

## RESEARCH SUMMARY

### WEED CONTROL IN PROCESSING VEGETABLES (2004)

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#### **Tolerance of Lima Bean to Preemergence and Postemergence Herbicides.**

This trial was kept weed-free to test for the effect of preemergence applications of Valor, Spartan and First Rate and postemergence applications of Meridian Plus and First Rate on visual injury, height, dry weight and yields of lima bean. Lima bean had commercially acceptable tolerance to PRE treatments of First Rate and POST treatments of Meridian Plus.

#### **Tolerance of Snap Bean to Preemergence and Postemergence Herbicides**

This trial was kept weed-free to test for the effect of preemergence applications of Dual+Pursuit, Valor and Spartan and postemergence applications of Reflex+Basagran on visual injury, height, dry weight and yields of lima bean. Snap bean had commercially acceptable tolerance to Dual II Magnum, Pursuit and the tank mix of Reflex+Basagran.

#### **Tolerance of Green and Yellow Snap Beans to Meridian Plus**

This trial was kept weed-free to test for the effect of Meridian Plus + Basagran Forte (14.5 g/ac + 500 ml/ac) on visual injury, fresh weight, dry weight, height and yield of green and yellow snap bean. There is an acceptable level of tolerance in snap bean to Meridian Plus + Basagran Forte at both the label and overlap rates.

#### **Weed Control and Tolerance of Carrot to Herbicides**

One half of this trial was kept weed-free to test for the effect of preemergence and postemergence herbicides on visual injury, carrot root weight and yield of 'Fontana' carrot. The following treatments were applied: Linuron (840 ml/ac), Dual II Magnum (0.7 and 1.4 L/ac), linuron (840 ml/ac) followed by Sencor (75 and 150 g/ac), linuron (840 ml/ac) followed by two applications of Sencor (75 and 150 g/ac), and Dual II Magnum (0.7 or 1.4 L/ac) followed by two applications of Sencor (75 and 150 g/ac). Carrot showed commercially acceptable tolerance to all treatments except those containing Dual II Magnum followed by two applications of Sencor (75 and 150 g/ac).

#### **Tolerance of Carrot to Preemergence Herbicides**

This trial was kept weed-free to test for the effect of preemergence and postemergence herbicides on visual injury, carrot root weight and yield of 'Fontana' carrot. The following treatments were applied: Linuron (840 ml/ac), Dual II Magnum (0.7 and 1.4 L/ac), linuron (840 ml/ac) followed by Sencor (75 and 150 g/ac), linuron (840 ml/ac) followed by two applications of Sencor (75 and 150 g/ac), and Dual II Magnum (0.7 or 1.4 L/ac) followed by two applications of Sencor (75 and 150 g/ac). Carrot showed commercially acceptable tolerance to all treatments except those treatments containing Dual II Magnum.

#### **Tolerance of Carrot to Postemergence Herbicides**

This trial was kept weed-free to test for the effect of postemergence herbicides on visual injury, carrot root weight and yield of 'Fontana' carrot. The following treatments were applied: Accent (13 and 24 g/ac), Option (80 and 160 g/ac), and Assure II (300 and 600 ml/ac). Accent and Option caused unacceptable visual injury, and reduced carrot weight and yield. Carrot showed excellent tolerance to Assure II.

#### **Tolerance of Transplanted Broccoli to Sulfonylurea Herbicides**

This trial was maintained weed-free to test for the tolerance of transplanted broccoli to a number of sulfonylurea herbicides. Option (80 and 160 g/ac), Accent (13 and 26 g/ac), Prism (24 and 48 g/ac), Upbeet (28 and 56 g/ac), Muster (6 and 12 g/ac) and Pinnacle (3.2 and 6.4 g/ac) were applied to broccoli 21 days after transplanting. Option, Accent, Prism, Upbeet and Pinnacle caused commercially unacceptable visual injury to transplanted broccoli at both the 1X and 2X labeled rates. Option, Accent, Prism, Upbeet and Pinnacle reduced head size and yield of transplanted broccoli. Broccoli showed excellent tolerance to Muster at 6 or 12 g/ac.

#### **Tolerance of Transplanted Cabbage to Sulfonylurea Herbicides**

This trial was maintained weed-free to test for the tolerance of transplanted cabbage to a number of sulfonylurea herbicides. Option (80 and 160 g/ac), Accent (13 and 26 g/ac), Prism (24 and 48 g/ac), Upbeet (28 and 56 g/ac), Muster (6 and 12 g/ac) and Pinnacle (3.2 and 6.4 g/ac) were applied to cabbage 21 days after transplanting. Option, Accent and Prism caused complete death of the cabbage plants, and no cabbage heads formed in these treatments. Cabbage showed excellent tolerance to Muster at 6 or 12 g/ac.

#### **Tolerance of Transplanted Cauliflower to Sulfonylurea Herbicides**

This trial was maintained weed-free to test for the tolerance of transplanted cauliflower to a number of sulfonylurea herbicides. Option (80 and 160 g/ac), Accent (13 and 26 g/ac), Prism (24 and 48 g/ac), Upbeet (28 and 56 g/ac), Muster (6 and 12 g/ac) and Pinnacle (3.2 and 6.4 g/ac) were applied to cauliflower 21 days after transplanting. Option, Accent, Prism, Upbeet and Pinnacle caused commercially unacceptable visual injury to transplanted cauliflower at both the 1X and 2X labeled rates. Option, Accent and Prism caused complete death of the cauliflower plants, and no cauliflower heads formed in these treatments. Cauliflower showed excellent tolerance to Muster at 6 or 12 g/ac.

#### **Tolerance of Transplanted Cabbage to Dual II Magnum Application Timing**

One half of each plot was maintained weed free to examine the effect of Dual II Magnum applied at 0.35, 0.7 and 1.0 L/ac, pre-plant incorporated, preemergence, and postemergence (3<sup>rd</sup> leaf of cabbage) on visual injury and yield of transplanted cabbage. Weeds were left in the other half of each plot to determine the level of weed control by each treatment. Cabbage showed excellent tolerance to Dual II Magnum at all rates and application timings.

#### **Tolerance of Transplanted Broccoli to Preemergence Herbicides**

This trial examined the effect of Frontier, Spartan (sulfentrazone), Goal, Frontier+Spartan and Frontier+Goal on weed control and tolerance of transplanted broccoli. Transplanted broccoli showed excellent tolerance to all herbicide treatments. The tank mixes gave good to excellent control of lambs-quarters and lady's thumb, and fair control of ragweed and velvetleaf throughout the season. These herbicides should be recommended for prioritization in the Federal Minor Use System.

#### **Tolerance of Transplanted Cabbage to Preemergence Herbicides**

This trial examined the effect of Frontier, Spartan (sulfentrazone), Goal (oxyfluorfen), Frontier+Spartan, and Frontier+Goal on weed control and tolerance of transplanted cabbage. Transplanted cabbage showed excellent tolerance to all herbicide treatments. The tank mixes gave good to excellent control of lambs-quarters and pigweed, and fair control of common chickweed throughout the season. These herbicides should be recommended for prioritization in the Federal Minor Use System.

#### **Tolerance of Transplanted Cauliflower to Preemergence Herbicides**

This trial examined the effect of Frontier, Spartan (sulfentrazone), Goal (oxyfluorfen), Frontier+Spartan and Frontier+Goal for weed control and tolerance of transplanted cauliflower. Transplanted cabbage showed excellent tolerance to all herbicide treatments. The tank mixes gave good to excellent control of lambs-quarters, pigweed, and green foxtail throughout the season. These herbicides should be recommended for prioritization in the Federal Minor Use System.

#### **Tolerance of Processing Peas to Preemergence Herbicides**

This trial was established to determine the influence of various preemergence treatments on pea visual injury, tenderness, yield, and weed control. The following treatments were assessed: Dual II Magnum (0.7 L/ac), Pursuit (125 ml/ac), Dual II Magnum+Pursuit (0.7 L/ac+125 ml/ac and 1.4 L/ac+250 ml/ac) and Spartan (sulfentrazone - 113 and 226 g/ac). Processing pea showed excellent tolerance to Dual II Magnum, Pursuit, and Dual II Magnum+Pursuit. Spartan caused commercially significant injury to pea, however tenderness and yield in the Spartan treatments were not different than in the untreated check. The tank mix combination of Dual II Magnum+Pursuit (0.7 L/ac+125 ml/ac) gave excellent control of common lamb's-quarters, velvetleaf, redroot pigweed, eastern black nightshade, large crabgrass and green foxtail, and fair control of common ragweed. Spartan gave excellent season long control of velvetleaf, redroot pigweed, common lamb's-quarters, and eastern black nightshade, fair control of common ragweed and green foxtail and poor control of large crabgrass.

#### **Tolerance of Transplanted Pepper to Preemergence Herbicides**

This trial examined weed control and tolerance of transplanted pepper to preemergence applications of Dual II Magnum, Command, Sandea, Spartan, Outlook, Dual II Magnum+Spartan, Command+Sandea and Outlook+Spartan. Sandea caused significant visual injury to pepper, but did not reduce marketable fruit size, but total yield was less than in the untreated, weed-free check. The remaining herbicide treatments did not cause significant visual injury or reduce marketable fruit size or weed-free yield of pepper

compared to the untreated check. The tank mix treatments all gave fair to excellent control of a broadspectrum of broadleaf and grass weeds in the trial.

#### **Tolerance of Red Beet to New Herbicides**

Two trials were established to examine tolerance of red beet to preemergence applications of Dual II Magnum and postemergence applications of Upbeet, Lontrel and Select. Red beet showed excellent tolerance to each of these herbicides – no visual injury, no reduction in beet diameter and % sugar, and no yield reductions. An additional trial was established to determine weed control and tolerance of red beet to four micro-rate applications of Pyramin+Upbeet+Lontrel (product rates in each micro-rate application were 500 ml/ac + 3.6 g/ac + 50 ml/ac). Red beet showed excellent tolerance to micro-rate treatments. Micro-rate treatments gave greater than 90% control of common lamb's-quarters and lady's thumb, and 84% control of redroot pigweed.

#### **Tolerance of Sweet Corn to Pinnacle**

This trial was maintained weed free to test for the effect of Pinnacle applied postemergence (4-5 leaf stage) at 3.2 and 6.4 g/ac, on eight processing sweet corn cultivars: GG214, Delmonte 2038, GH2547, GSS9299, GH1861, GH2684, Empire, and GH2298. Sweet corn height at 21 DAT, marketable cob weight, and marketable yield significantly decreases in all varieties except GG214, GH2547, and GSS9299.

#### **Tolerance of Sweet Corn to Accent**

This trial was maintained weed free to test for the effect of Accent applied postemergence (4-5 leaf stage) at 13 and 26 g/ac, on eight processing sweet corn cultivars: GG446, GG763, GG227, GG236, HMX1382, GH2684, GH1861 and GH2298. GG446, GG763, GG227, GG236 and HMX1362 showed excellent tolerance to Accent applied at 13 and 26 g/ac (twice the registered rate).

#### **Tolerance of Sweet Corn to Postemergence Applications of Callisto**

This trial was maintained weed free to test for the effect of Callisto applied postemergence (4-5 leaf stage) at 0.084 and 0.168 L/ac, on four sweet corn cultivars: GH1861, GH2547, Delmonte2038, and GSS9299. These treatments were compared with postemergence applications of Pardner at 0.5 and 1.0 L/ac. Commercially unacceptable visual injury was observed in three of the four varieties tested: GH1861, Delmonte2038 and GSS9299. Height significantly declined as Callisto rate increased in these varieties. Marketable cob size and yield of Delmonte2038 declined as Callisto rate increased. Marketable yield was less in all herbicide treatments when compared with the untreated check.

#### **Tolerance of Pumpkins to Herbicides**

This trial was maintained weed free to examine the effect of Dual II Magnum, Command, Sandea, Spartan, Outlook and tank mixes of Command+Sandea, Dual II Magnum+Sandea and Dual II Magnum+Spartan applied preemergence for visual injury and yield of pumpkin. Pumpkin showed excellent tolerance to all treatments except the Spartan (132 g/ac) treatment. Spartan injury included stunting and some delay of development, poor emergence, stunted plants and mortality. Dual II Magnum,

Command, Sandea, Frontier and the various tank mixes of these herbicides did not injure pumpkin, and should be considered for minor use projects.

#### **Tolerance of Squash to Herbicides**

This trial was maintained weed free to examine the effect of Dual II Magnum, Command, Sandea, Spartan, Outlook and tank mixes of Command+Sandea, Dual II Magnum+Sandea and Dual II Magnum+Spartan applied preemergence for visual injury and yield of squash. Squash showed excellent tolerance to Dual II Magnum, Command and Outlook. Sandea (27 g/ac) and Spartan (132 g/ac) caused significant visual injury to squash, which included reduced emergence, stunting early in the growing season. Despite the early visual injury symptoms, squash number and yield were not less than the untreated control in any of the treatments. All herbicides except Spartan should be considered for minor use projects.