

# Johnsongrass Control Trials In Corn

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Although not the most widespread weed problem, Johnsongrass has been often named by farmers as one of the most difficult weeds to control in corn in southern Pennsylvania.

Prior to 1990, the main tools available to keep this under control were primarily cultural practices. Tillage and cultivation could aid in suppressing the vigor of the rhizomes from which the nasty weed regenerated its growth.

Rotation to small grain and hay crops offered a little more crop growth competition to the weed during the growing season and following small grain harvest Roundup could be used. Rotation to soybeans allowed the use of effective post-emergence herbicides. When growing corn however, control with an herbicide was limited to using Eradicane which required immediate and thorough incorporation into the soil.

In 1990, two new herbicides, Accent and Beacon, became labeled for use in corn and were readily available in 1991. Both of these products are applied over the top of the corn after the

weeds have reached a specified stage of growth. They both show activity on Johnsongrass and other weeds that are emerged at the time of application and low injury potential to the corn if applied as labeled. However, they do not provide residual weed control of later emerging stems or seedlings, so a tradeoff between waiting for late emerging weed growth and sacrificing control of the earlier weeds that might get too big is inherent. The additional production cost from using these products ranges from twenty to twenty five dollars per acre.

Because of concerns about application timing and potential rate reduction by users as a means of lowering costs, Dr. William Curran, extension weed specialist and I started a study in 1991 in York County to determine the effects of different application timings and of using less than standard rates. The study was conducted on a cooperating farm in a field with a history of a severe Johnsongrass infestation. The field was chisel plowed and disked prior to planting and received a pre-emergence herbicide to control other weeds. Each product was applied at two rates; standard label rate and one-half



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label rate. Each of these were applied at two different times; at the label recommended weed growth stage and also two weeks following the first applications. A third treatment included two half rates applied in a split application timing. Each plot was 12 feet wide and 25 feet long. Application was made with a carbon dioxide pressurized backpack sprayer, flat fan nozzles with 20 gallons of water plus 1 qt. crop oil concentrate per acre.

The height of the Johnsongrass at the first application on May 31 ranged from 8 to 18 inches. At the second application on June 11, the range was from 18 to 30 inches. Growing conditions in 1991 were terribly hot and dry. Both the corn and Johnsongrass were under stress before, during and after applications. Visual ratings of the percentage of weed control were taken. The full rates and the earlier applications generally did better than the half rates and later applications. This was probably due to a combination of the weed mass diluting the

herbicide and reduced spray penetration due to obstruction by the weed and crop canopy at the later time.

There was a greater difference in control between the full and half rate of Accent than there was between the full and half rate of Beacon and the control ratings for Accent tended to be slightly higher than Beacon. For Beacon, the split application had the best control rating. But with Accent the rating for the split treatment was similar to the full rate first application timing. Half rates provided no more than sixty five percent control with either product at either application time. In 1992 the study was continued with some modifications to the treatments.

For both products, the standard label rate was compared to two thirds the standard rate. Liquid nitrogen was also used as an additive in addition to crop oil concentrate. All treatments were applied at one application time when the weed was in the recommended growth stage. An additional

treatment consisted of a combination of both products applied together at a half rate each.

Growing conditions were more favorable than in 1991. Although rainfall was below average, it was adequate. Temperatures were much below average. The same field was used, but the corn was planted without tillage (no-till). Growth of the Johnsongrass out-paced the corn and had reached 10-12 inches by the time the corn had reached 4 inches in height, which was the minimum label recommended growth stage for application. Applications were made on May 28.

Visual ratings of the percentage weed control made through the beginning of July showed no differences between any of the treatments, all providing close to ninety percent control. In the control ratings taken in late July, Accent and the Accent-Beacon combinations were slightly better than the Beacon treatments. Those data suggest that comparable control with two thirds the rate may be attainable when made at the optimum weed stage and with adequate growing conditions.

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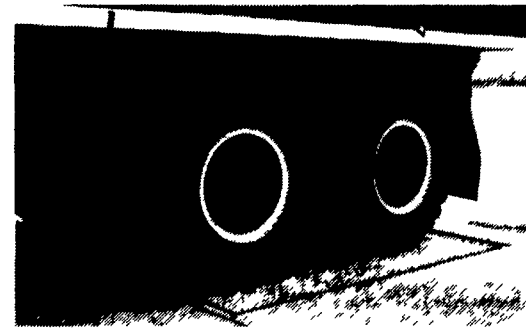
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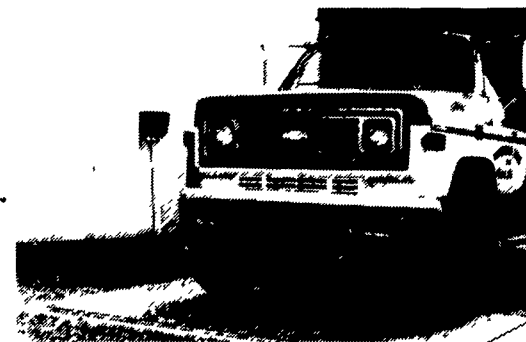
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