

Developing a Demonstration Area for Integrated Weed Management at Duncan High School Greenlee County

2024 Final Report

Progress towards Project Goals and Measures:

1. *Reduce the density of Russian knapweed in the ag field (monitoring of density plots).*
Monitoring of the field by students resumed in the spring of 2024 when Russian knapweed broke ground following dormancy. Overall, there was a reduction in Russian knapweed over the two-year period in the main ag field. The smaller field was monitored but not treated the second year due to Freeport McMoRan installing a greenhouse on a portion of that field. Plans are to treat this field in 2025. The Ag teacher has committed to keep her students involved with monitoring in 2025. We believe that switching active ingredients in herbicides between the two years helped in the reduction of targeted plants in the main field.

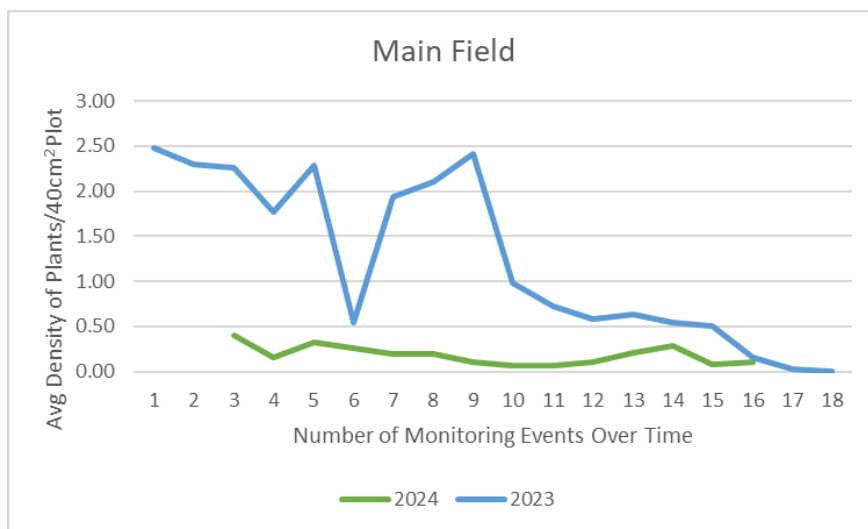


Figure 1. Comparison of monitoring results in the Main Field in 2023 and 2024.

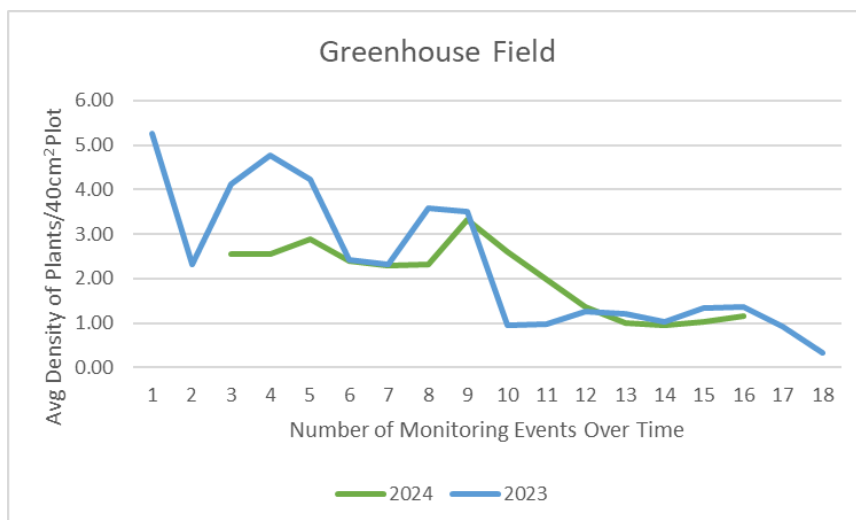


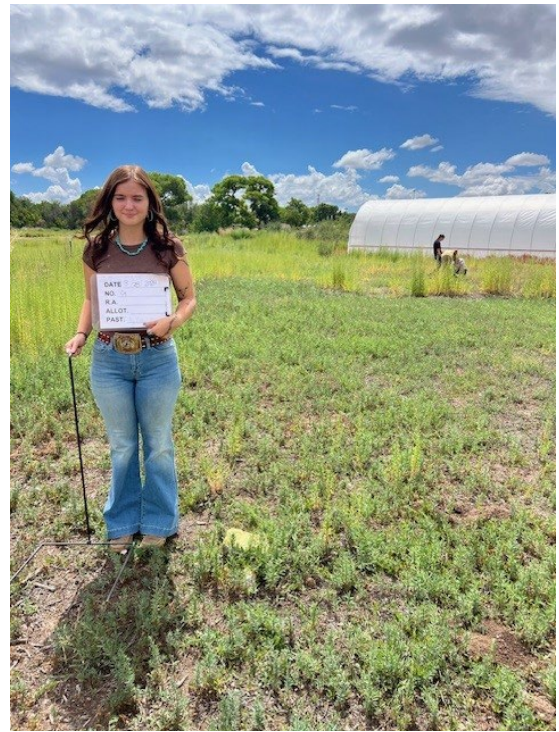
Figure 2. Comparison of monitoring results in the Greenhouse Field in 2023 and 2024.

Table 1. Number of Monitoring Events Over Time and Corresponding Monitoring Dates.

	2023	2024
1	3/21/2023	
2	4/4/2023	
3	4/24/2023	5/7/2024
4	5/9/2023	5/20/2024
5	5/24/2023	6/5/2024
6	6/6/2023	6/20/2024
7	6/22/2023	7/3/2024
8	7/10/2023	7/16/2024
9	7/25/2023	7/30/2024
10	8/14/2023	8/14/2024
11	8/28/2023	8/28/2024
12	9/12/2023	9/10/2024
13	9/25/2023	9/26/2024
14	10/17/2023	10/8/2024
15	11/1/2023	10/22/2024
16	11/15/2023	11/5/2024
17	11/29/2023	
18	12/11/2023	

Previous to this grant, Milestone (Aminopyralid) was used to treat Russian knapweed infestations. This was chosen based on UA Cooperative Extension herbicide field trials done in Greenlee and Cochise counties. This herbicide was used for a number of years back-to-back. The Gila River Weed Working Group discussed herbicide resistance in other weeds across the US as a potential problem with using the same chemical over time. For this reason, in 2023 the group decided to try a different herbicide, Weedmaster (2,4-D and Dicamba). In 2024, the group decided to try DuraCor (Aminopyralid plus Rinskor). Timing of application of herbicides varied by year, but were based on plant growth at the pre-bloom stage, usually occurring in early May.

2. *Have high school students engaged in the project (number of students involved in monitoring).* Twenty-six junior and senior high school agriculture students were involved in monitoring Russian knapweed in 2023 and 2024.



To Whom it May Concern:

I have had the pleasure of working hand in hand with Greenlee County and UA Greenlee County Cooperative Extension in creating, monitoring and documenting noxious weed species in our demonstration area at Duncan High School.

My students have gained firsthand knowledge about the effects of invasive and noxious weed species, their effects on livestock and methods to control and monitor these species.

While some of my students will go on to have careers in livestock management, natural resources or farming, some of them will not. They will, however, take with them an awareness of the spread of invasive species and how it can affect everyday life.

We have witnessed great strides in controlling the Russian Knapweed population, which was once rampant in the demonstration area. Through the application of herbicides and the continuous grazing of goats, the progress is evident. This would not have been possible without the funding and support provided by this grant.

Thank you for your time and support,

Kayla Sexton-Presley
Agricultural Education & FFA Advisor, Duncan High School

3. *Have the ag field be a demonstration area for landowners in the Duncan Valley (number of workshop participants that tour the site, workshop participant evaluations).*

A Noxious Weed Workshop was held on March 17, 2024, in Duncan with 8 participants. Seven of those participants had never attended a previous workshop. Topics included the biology and control of target species, how to read herbicide labels, and a surfactant demonstration. An update was given on the progress of the work being done at the Duncan High School Demonstration area. Overall, participants rated the workshop at a 5.0 (on a scale of 1=not valuable to 5=very valuable). 100% of participants listed two key concepts that they learned, and 100% of participants listed one thing that they intend to implement as a result of the workshop.

4. *Use livestock to manage weeds in the field (document livestock and grazing periods, effective periods to suppress plant above ground growth).*

Four goats grazed the field from year-long. The goats were removed from the field during herbicide treatments and the labelled re-entry periods were followed. While the goat grazing does not kill the Russian knapweed, it does keep it controlled for a good part of the year.



5. *Reduce the extent of Whitetop and Malta starthistle on school grounds, and all three species on adjacent lands (map infestations prior to and after treatment).*

Whitetop and Malta starthistle plants have been controlled on school grounds and are no longer present. See #1 for progress on Russian knapweed on school grounds. Two landowners adjacent to school grounds treated 30 acres of Russian knapweed.

Other observations and thoughts from the project:

- In 2023 Russian Knapweed plants that were shaded out by Kochia did not bolt or flower. We had tried to use a cover crop that year, but with no irrigation on the fields and a dry winter, we had no germination. The Kochia seemed to have the same effect as a cover crop for competition with the Russian knapweed. In 2025, there is the potential to have some water in the fields. One thing that we plan to explore is to use a grass, possibly Sudan grass, as a cover crop to compete with the Russian knapweed. If we need to use herbicide, we will be okay using a broadleaf targeted herbicide that will not damage the cover crop.
- We learned that if we skip one year of treatment (as we did in the Greenhouse Field), we lose a lot of ground and are essentially back to square one with the infestation. We will be starting over in 2025 with treatment of that field.
- The goats did have to be removed at the beginning of 2025 due to predation by coyotes. Two goats were killed. In the past, a community member put his steers on the pasture but as soon as they were removed the Russian knapweed bolted and flowered. More thought needs to go into how we proceed with grazing by livestock with the potential for predation.
- A poster was displayed on this project at the 2024 Fall Meeting of the SWVMA meeting.

Project Expenses

Greenlee County purchased \$9,100 worth of DuraCor and Weedmaster herbicide in 2023 for the county noxious weed program. A portion of that herbicide and methylated seed oil (also purchased in 2023) was used on the Duncan High School field, as well as the 30 acres on two adjacent farms. A portion of this herbicide was also used on the three properties in 2024.

The Greenlee County Weed Technician spent 31 hours in 2023 and 2024 (valued at \$775) on the Duncan High School Demonstration project.