Weeds are a considerable economic pest for woody ornamental plant growers. Preemergent herbicides are typically used to control weed seed germination and minimize impacts from weeds. Demonstration plots were created to screen seventeen preemergent herbicides, one organic mulch, and one organic mulch/herbicide combination for efficacy against fall/winter weeds commonly seen in woody plant production in Hillsborough County. Used potting soil containing weed seeds was used as the foundation of the plot substrate. Weed seeds from green kyllinga (*Cyperus brevifolius*), bittercress (*Cardimine spp.*), doveweed (*Murdannia nudiflora*), beggar’s ticks (*Bidens alba*), prostrate spurge (*Euphorbia maculata*), hyssop spurge (*Euphorbia hyssopifolia*) artillery plant (*Pilea microphylla*) and crabgrass (*Digitaria spp.*), were collected from local nurseries and raked into the top one inch of the plots. Preemergent herbicides were then applied over the top of the 4.3 square foot plots. Herbicides and weeds were observed at 30 and 60 days after treatment for efficacy and compared.

**Materials and Methods**

A layer of polypropylene groundcover measuring 35 ft x 7 ft. was placed on the ground. An arectangular frame divided in the middle lengthwise was constructed with 2 ft. x 4 ft boards measuring 75 inches x 35 ft and placed on top of the groundcover. The frame box was filled with used potting soil infested with weed seeds (75% pine bark, 20% peat, and 5% sand) obtained from local growers. The frame was divided with string to mark plots measuring 4.3 ft². One half of the frame was filled to a depth of four inches. Weed seeds were collected from local nurseries from the following ornamental plants that were not sold in a timely fashion. *OH II*®, this artillery plant (*Pilea microphylla*) and crabgrass (*Digitaria spp.*) These seeds were scattered on top of the soil and lightly raked in. The soil was wet by hand to field capacity. On 4 Oct. 2013, the following herbicide treatments and rates were applied over the top of the plots: 1) *OH II*® (oxyfluorfen + pendimethalin) 100 lbs/acre; 2) Biathlon® (oxyfluorfen and prodiamine) 100 lbs/acre; 3) Jewel™ (oxadiazon + pendimethalin) 100 lbs/acre; 4) Rout® (oxyfluorfen + oryzalin) 100 lbs/acre; 5) Double O™ SPC (oxyfluorfen + oryzalin) 100 lbs/acre; 6) Tower® (dimethenamid-P) 21 ml/1000 ft²; 7) Free-Hand® 1.75G (dimethenamid-P + pendimethalin) 200 lbs/acre; 8) Broadstar® (flumioxazin) 150 lbs/acre; 9) SureGuard® (flumioxazin) 3.4 g/436 ft²; 10) Showcase® (trifluralin + isoxaben + oxyfluorfen) 200 lbs/acre; 11) Snapshot® (trifluralin + isoxaben) 200 lbs/acre; 12) Corral® (pendimethalin) 114 lbs/acre; 13) Oxadiazon 50WSB (oxadiazon) 8 lbs/acre; 14) Oxadiazon 2G (oxadiazon) 100 lbs/acre; 15) Quali-Pro® T/I 2.5G (trifluralin + isoxaben) 200 lbs/acre; and 16) Simazine 4L (simazine) 4 quarts/acre.

One plot contained wood shavings at 0.5 inches deep and another plot contained wood shavings (0.5 inches deep) plus Biathlon® herbicide over the top. A control plot with only water was used as a comparison. All herbicides were irrigated in. Water was applied daily. Herbicides were applied with a shaker can or a spray bottle over the plot. This demonstration was repeated at 30 d after treatment (DAT). In the second trial plots Marengo® (indaziflam) 15.5 oz/acre was added. Data was collected at 30 and 60 DAT.

**Results and Discussion**

Observations at 30 DAT revealed that Marengo® had the least amount of weed coverage in the plot with 0% (Fig. 1). There was only one Marengo® plot for comparison however. Herbicides with < 20% weed coverage were Simazine 4L (20%), Free-Hand® 1.75G (13.5%) and Tower® (6%). Most weed coverage in the plot occurred with Quali-Pro® T/I 2.5G (72.5%), Oxadiazon 2G (70%), and Biathlon® (62.5%). The wood shavings had 57.5%
weed coverage and wood shavings + Biathlon® had 55% weed coverage. The control plot had 97.5% weed coverage.

Observations were made in regard to bittercress weed (Cardamine spp.) at 60 DAT on only one series of plots. Herbicides observed to have the greatest control (0–5 weeds/plot) were Marengo®, Tower®, SureGuard®, BroadStar®, and FreeHand® 1.75G. Herbicides with moderate control (6–10 weeds/plot) wood shavings + Biathlon®, and Quali-Pro® T/I 2.5G. Lowest control (11+ weeds/plot) was given with Snapshot®, OH II®, Jewel™, Rout®, Simazine 4L, Oxadiazon 50 WSB, Biathlon®, Corral®, Double O™ SPC, Oxadiazon 2G, and wood shavings. The control plot had 96 bittercress weeds per plot.

Spurge (Euphorbia sp.) is particularly troublesome to Hillsborough County woody ornamental growers. Data was collected 30 DAT on spurge control. All species of spurge were counted and averaged for the number per plot. Control was best (0–2 weeds/plot) with Snapshot®, Showcase®, FreeHand® 1.75G, Jewel™, Marengo®, Quali-Pro® T/I 2.5G, Tower®, Oxadiazon 50 WSB, Rout®, OH II®, and BroadStar® herbicides. Moderate control (3–8 weeds/plot) was obtained with SureGuard®, and Biathlon®. Lowest control of spurge (9+ weeds/plot) was obtained with Corral®, Double O™ SPC, wood shavings + Biathlon®, Oxadiazon 2G, wood shavings, and Simazine 4L. The control plots had an average of 35 spurge weeds per plot.

Most herbicides were effective on all grasses which were not divided by species. Herbicides with efficacy averaging 0–3 grass weeds per plot were Snapshot®, T/I 2.5 G, Rout®, Double O™ SPC, Showcase®, Biathlon®, OH II®, FreeHand®, Jewel™, Tower®, SureGuard®, Oxadiazon 2G, Oxadiazon 50 WSB, and Marengo®. The control plots averaged 155 grass plants per plot. Moderate control (4–10 grass weeds per plot) was obtained with Corral®, BroadStar®, and wood shavings. Poor control of grasses (11+ grass weeds per plot) was obtained with wood shavings + Biathlon® (11 weeds), and Simazine (39 weeds).

In general terms, overall control at 30 DAT based on the demonstration plots, liquid formulation of herbicides worked better than granular applications (SureGuard® versus BroadStar® and Oxadiazon 50 WSB versus Oxadiazon 2G). Also, brand name herbicides worked better than their generic counterparts (Snapshot® versus Quali-Pro® T/I 2.5G and Rout® versus Double O™ SPC).

Growers would do well to correctly identify weeds first then match effective herbicides to minimize economic impact in production. Rotation of herbicides (mode of action) is also important to minimize shifting the weed spectrum and loss of control of key herbicides.

**Literature Cited**