

Weeds Forum 2005 – Weed management in sugar beets: Past, present, and future.

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Introduction:

The introduction to the 2005 Weeds Forum included a brief overview of discussion topics from weed forums of the past. The focus of the 1997 Weeds Forum was Herbicide-Resistant Sugar Beets. Comparisons were made between Liberty Link and Roundup Ready sugar beets. There was also discussion on the ALS-resistant sugar beets that were developed at Michigan State University through tissue culture and how these sugar beets could potentially be used to alleviate carryover and drift concerns from ALS-inhibiting herbicides. Discussions focused on how herbicide-resistant sugar beets will impact weed control, the future of currently used sugar beet herbicides, the potential for herbicide-resistant weeds, and the importance of having herbicide-resistant weed management strategies in place. Some of the biggest discussion was focused around the acceptance issues behind herbicide-resistant sugar beets.

The focus behind the 2001 Weeds Forum also included similar discussions about herbicide-resistant sugar beets that took place in the 1997 Weeds Forum. These discussions were important since Roundup Ready and Liberty Link sugar beets have been registered and still not planted due to lack of commercial acceptance. Other discussions focused on the trends and effectiveness of micro-rate herbicide programs, ALS-resistant kochia spread and control measures, comparison and incorporation of Dual Magnum and Frontier (Outlook) into weed control programs.

2005 Weeds Forum Topics:

- I. Roundup Ready sugar beets
 - A. How close are we to commercial use?
 - B. Potential selection for glyphosate-resistant weeds
 - C. Should management plans be in place to reduce the risk of developing glyphosate-resistant weeds
 - D. What will happen to currently registered sugar beet herbicides
- II. Goltix (metamitron)
 - A. Results from 2004
 - B. Where is the best fit for this product?
 - C. What are Makhteshim-Agan's plans for commercialization?
- III. Outlook (dimethenamid-P) and Dual Magnum (s-metolachlor)
 - A. Results from 2004
 - B. Any problems with sugar beet injury this year
 - C. Dual Magnum's 24C for preplant incorporated and preemergence applications
- IV. Weed control before sugar beet emergence
 - A. Aim (carfentrazone) – experiences
 - B. Others??
- V. Growing degree day (GDD) recommendations for postemergence herbicide applications
 - A. Results from 2004
 - B. Observations and comments
- VI. Update on herbicide-resistant weeds
 - A. ALS-resistance

B. Any reports of grass resistance to ACCase inhibitors?

C. Any glyphosate-resistant weeds?

Topics for the 2005 Weeds Forum in Palms Springs, California were solicited from university weed scientists throughout the sugar beet growing regions. Through out the Weeds Forum there were approximately 60 to 80 participants that took place in the discussions. University weed scientists that were present at the Weeds Forum included: Dr. Alan Dexter (North Dakota State University), Dr. Steve Miller (University of Wyoming), Dr. Bob Wilson (University of Nebraska), and Dr. Christy Sprague (Michigan State University).

I. Roundup Ready sugar beets – There was a fair amount of discussion on Roundup Ready sugar beets. There is a new Roundup Ready sugar beet event (H7-1) that has been tested over the last couple of years. A representative from Monsanto believes that this new event will be deregulated prior to sugar beet planting this year. There were several questions as to if there may finally be a move of the various Sugar Companies allowing the planting of these sugar beets. The Bio-Tech Council is shooting for a commercial launch in 2007 for Roundup Ready sugar beets. There is talk that the Beet Sugar Development Foundation will work with Amalgamated Sugar Co. to carryout a large scale demonstration trial in 2006 with the new Roundup Ready sugar beet event, where the new event would be compared with current sugar beet varieties and they would be processed and marketed. There was some criticism of the sugar industry for lagging so far behind other commodities in their acceptance of Bio-Tech crops. There were comments from the industry emphasizing that the reluctance had to do with the unknown in regards to the market acceptance of GMO sugar. The point was brought up that several other commodities that are used a sweeteners (i.e., high fructose corn syrup) have been GMO for quite some time. It was suggested that maybe to help market acceptance the sugar beet industry should publish a list of other products that contain GMO commodities. Discussions took place on the potential development of herbicide-resistant weeds. The group from the western sugar beet region contends that the use of half-rates of glyphosate will increase the chances for the development of glyphosate-resistant weeds. All participants believe that it is extremely important to encourage the use of the appropriate use rates for the weeds and weed sizes present. There was some discussion on that glyphosate-resistant seems to be quite a bit different than other types of herbicide-resistant weeds. There does seem to be concern in the development of glyphosate-resistant weeds and what this might mean to the sugar beet industry. The major question is when Roundup Ready sugar beets are accepted and planted are we going to be ready with recommendations and are we going to see major shifts in how sugar beets are produced. The question was raised on whether there were any other herbicide-resistant traits being brought forward, as the potential for integrating into a resistance management strategy. Agrevo once has developed Liberty Link (glufosinate-resistant) sugar beets but has since dropped the development. There is some concern with the loss of current sugar beet herbicides, especially those that have niches in other small markets. An example of a sugar beet herbicide that was lost due to small markets was H-73 (endothall) and several growers miss this product.

II. Goltix (metamitron) – Goltix is a product that Makhteshim-Agan took to a couple of U.S. Universities last year to look at weed control and crop safety in sugar beets. This product has been investigated before in the U.S. approximately 20 years ago. It is currently used in several countries in Europe and the Middle East for weed control in sugar beets. In examining Goltix 20

years ago in Idaho, moisture was a limiting factor to Goltix activity. This year in North Dakota, Goltix had excellent activity on lambsquarters and good activity on kochia. In Michigan, it was extremely effective on lambsquarters and pigweed and had some initial control of giant foxtail. A comment from a colleague from the Middle East stated that Goltix use is wide-spread in sugar beets and it is very effective preemergence and postemergence and has excellent crop safety. Currently there is no indication from Makhteshim-Agan on whether they will be pursuing a U.S. registration.

III. Outlook (dimethenamid-P) and Dual Magnum (s-metolachlor) – No one is recommending the used of Outlook or Dual Magnum soil-applied, even though several states have 24C registrations for this use because some growers are willing to take the risk. Recommendations from North Dakota are to wait until beets are at least 4-leaf (~3rd micro-rate). In Wyoming, recommendations are to wait until beets are 6 to 8-leaf. In Wyoming, Outlook provides about 10% better control of nightshade compared with Dual Magnum. Dual Magnum is better lay-by for pigweed control.

IV. Weed control before sugar beet emergence – In certain areas, the use of Aim (carfentrazone) is being promoted as burndown herbicide particularly when tank-mixed with glyphosate. Experience has been limited with most of the group. However, the experiences that are out there have shown carfentrazone to antagonize glyphosate on certain weeds. Additionally, the spectrum of weeds controlled for carfentrazone is limited.

V. Growing degree day (GDD) recommendations for postemergence herbicide applications – Timing micro-rate applications by growing degree days has worked well in Michigan. It has decreased sugar beet injury from micro-rate applications and has reduced the number of micro-rate applications. In 2004, several other regions conducted trials looking at timing micro-rates by GDD. In these trials there was little benefit to timing micro-rate applications by growing degree days compared with calendar days this year. One possible explanation is that the climate may be more consistent in some of these regions once beets are planted compared with the eastern sugar beet growing region.

VI. Update on herbicide-resistant weeds – In North Dakota, there appears to be wild oat populations that are resistant to ACCase-inhibiting herbicides. ALS-resistant kochia has been identified in Alberta and Michigan. It has been reported that common lambsquarters is resistant to glyphosate in Ohio, this adds to common ragweed in Missouri and horseweed (marestail) that is resistant glyphosate in the eastern part of the United States.