CONTROL OF SPIDER MITE ON PEANUTS IN ALABAMA, 1990: A field test on the Wiregrass Experiment Station evaluated materials for their ability to suppress or control spider mites compared with an untreated control. Treatments were applied on 28 Aug using a row crop sprayer calibrated to 15 gal/acre with 3, D2-25 nozzles/row. A second application was applied on 4 Sep to Danitol, Capture, Safer’s Soap and Vydate plots due to hatching of new individuals and webbing in these plots. Temperatures during the study were in excess of 90°F each day with sunny skies and no rainfall. Plots consisted of 4/36-inch rows X 150 ft long. Three replicates of each treatment were arranged in a randomized complete block design. Sampling was conducted on 30 Aug, 4 Sep (before reapplication), 7 Sep and on 11 Sep by collecting 5 tetrafoliate leaves at random from each plot. These leaves were placed in plastic bags and chilled until counting in the laboratory later that day. In the laboratory 1 leaflet from each of the 5 leaves was selected at random and the adult spider mites on the upper and lower surface, and petiole of each leaflet were counted under a 30 X stereoscope. A visual observation rating of each plot was also made on 4 Sep and 12 Sep to evaluate the degree of damage to the plot as a whole (foliage damage) and the amount of webbing evident in the plant terminals.

All miticide treatments significantly reduced populations of spider mites at all sample dates. Plots receiving only 1 application of Comite had significantly reduced spider mite populations at all sample dates compared with mite populations in the untreated control. The visual rating on 4 Sep indicated other treated plots still had significant mite activity as evidenced by webbing and immature mites. Safer’s Insecticidal Soap reduced mite populations compared with mite populations in the untreated only on 30 Aug and was not as effective as the other miticides/insecticides. The visual ratings on 12 Sep indicate that Danitol, Capture and Comite treatments were more effective in preventing crop injury than Vydate. However, Vydate did provide significant control compared with the Safer’s Soap and untreated plots. The Comite treatment caused a moderate amount of bronzing to peanut foliage, while other treatments showed no phytotoxicity.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rate/acre</th>
<th>Avg no. mites/leaflet</th>
<th>Avg plant damage rating 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>30 Aug</td>
<td>4 Sep</td>
</tr>
<tr>
<td>Danitol 2.4 EC</td>
<td>0.30</td>
<td>6.2c</td>
<td>20.3bc</td>
</tr>
<tr>
<td>Capture 2.0 EC</td>
<td>0.06</td>
<td>7.8c</td>
<td>9.6c</td>
</tr>
<tr>
<td>Comite 6.55 EC</td>
<td>1.64</td>
<td>3.8c</td>
<td>3.1c</td>
</tr>
<tr>
<td>Safer’s Insecticidal Soap</td>
<td>2% v/v</td>
<td>42.2b</td>
<td>49.5ab</td>
</tr>
<tr>
<td>Vydate L 2.0</td>
<td>0.50</td>
<td>9.2c</td>
<td>23.3bc</td>
</tr>
<tr>
<td>Untreated</td>
<td>—</td>
<td>93.0a</td>
<td>61.9a</td>
</tr>
</tbody>
</table>

Means within a column followed by the same letter are not significantly different (P = 0.05; DMRT).

1Whole plot rating: 0 = no visible mites, no leaf damage; 5 = balls of mites on terminals, webbing, leaves turning brown; 10 = total defoliation of plants.

Cheatgrass brome: Bromus tectorum L.
Grasshoppers;
Melanoplus confusus Scudder
Aulocara elliotti Thomas
Amphitornus coloradus (Thomas)
Ageneotettix deorum (Scudder)
Cordillarea ocipitalis (Thomas)

EVALUATION OF DIMILIN BRAN-BAIT FOR RANGELAND GRASSHOPPER CONTROL, 1990: A 1% Dimilin bran-bait was applied to a rangeland site in Platte County, Wyo. Treatments were randomly assigned to nine, 10-acre plots such that 3 plots each were: untreated controls, treated with 1.0 lb of bran bait/acre, or treated with 2.0 lb of bran bait/acre, using a Peacock Industries truck-mounted bran spreader on 15 Jun. For each plot, grasshopper densities were estimated by taking 54 visualized 1.0 ft 2 samples. Grasshopper community structure was determined by collecting 50-250 grasshoppers with a 12 inch diam sweep net. These sampling procedures were conducted immediately prior to treatment and 7, 14, and 21 DAT. Fisher’s protected LSD post-ANOVA test was used to evaluate differences in grasshopper densities at each sampling time. Chi-square analysis was used to statistically assess differences in species and age distribution as a function of treatment. Mortality rates were calculated after correcting for mortality and development in the control plots.

Initial grasshopper densities were 26, 28, and 31 grasshoppers/1.0 yd 2 for plots treated with 0, 1.0, and 2.0 lb/acre, respectively. After 14 d, densities were 32, 8, and 10 grasshoppers/yd 2 for plots treated with 0, 1.0, 2.0 lb/acre respectively. The 1.0 lb/acre treatment, resulted in >90% control of melanoptines and 80% control of A. elliotti, as compared to 64% control of Amphitornus coloradus, 55% control of Ageneotettix deorum, and 37% control of C. ocipitalis. The higher level of treatment increased mortality of A. coloradus, A. deorum, and C. ocipitalis by 30 to 37%. The 1.0 lb/acre treatment resulted in 80% mortality of 2nd and 3rd instars and 50% mortality of 4th and 5th instars. The 2.0 lb/acre treatment did not markedly increase control of any particular developmental stage. Due to significant (P = 0.05) initial differences in community structure between plots, it was not possible to statistically analyze treatment effects on the frequency distribution of species and developmental stages.
**RANGELAND GRASSES:**

Crested wheatgrass: *Agropyron desertorum* (Fisch.) Schult.
Western wheatgrass: *Agropyron smithii* Rydb.
Needleandthread: *Stipa comata* Trin. and Rupr.

**Bigheaded grasshopper,** *Aulocara elliotti* (Thomas)

**Whitewished grasshopper,** *Ageneotettix deorum* (Scudder)

**Striped grasshopper,** *Amphitornus coloradus* (Thomas)

**EVALUATION OF DIMILIN 1% BRAN BAIT FOR GRASSHOPPER CONTROL ON RANGELAND, 1990:** A 150-acre area of rangeland near Edgemont, S. Dak. was chosen for evaluating efficacy of Dimilin (diflubenzuron) 1.0% bran bait against rangeland grasshoppers. The vegetation in the test site was dominated by cool and warm season perennial grasses. Percent basal coverage by all plant species ranged from 45-60%. The test site was divided into 9 contiguous plots of 12 acres. Pre- and posttreatment grasshopper densities were assessed by counting grasshoppers in 40, 0.1 m² rings located in the center of each plot. Before application of treatments, *Aulocara elliotti* were 20% second, 40% third and 25% fourth instars, and *Ageneotettix deorum* and *Amphitornus coloradus* were 70% second and 30% third instars and the 3 species respectively constituted 53, 22 and 10% of the grasshopper population in the study site. Treatments were replicated 3 times in a randomized complete block design. The 9 plots were grouped into 3 blocks with grasshopper population estimates recorded using 1 d pretreatment counts. Dimilin bait was applied at 1.0 and 2.0 lb of bran flakes/acre rates from a Brie-Mar Model 60 bran applicator mounted on a pickup truck on 19 Jun and calibrations were based on a 13 m swath. Posttreatment counts were conducted 7, 14, 21 and 28 DAT. The natural change in grasshopper densities was determined by counts from untreated plots. Percent survival based on pretreatment counts on the same treated plot was adjusted for the natural population fluctuations by a modified Abbott’s formula and expressed as percent grasshopper reduction.

<table>
<thead>
<tr>
<th>Taxon or instar</th>
<th>1 lb bait/acre</th>
<th>2 lb bait/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 wk</td>
<td>2 wk</td>
</tr>
<tr>
<td>M. confusus</td>
<td>80</td>
<td>90</td>
</tr>
<tr>
<td>A. coloradus</td>
<td>64</td>
<td>85</td>
</tr>
<tr>
<td>A. deorum</td>
<td>50</td>
<td>87</td>
</tr>
<tr>
<td>A. elliotti</td>
<td>50</td>
<td>82</td>
</tr>
<tr>
<td>C. occipitalis</td>
<td>37</td>
<td>60</td>
</tr>
<tr>
<td>Other species</td>
<td>71</td>
<td>36</td>
</tr>
<tr>
<td>Second instar</td>
<td>79</td>
<td>17</td>
</tr>
<tr>
<td>Third instar</td>
<td>81</td>
<td>89</td>
</tr>
<tr>
<td>Fourth instar</td>
<td>49</td>
<td>52</td>
</tr>
<tr>
<td>Fifth instar</td>
<td>50</td>
<td>69</td>
</tr>
<tr>
<td>Total</td>
<td>67</td>
<td>69</td>
</tr>
</tbody>
</table>

Mean densities in control and treated plots differ significantly (P = 0.05; Fisher’s protected LSD test). Values undefined due to division by zero. Densities in the treated plots were higher than in the control plots, resulting in negative control.

- **Avg (± SEM) live grasshoppers/40 0.1 m² rings**
  - **Treatment**
  - **Un-treated**
    - 52.7 ± 5.5a
    - 47.7 ± 2.2a
    - 55.3 ± 2.9a
    - 65.7 ± 5.5a
    - 68.7 ± 10.1b
    - 32.3 ± 8.4b
  - **1 lb Dimilin bran/acre**
    - 53.7 ± 6.4a
    - 55.7 ± 5.3b
    - 15.0 ± 5.1b
    - 26.7 ± 10.1b
    - 32.3 ± 8.4b
  - **2 lb Dimilin bran/acre**
    - 49.3 ± 8.4a
    - 13.0 ± 1.7b
    - 8.0 ± 2.1b
    - 8.0 ± 1.2b
    - 21.0 ± 2.0b

- **Mean (± SEM) % posttreatment reduction**
  - **1 lb Dimilin bran/acre**
    - 69.7 ± 8.6a
    - 74.9 ± 7.1a
    - 61.7 ± 12.2a
    - 58.4 ± 7.5a
  - **2 lb Dimilin bran/acre**
    - 68.5 ± 7.2a
    - 82.1 ± 7.6a
    - 86.6 ± 1.9a
    - 68.6 ± 3.7a

Means within each column followed by the same letter are not significantly different (p > 0.05; DMRT). Values presented are corrected for pretreatment counts and by using Abbott’s formula. Percentages were transformed by arcsin √x prior to analysis.

- Three precount means are not significantly different (p > 0.05; DMRT).