

2017 Herbaceous Weeds Summary

By Kaleb Baker

This year we began using Arc Collector to help us determine how much management we are doing, in what areas, and with what treatments. The following is a summary of the analysis performed on the data collected.

Overview

Treatment	Worker Hours	Herbicide Gallons	Average Hours/Acre	Average Gallons/Acre	Area (acres)
Boom Sprayed	10.05	2444.7	0.027369	6.65760702	367.204
Mowed	0	0	0	0	30.31783
Swept (Spot Treat)	836.65	472.95	0.7266923	0.41079201	1151.313
Re-swept (Spot Treat)	101.9	35	0.8639201	0.29673408	117.9507

The above table provides a basic summary of the treatments used. Most of our worker hours were spent sweeping our plantings, as expected. It is affirming to see that we are well below an average of 0.5gal/acre of herbicide.

It is interesting to note that 2017 had about 10% of the area re-swept that had previously been spot treated, consuming over 100 more worker hours. Some of these hours are unavoidable as patches will be missed, late season weed growth can spring up on areas swept early in the season, and mowed areas inevitably produce re-sprouts. However, it would be nice to see a lower percentage of time spent re-sweeping.

Management Units

Units	Worker Hours	% Worker Hours	Total Gallons	Acres	Hours/Acre
Clear Creek Knolls	138.25	15.54%	266.9	289.4759262	0.47758721
Holland Prairie	137.55	15.46%	81.1	255.2558541	0.538871089
Hook Larson	85.65	9.63%	263.6	106.4511087	0.80459472
Prairie Potholes	72.75	8.18%	42	53.02168633	1.372080087
Rolling Thunder	52.5	5.90%	63	40.12607974	1.308376007
Oak Island	48.5	5.45%	10	55.58550953	0.872529557
Senger	48	5.39%	30	67.01532361	0.716254096
Eight Oaks	37.5	4.21%	37	12.44984344	3.01208607
Thelma Carpenter Unit	37.1	4.17%	3	37.87429685	0.979556139
Main Unit Knobs	34.85	3.92%	3.5	81.02041152	0.430138521

Above are the top ten most highly managed units in terms of the percentage of worker hours spent actively managing those units. Unsurprisingly, these are the units with the most amount of herbicide applied to them. The newer crew plantings, those in Clear Creek Knolls and Holland Prairie, consume 31% of our time whereas the older planting require less time to manage. This may lead one to believe that they have more weeds, but that is not necessarily true.

When looking at the number of hours spent per acre, it seems that knowing the specific weeds that are at each location determine the hour to acre ratio. For example, Eight Oaks, Prairie Potholes, and Rolling Thunder required the highest time to acres ratio. These locations have a lot of birds foot trefoil compared to the other units meaning that finding a more efficient means of killing BFT should be a high priority, something we already knew. Thelma Carpenter required a lot of time this year hand pulling, scything, and brush mowing sweet clover off the remnants despite the undocumented hours spent by Dee Hudson. Efficiently managing weeds on our remnant is another challenge we will need to address.

Weed Species

Primary Target Weeds	Worker Hours	Herbicide Gallons	Acres	Hours/Acre
Melilotus officinalis (YSC)	486.85	657.2	947.4918788	0.513830262
Lotus corniculatus (BFT)	173.35	599.6	160.7873105	1.078132344
Melilotus albus (WSC)	110.3	360.5	202.5381965	0.544588635
Phalaris arundinacea (RCG)	57.8	511.9	87.16046109	0.663144725
Hieracium piloselloides (King Devil)	54	12.5	87.53784702	0.616876035
Trifolium pratense (Red Clover)	31	96	26.30440381	1.178509888
Lespedeza cuneata (ABC)	15	302.6	66.78196256	0.224611548
Other Species	7.35	15.35	25.20613037	0.291595731
Linaria vulgaris (Butter and Eggs)	6.2	5	0.737524837	8.406496552
Saponaria officinalis (Bouncing Bet)	6	4	3.511989298	1.708433452
Dipsacus fullonum (Teasel)	0.75	6	1.598213394	0.469274005

Above are the top 11 species controlled on the preserve by staff. Before analysis of these species is delved into, it must be noted that the hours, gallons, and acres indicated for each species represent the species that was most abundant and required the most time for each area. For example, if a sweep was done targeting yellow sweet clover, white sweet clover, and red clover where red clover was the most abundant, then all the time spent managing white and yellow sweet clover within that area were attributed towards red clover. This was done for the ease of analysis.

The species that consume the most time overall are the sweet clovers and birdsfoot trefoil. However, the hours per acre spent on butter and eggs, red clover, birdsfoot trefoil, and bouncing bet are rather high. These are species that should be focused on to find a more efficient means of control, if it is decided they should be managed on the landscape scale we work on.

Other Items of Note

This isn't a perfect tool. For example, in the Overview chart, it clearly took time to mow 30 acres, but that data wasn't recorded. However, this does provide us with a good representation of the weed work performed by the staff overall and therefore a means of measuring our strategies and treatment methods.

The amount of time and area managed by weed cruising by vehicle is also not included in this data. Dense patches of weeds are included as spot treatments, but the time spent getting ones and two is not.