Cotton Comments

OSU Southwest Oklahoma Research and Extension Center
Altus, OK

February 7, 2012 Volume 2 Edition 1

Numerous studies have shown that leaving weeds unaddressed for an extended period results in a loss of valuable resources like moisture and in our current case residual fertility (namely nitrogen). There is no doubt that we should be taking advantage of in 2012. I think we can all agree that this year we definitely need to manage our resources as well as possible in order to rebound from 2011. Taking out these weeds as early as possible is an essential part of this process.

Many producers in Oklahoma have adopted limited or no-till production techniques. Due to the lack of tillage in these systems, producers often experience an increase in winter and spring annual weed problems including horseweed, Russian thistle and kochia. Consequently, preplant burndown herbicides are essential to replace tillage as the primary weed management tool in these systems. Two of the most troublesome winter/spring weeds present in limited tillage or no-till cotton fields are Russian thistle and horseweed.

Weed management research conducted by Dr. Wayne Keeling in the High Plains has focused on the evaluation of different products for the control of Russian thistle. In his research, paraquat has shown excellent activity on Russian thistle, but has not been effective on horseweed. In Oklahoma, glyphosate applied alone has proven very inconsistent at best when trying to control horseweed. In addition, the recent confirmation of glyphosate resistant horseweed in Oklahoma magnifies the importance of additional chemistries. Studies conducted in Oklahoma have shown that effective control of horseweed can be achieved by including dicamba (Banvel, Clarity, etc.) or 2,4-D with glyphosate. However there are some caveats that go along with their use. First, weed size at application time is critical for success. Excellent control of horseweed has been observed when applications have been made to horseweed in the rosette stage (flat or prostrate, prior to bolting or vertical growth). Secondly, it is important to take note of the plant back restrictions required for both dicamba and 2,4-D. When using dicamba, planting may occur 21 days after an application as long as 1 inch of rainfall has been received within that period. In addition Dicamba is not recommended for use in areas that receive less than 25 inches of annual rainfall. For 2,4-D, studies have shown that planting may occur 30 days after application without concerns of crop injury or yield reduction. The following flyer is a reminder we often distribute at meetings to remind growers of both the need and our best recommendations for preplant horseweed control in the spring (if you want download a copy, click here).

In addition, BASF has recently released the new product "Sharpen." Sharpen is considered a PPO (protoporphyrinogen-oxidase) inhibitor and provides both burndown (postemergence) and residual (preemergence) activity on many broadleaf weeds. Growers interested in trying Sharpen need to be aware of a few important facts regarding this herbicide. The label states that 42 days and 1 inch of rainfall must occur after application before cotton may be planted (for applications at 1 oz/A). In addition it is very important growers take note of the recommended adjuvants when using this product. The label recommends the addition of an MSO (methylated seed oil) or crop oil concentrate along with ammonium sulfate. Substituting with other adjuvants is not recommended and will definitely reduce the effectiveness of this herbicide. Growers should also take note of the restrictions on coarse soils (cotton injury may occur on coarse soils with less than 1.5% organic matter). In addition the label states that growers should not apply Sharpen in areas where an at-planting application of an organophosphate or carbamate insecticide is planned or severe injury may result. Since Sharpen is relatively new to the market (only a few years of local data) we certainly cannot refer to it as a "standard." However, results thus far suggest that it can definitely help growers control horseweed in limited or no-till cotton. Several years of information qualify the inclusion of 0.25 lb ai/A of dicamba or 1.0 lb ai/A of 2,4-D (with the usual 1.0 lb ai/A of glyphosate) as standards for horseweed control. Regardless of which herbicide program growers choose, the most important thing to remember is that the key to successful horseweed control revolves around the weed size at application. Making applications according to the calendar (instead of weed size) typically produces more problems down the line. Recent studies sponsored by Cotton Incorporated through the Oklahoma State Support Committee focused on evaluating treatments including Sharpen and comparing those treatments to our standards. Eleven treatments were evaluated in the Spring of 2011. These treatments are presented in detail in table 1. Data from the 30 day observation are presented Figure 1. 2011 was a very unique and challenging year. As we all know conditions through the

winter (of 2010) remained very dry and spring weed emergence was limited. No significant rainfall was encountered before or after these treatments were applied. Obviously these treatments were subjected to very stressful conditions. When Sharpen was applied alone, approximately 50% control was observed 30 days after treatment (DAT). Similar control was observed when Sharpen was tank-mixed with Ignite 280. However, when Sharpen was tank-mixed with either dicamba or 24 oz/A of 2,4-D, greater control (72-75%) was obtained. Sharpen, Aim or ET tank-mixed with glyphosate provided 82-88% control. Dicamba applied alone or 2,4-D applied alone at 32 oz/A provided 87-92% control. Only tank-mixes of 2,4-D (at 32 oz/A) or dicamba with glyphosate provided greater than 92% control of horseweed 30 DAT.

Table 1. Treatments evaluated for horseweed control project:

1. Untreated Check
2. 1 oz/A Sharpen + 1% MSO + 17 lb/100 gal AMS
3. 1 oz/A Sharpen + 1% MSO + 17 lb/100 gal AMS + 24 oz/A 2,4-D (4lb)
4. 1 oz/A Sharpen + 1% MSO + 17 lb/100 gal AMS + 29 oz/A Ignite 280
5. 1 oz/A Sharpen + 1% MSO + 17 lb/100 gal AMS + 8 oz/A Dicamba
6. 1 oz/A Aim + 1% MSO + 17 lb/100 gal AMS + 32 oz/A Glyphosate (4lb)
7. 2 oz/A ET + 1% MSO + 17 lb/100 gal AMS + 32 oz/A Glyphosate (4lb)
8. 1 oz/A Sharpen + 1% MSO + 17 lb/100 gal AMS + 32 oz/A Glyphosate (4lb)
9. 8 oz/A Dicamba + 32 oz/A Glyphosate (4lb) + 17 lb/100 gal AMS + ¼% NIS
10. 32 oz/A 2,4-D (4lb) + 32 oz/A Glyphosate (4lb) + 17 lb/100 gal AMS + ¼% NIS
11. 32 oz/A 2,4-D (4lb) + ¼% NIS
12. 8 oz/A Dicamba + ¼% NIS

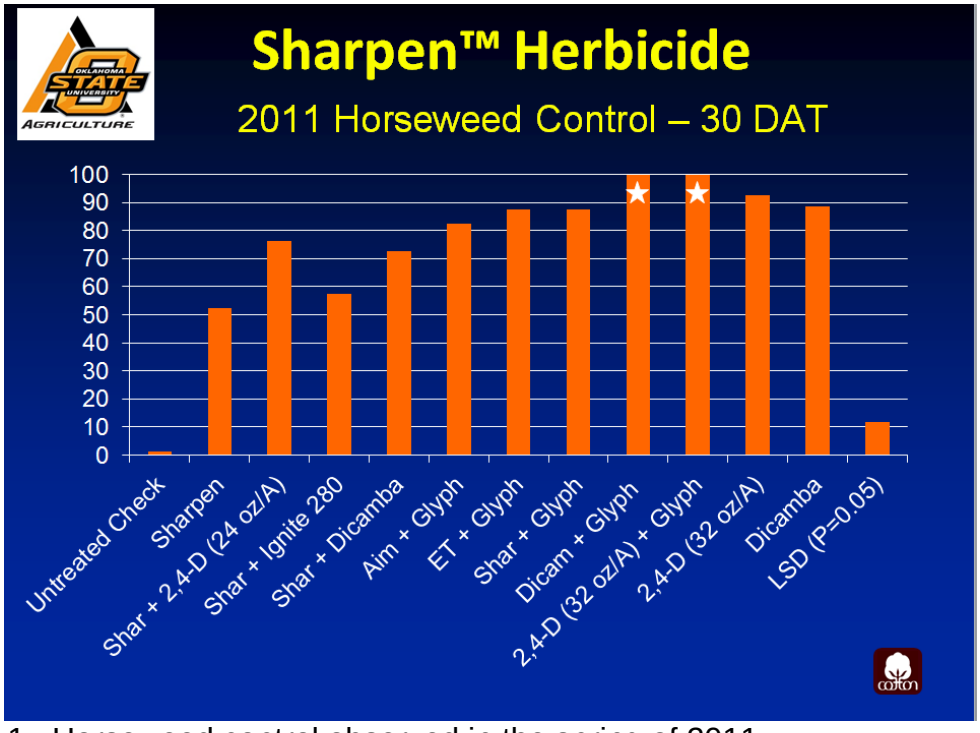

Figure 1. Horseweed control observed in the spring of 2011.

Although the standard treatments (8 oz/A dicamba or 32 oz/A 2,4-D + 32 oz/A glyphosate) performed well in 2011, some Sharpen treatments seemed to be less effective than indications from prior work. Sharpen applied alone or tank-mixed with dicamba or the lower rate of 2,4-D did not control horseweed as effectively in 2011 as we have seen in prior years. This may be attributable to the extreme dry conditions in 2011. These treatments will be evaluated further. In addition, glyphosate clearly had a positive impact on treatment performance which suggests that horseweed at this site may not be a resistant population. Since glyphosate resistant populations of horseweed have already been found in Oklahoma we should continue to explore effective glyphosate alternatives such as Sharpen.

Speaking of herbicide resistant weeds, this is also a good time to be considering your overall approach to cotton weed control for 2012. I think we all have read extensively about how herbicide resistant weeds have taken most of the countryside. In fact with the recent discovery of glyphosate resistant palmer amaranth to our west (in Texas South Plains counties including Hale, Hockley and Terry near Lubbock) Oklahoma seems to be surrounded. Actually there are already several species of herbicide resistant weeds in Oklahoma. ALS resistant Italian ryegrass, cheat and palmer amaranth, and glyphosate resistant waterhemp and horseweed have been already been documented in several areas of Oklahoma. For a few years now Dr. Joe Armstrong has been testing weed populations around the state for signs of or the development of herbicide resistance. Thanks to funding from several producer and/or commodity organizations (Oklahoma Cotton Council, Cotton Incorporated, the Oklahoma Peanut Commission, Oklahoma Soybean Board, and the Oklahoma Wheat Commission) this testing is provided as a FREE service to Oklahoma producers. Dr. Armstrong has issued a fact sheet (PSS-2279) explaining this diagnostic service in detail and we encourage everyone to visit the following link to become familiar with this program (link to factsheet). Our biggest concern at this point is preventing (or at least delaying) the development of glyphosate resistant palmer amaranth populations in Oklahoma. I think the road map provided by other areas of the country shows us that this particular weed has the potential to have the greatest negative impact on Oklahoma due to its prolific nature. Currently we have no indications of any “confirmed” glyphosate resistant palmer in Oklahoma. Unfortunately this could easily change in 2012. We use the word “confirmed” not to boast about how much we currently know but rather to point out how little we currently know. Without extensive testing it is essentially impossible to identify these populations. The fact sheet from Dr. Armstrong addresses exactly what is entailed in the confirmation process. The two photographs below represent samples taken in 2011 and the results of the screening. Figure 2 is the susceptible check used for comparison or a baseline. Figure 3 represents a population of horseweed sampled last fall and I think the results speak for themselves.

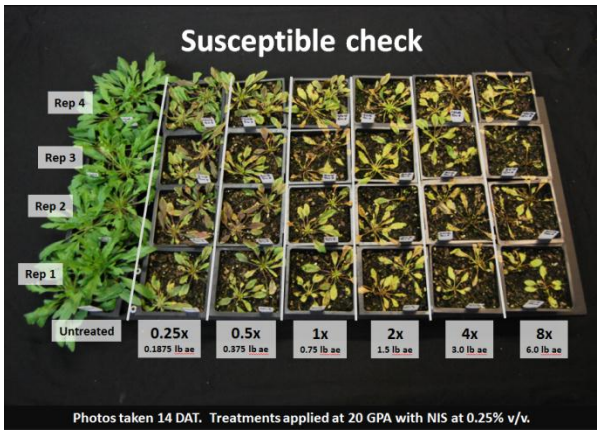

Figure 2. Susceptible check population

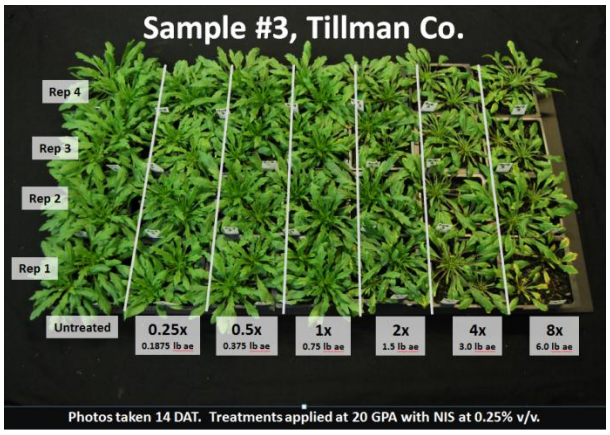

Figure 3. Resistant population

As you can see from the photos, glyphosate resistant horseweed populations can survive even 8 times the normal rate. Fortunately as it pertains to (preplant) horseweed control we have effective alternatives that we previously mentioned. So, the question becomes: What can we do to prevent or delay the development of glyphosate resistant palmer amaranth in Oklahoma? Well, the answers are the same as what you have been reading in ag-based literature for several years. The use of residual herbicides are the key component in our defense against this threat. Fortunately in cotton we still have many effective options. I think there are multiple reasons why glyphosate resistant palmer hasn't taken over the southwest just yet. One that is agreed upon by most is the continued use of yellow herbicides. This continues to be the best (and most economical) advice we can give cotton producers. Tank-mixing preplant burndown and early post herbicides is another key component for us. In the southwest when we do receive adequate rainfall it is usually in the early part of the season (spring on into June). In order for residual herbicides to be effective one of the following three requirements must be met - shallow tillage, rainfall or irrigation. Taking advantage of the rainfall component is critical. Therefore we place more importance on incorporating residuals early-season…when we still have good chances to receive the activating rains. Once we hit July, our chances of getting the full benefit out of a residual herbicide depend highly upon whether or not we own a sprinkler. Defending against this threat in the southwest is an early-season battle.

In closing, while visiting with producers some has made the comment that things will soon take care of themselves because technological advances coming in the pipeline will bail us out of this train wreck we have thus-far avoided. Unfortunately these technologies are several years out and don't currently provide us with any guarantees that life will be a breeze in the future. In addition, the best way to find out if this comes true is to still be in business when the life-saving technology arrives.

Fair use policy

Editors

Randy Boman

Shane Osborne

SEND US A COMMENT BY EMAIL

Contributing Author

Randy Boman

Shane Osborne

Newsletter in maintained by Jerry Goodson Extension Assistant.

If you would like to receive this newsletter via email, send a request to

jerry.goodson@okstate.edu

Randy Boman
Research Director and Cotton Extension Program Leader
16721 US Hwy. 283
Altus, Oklahoma
(580) 482-2120 office
(580) 482-0208 fax
(580) 481-4050 mobile

randy.boman@okstate.edu

www.osucotton.com

www.ntokcotton.org