

Chemical Control/New Products

Evaluation of Pyridaben and Imidacloprid

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Tests were conducted in 1993 and 1994 to determine the effect of pyridaben (BAS 300) and imidacloprid (NTN 33893) on pear psylla and twospotted spider mite. In 1993, three rates of pyridaben were tested. Imidacloprid was tested at the maximum allowable rate with and without the addition of horticultural spray oil. In 1994, pyridaben was tested at three rates while imidacloprid was tested at two rates, both with the addition of horticultural oil. All treatments were applied to single Anjou trees replicated four times, except for the 1994 imidacloprid trial where each treatment was replicated three times. All treatments were sprayed to run-off (about 400 gallons per acre) with conventional high pressure hand gun equipment.

Densities of pear psylla immatures, eggs plus nymphs, and twospotted spider mites were estimated prior to treatment and periodically (weekly or biweekly) post treatment by sampling 20 leaves per replicate. Samples were returned to the laboratory where the leaves were brushed and insects counted with the aid of a dissecting microscope. Insect count data were transformed using square root ( $x + 0.5$ ) and analysis of variance was performed. Significant differences were based on Fisher's protected LSD test,  $P \leq 0.05$ . Separate data analyses were conducted for 1993 and 1994.

The results were fairly similar over the two years. Pyridaben exhibited a high degree of control of both pear psylla and twospotted spider mite populations (Table 1). Imidacloprid was also very effective in controlling pear psylla but appeared to stimulate populations of twospotted spider mite (Table 2). In the 1993 trial with imidacloprid the resultant levels of twospotted spider mite were significantly higher than the levels in the untreated check. In 1994 this effect, while still apparent, was not as pronounced.

**Table 1.** Effect of pyridaben on pear psylla (PP) and twospotted spider mite (TSM) (treated June 8, 1993; June 23, 1994).

| Year                    | Material                | Rate<br>Form/100 | Post-treatment means |                   |
|-------------------------|-------------------------|------------------|----------------------|-------------------|
|                         |                         |                  | TSM/leaf             | PP immatures/leaf |
| 1993                    | Pyridaben               | 121 g            | 19.0ab               | 1.5a              |
|                         | Pyridaben               | 182 g            | 11.5a                | 1.1a              |
|                         | Pyridaben               | 242 g            | 7.2a                 | 1.2a              |
|                         | Agrimek +<br>Orchex oil | 118 ml<br>946 ml | 8.8a                 | 3.2b              |
|                         | Check                   |                  | 24.7bc               | 4.3c              |
|                         | 1994                    | Pyridaben        | 40.8 g               | 14.0c             |
| Pyridaben               |                         | 60.8 g           | 8.9b                 | 0.8b              |
| Pyridaben               |                         | 97.2 g           | 6.5a                 | 0.7a              |
| Agrimek +<br>Orchex oil |                         | 118 ml<br>946 ml | 20.4d                | 2.3d              |
| Check                   |                         |                  | 39.3e                | 4.8e              |

**Table 2.** Effect of imidacloprid on pear psylla (PP) and twospotted spider mite (TSM) (treated June 8, 1993; June 21, 1994).

| Year                    | Material                     | Rate<br>Form/100             | Post-treatment means |                   |      |
|-------------------------|------------------------------|------------------------------|----------------------|-------------------|------|
|                         |                              |                              | TSM/leaf             | PP immatures/leaf |      |
| 1993                    | Imidacloprid                 | 236 ml                       | 85.2d                | 1.5a              |      |
|                         | Imidacloprid<br>+ Orchex oil | 236 ml<br>946 ml             | 52.7c                | 1.9ab             |      |
|                         | Agrimek +<br>Orchex oil      | 118 ml<br>946 ml             | 8.8a                 | 3.2b              |      |
|                         | Check                        |                              | 24.7b                | 4.3c              |      |
|                         | 1994                         | Imidacloprid<br>+ Orchex oil | 118 ml<br>946 ml     | 43.1b             | 1.6a |
|                         |                              | Imidacloprid<br>+ Orchex oil | 236 ml<br>946 ml     | 46.2b             | 1.0a |
| Agrimek +<br>Orchex oil |                              | 118 ml<br>946 ml             | 6.9a                 | 1.9a              |      |
| Check                   |                              |                              | 28.2b                | 5.9b              |      |