

SUCCESS

Yellow Nutsedge Control in Onions

To control yellow nutsedge in onions, the Fall application of Dual Magnum has been added to the New York herbicide label.

New York onion growers now have a new tool to effectively manage the potentially devastating perennial weed, yellow nutsedge, in onions grown on muck soil. This improved method saves farmers an average of \$500 per acre in hand weeding expenses plus it keeps hundreds of acres of muck land in sustainable onion production.

Research conducted by the Cornell Vegetable Program Onion Specialist, Christy Hoepting, led to the herbicide label addition.

Identifying the Need

Onions are very poor competitors with weeds as they grow relatively slowly compared to weeds. The weed, yellow nutsedge, can be especially problematic in onion production in New York State where at least 10,000 acres of dry bulb onions are grown on muck soil, worth an average of \$55 million annually. This aggressive perennial weed is a member of the sedge family and has an extensive underground system of specialized roots and tubers that gives it extraordinary survival and reproductive capacity. One plant can produce several hundred to several thousands of tubers during a single growing season, and each tuber can produce two or three more plants. When yellow nutsedge is not controlled in onion production, losses to yield and bulb size can be severe, to the extent that the crop is not worth harvesting.

With limited current herbicide and control options onion growers often have poor control of yellow nutsedge. Rotating ground out of onions into crops where nutsedge is easier to manage with herbicides or cultivation, such as potatoes, corn or soybeans, often fails, because the canopy of these crops quickly shades out the yellow nutsedge. Although the nutsedge does not grow in these crops, the storage tubers lie in waiting until the next onion crop when the nutsedge becomes as prolific as ever. Onion growers' only option is to hand weed, which can cost \$200 to \$600 per acre depending on the severity of weed escapes. Clearly, new control options for yellow nutsedge were critically needed to increase the productivity of onion production in New York.

Cornell Vegetable Program Response

Three large-scale on-farm research trials were conducted by Cornell Vegetable Program Onion Specialist, Christy Hoepting, with two onion grower cooperators in Orleans and Wayne counties from 2007 to 2010. The purpose of this research was to investigate the feasibility of applying the herbicide Dual Magnum in the fall after harvesting onions for control of yellow nutsedge. Dual Magnum is an herbicide that inhibits new plant growth and has good activity against yellow nutsedge when applied to the soil before the weeds emerge. The Fall application of Dual Magnum herbicide was previously approved only in the mid-western states on field crops such as corn and soybeans. However, this study demonstrated that this use would be beneficial in onions in New York as well.



Field studies showed that when Dual Magnum was applied in the Fall between mid-September and late-November, and shallowly incorporated to 2-4 inches, it provided 90% control of nutsedge in onions the following spring, and 69% control of nutsedge in the following season. Studies also demonstrated that

when ground that was treated with Dual Magnum in the Fall was deep plowed in the spring, control of yellow nutsedge failed. When double the rate of Dual Magnum was applied, a moderate 25% reduction in onion stand and minor 6% reduction in onion plant height were observed.



Hoepting shared her research results with the chemical company responsible for Dual Magnum, Syngenta Crop Protection, and they were successful in adding this new use to the FIFRA Section 24(c) Special Local Need Label for Dual Magnum in New York, which became available to onion growers in 2011.

Research results and specific recommendations for proper use of Dual Magnum in the Fall to control yellow nutsedge in onions was shared with New York onion growers and allied industry representatives by Hoepting via four presentations given at winter educational and summer field meetings attended by 165 participants, and via two newsletter articles, which reached 983 readers.

Impact on the Onion Industry

New York onion growers now have a new tool to effectively manage the potentially devastating perennial weed yellow nutsedge in onions grown on muck soil for 1/10th to 1/20th the cost of hand-weeding. Thanks to the efforts of the Cornell Vegetable Program Onion Specialist, the Fall application for control of yellow nutsedge in onions has now been added to the New York Dual Magnum herbicide label.

Based on a survey of a sub-sample of the large-scale onion growers in New York, over half of them who had yellow nutsedge problems have used the Fall application of Dual Magnum on their farms. All of them reported that it worked very good to excellent. Several other onion growers who do not currently have nutsedge problems indicated that they would use Dual Magnum in the Fall when necessary. It is estimated that at least 750 acres and probably more than 1,000 acres of onions have been treated with Dual Magnum in the Fall for control of yellow nutsedge in New York.

One grower treated over 200 acres with Dual Magnum in the Fall and reported that it worked very well, resulting in savings in hand weeding expenses of a total of \$100,000 on this farm. Although, minor stand reduction and poor growth was observed in the fields treated with Dual Magnum it more than made up for having to deal with the nutsedge. In addition, the grower was able to keep the fields in onion production. When an onion field is taken out of production to grow field corn, net return is diminished by 85% from \$4500 to \$720 per acre. Thus, keeping ground in onion production on this farm by using Dual Magnum in the Fall resulted in an estimated \$756,000 in increased profit.

Similarly, another grower treated 25 of his 100 acres of onion ground with Dual Magnum in the Fall and achieved excellent control of yellow nutsedge without any injury to his onion crop. He saved \$12,500 in hand weeding expenses, enjoyed increased yields and was also able to keep this ground in onion production.

For more information on this research project by the Cornell Vegetable Program, contact :

Christine Hoepting
12690 Route 31
Albion, NY 14411
585.798.4265 x38
cah59@cornell.edu



Cornell University
Cooperative Extension
Cornell Vegetable Program