/acre). At 11 and 21 DAT, the Brigade treatment had significantly lower leaffooted bugs than all other treatments. At 28 DAT, treatment impacts began to fade and by 38 DAT there were no treatment differences (Table 1) as new adult leaffooted bugs continued to migrate in and there was movement among the trees of the resident population.

Data showed that Beleaf may provide short-lived reductions in leaffooted bugs (<1 wk), but that it is not a viable alternative for growers needing the longer residual (3 wk) control provided by the industry standard. No phytotoxicity, measured by burning of leaves, was observed on any sample date on any treatment. There were no treatment effects on fruit quality, including incidence of soft rot and other diseases that may be associated with leaffooted bug.

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**Table 1.**

Treatment/ formulation	Rate form productst/acre	Mean leaffooted bugs per sampled fruit <sup>a</sup>						
		7 Sep	14 Sep	5 DAT	11 DAT	21 DAT	28 DAT	35 DAT
Water control	–	1.1a	2.2a	2.7a	2.8a	1.2a	1.2ab	0.5a
Brigade	68 <sup>b</sup>	2.2ab	2.4a	0b	0.5b	0.1b	1a	0.9a
Beleaf 50SG	81 <sup>b</sup>	2.1ab	2.3a	3.4a	4.7a	1.4a	1.9b	1.0a
Beleaf 50SG	121 <sup>b</sup>	3.2b	2.0a	1.1c	4.5a	0.9a	1.3ab	0.8a
Beleaf 50SG	241 <sup>b</sup>	1.5ab	3.2a	2.2ac	2.5a	1.3a	1.9b	1.5a
$F_{4,245}$		2.851	0.422	4.405	6.758	5.803	3.033	1.732

<sup>a</sup>Square root (X + 0.5) transformed data used for analysis, nontransformed means are shown in the table; within each column, means followed by different letters are significantly different.

<sup>b</sup>g formulated product per acre.