

INFLUENCE OF HERBICIDE, PREPLANT TILLAGE, AND COVER CROP ON JACK-O-LANTERN PUMPKIN FARM-GATE REVENUES. Nathan R. Johannig, S. Alan Walters, and Bryan G. Young, Graduate Research Assistant and Associate Professors, Plant, Soil, and Agricultural Systems, Southern Illinois University, Carbondale, IL 62901.

Conventional tillage systems in jack-o-lantern pumpkin production rely on cultivation to achieve optimal weed control, which leads to increased soil erosion as well as excessive amounts of soil attached to pumpkin fruit at harvest. No-tillage pumpkin production in the Midwest has been increasing over the last decade, but the lack of weed control in this system is still a great challenge to growers. The combination of cover crops integrated into no-tillage planting systems with proper preemergence and postemergence herbicides may provide additional weed control, reduced soil erosion, and cleaner fruit.

In 2003 and 2004, field studies were conducted evaluating tillage practices (tillage vs. no-tillage), cover crop systems (no cover crop, wheat, or winter rye) and preemergence applications of clomazone, ethalfluralin, or halosulfuron, and/or post-emergence applications of halosulfuron for weed control and pumpkin productivity. Wheat and winter rye were killed approximately 1 June with glyphosate and mowed with a rotary mower to a height of 6 cm approximately 3 weeks later. Herbicide treatments were applied to the soil 2 to 3 days after mowing and 'Aspen' pumpkin were direct seeded about 20 June each year.

The use of a cover crop reduced the incidence of smooth crabgrass, but not redroot pigweed at pumpkin harvest. In the absence of any herbicide application plots, without a cover crop had 151 smooth crabgrass plants/m² compared with 54 and 49 plants/m² for winter rye and wheat, respectively. Preemergence applications of halosulfuron alone were more effective for reducing redroot pigweed density than postemergence applications of halosulfuron alone regardless of cover crop system. Furthermore, preemergence or postemergence applications of halosulfuron alone were more effective at reducing redroot pigweed density than preemergence applications of clomazone plus ethalfluralin. The combination of halosulfuron plus clomazone and ethalfluralin reduced redroot pigweed density (5 plants/m²) to the greatest extent compared with any other herbicide treatment. Pumpkin yields (number and weight/ha) and farm-gate revenues were influenced by only herbicide treatments and not cultivation method or cover crop system. Pumpkin yields were the highest in the treatments that contained clomazone and ethalfluralin applied preemergence in combination with halosulfuron applied preemergence or postemergence. The greatest farm-gate revenues were from the preemergence application of clomazone, ethalfluralin, and halosulfuron and the weed-free control, generating revenues of \$4,762 and \$5,740/ha, respectively. Overall, tillage and cover crop had relatively little influence on pumpkin yields and farm gate revenues compared with herbicide treatments. The addition of halosulfuron to clomazone and ethalfluralin provided greater broadleaf weed control resulting in greater jack-o-lantern pumpkin yields and farm-gate revenues.