

**WEED MANAGEMENT WITH BLACK OAT
(*AVENA STRIGOSA*) IN NO-TILL COTTON**
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Abstract

Black oat is being used in Brazil as a weed suppressive cover crop for soybeans and corn. Black oat grows faster than wheat and rye in warm climates and produces a relatively large quantity of biomass. Previous studies have indicated it may have allelopathic properties which inhibit the growth of annual grasses and small-seeded broadleaf weeds such as pigweed.

Research supported in part by check-off funds from Alabama cotton growers was initiated at the Alabama Agricultural Experiment Station located at Headland in the fall of 1994 to evaluate the potential of black oat for weed control in no-till cotton. Small grain cover crops including black oat, wheat, and rye were planted in November 1994 and compared to fallow ground (winter weeds including ryegrass and cutleaf eveningprimrose present). Small grains and fallow main plots were 30 by 108 ft and replicated 4 times. Cover crops and weeds were allowed to grow until April 10, 1995 then sprayed with 3 pints Roundup herbicide. Dessicated small grains approximately 3 ft tall were rolled flat to the ground using a modified stalk chopper machine on April 14 and cotton, variety Deltapine 5690, was planted with a John Deere Maxemerge planter fitted with Martin row cleaners and Accra-Plant retrofit disk openers on May 2. Temik 15G at 4 lb/acre was applied in furrow at planting. Main plots of each cover crop were split into three subplots consisting of no herbicide treatment, low herbicide treatment (Prowl 2.4 pts + Cotoran 3 pts/A), and high herbicide treatment (low treatment + Cotoran 2 pts + DSMA 4 pts/A post-directed followed by Bladex 1.5 pts + Cobra 0.5 pt/A post-directed). Data collected included visual weed control ratings, weed biomass in the drill and in the middles, and seed cotton yield.

Early season palmer amaranth, *Amaranthus palmerii*, control ratings for cotton planted in black oat and rye cover crops were equal for both low and high weed control programs. Weed control was better for cotton planted in black oat and rye covers than for cotton planted in fallow ground when no herbicide was used, indicating these cover crops suppressed weed seed germination and emergence. Weed biomass harvested June 20 from individual plots show less biomass was produced in plots with black oat and rye cover than plots with wheat or fallow covers.

Extremely high weed seed populations in the test area resulted in a breakdown of the low herbicide program by late season compared to the high herbicide program. Part of this was caused by the improper setting of the row cleaners on our planters, which resulted in more disturbance of the seed furrow than was needed to plant into the cover crops. Weed biomass in the row middles where cover crops were not disturbed were significantly lower than weed biomass in the drill for all cover crop/herbicide treatments. Without herbicides, black oat gave greater sicklepod, *Senna obtusifolia*, and palmer amaranth control than rye or wheat. Maximum seed cotton yield (3557 lb/A) was obtained with the rye cover and high herbicide input system. Using the low herbicide system, yields were 92% of the maximum with black oat, 84% with rye, 78% with wheat, and 76% with winter fallow.