EVALUATION OF A WEED SENSING HOODED SPRAYER FOR WEED MANAGEMENT IN COTTON

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Abstract

A study was conducted at Kinston, NC to evaluate a Pathchen™ weed-sensing hooded sprayer for weed control in conventional tillage Paymaster 1220RRBG cotton. The experimental design was a RCB with 6 replications and plot size was eight rows of cotton spaced 38 inches apart, 100 feet in length. Herbicides were applied at 20 gpa at 4 mph. The herbicide systems consisted of 1) an untreated check, 2) Prowl (pendimethalin) at 1.0 lb ai/ac plus Cotoran (fluometuron) at 1.0 lb ai/ac preemergence (PRE) followed by (fb) Roundup (glyphosate) at 1.0 quart/acre early postemergence (EPOST) fb Caparol (prometryn) at 1.2 lb ai/ac plus MSMA at 2.0 lb ai/ac; 3) Prowl (pendimethalin) plus Cotoran PRE on a 19 inch band fb Roundup EPOST fb a LAYBY of Caparol plus MSMA, 4) Prowl plus Cotoran PRE on a 19 inch band followed by Roundup EPOST banded on the drill with the Patchen hood for the row middles (also using Roundup); 5) Roundup EPOST on the drill and the row middles controlled with Roundup under the Patchen hood, 6) a weed free check, and 7) Roundup EPOST under the Patchen hood and where the hood triggering on the row middles also triggered a herbicide spray of Roundup on the drill. At LAYBY, the Patchen hood was used to spray Roundup on the row middles and triggering sprays of Roundup on the drill post-directed. The amount of spray used in each plot by the Patchen sprayer was quantified by measuring the amount of unused herbicide solution.

All systems controlled carpetweed (*Mollugo verticillata*) greater than 90% except system four which controlled 89%. Common lambsquarters (*Chenopodium album*) was controlled greater than 90% with all systems as was entireleaf morningglory (*Ipomoea hederacea* var. *integriuscula*) except for systems four and five which controlled 85% and 79%, respectively. System five controlled Palmer amaranth (*Amaranthus palmeri*) and slender amaranth (*Amaranthus viridus*) 84 and 82% repectively, while all other management systems controlled these weeds greater than 90%. All weed management systems yielded at least 620 lb/ac of lint with no differences among systems while the untreated check could not be harvested due to heavy weed infestations. The EPOST herbicide sprays were reduced 47 to 52% with the Patchen hooded sprayer while LAYBY herbicide use was reduced 65 to 67% with the Patchen hooded sprayer. Herbicide use at LAYBY was reduced 82% by the Patchen hooded sprayer when Prowl plus Cotoran was used PRE.

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