

Planting #122
 2016 Planting History
 Clear Creek Knolls East Planting
 Prepared by Kaleb Baker and Cody Considine 11/23/2016

103 Acres Total - 56lbs/acre, 173 species
Dry Mesic: 100 acres
Wet: less than ¼ acre
Combine Production: 2
Hand Production: less than ¼ acre
Step In: ¾ acre

Site Conditions

Location:
 General location – located to the south of Clear Creek and bordering Carthage road
 GPS: 41.905492, -89.321808 Elevation: 736ft – 799ft
 County: Ogle

Soil Types

According to the Web Soil Survey for the planting area in Ogle County, soils include:

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
223B	Varna silt loam, 2 to 4 percent slopes	0.5	0.5%
397B	Boone loamy fine sand, 2 to 7 percent slopes	0.1	0.1%
440C2	Jasper loam, 5 to 10 percent slopes, eroded	2.5	2.4%
622B	Wyanet silt loam, 2 to 5 percent slopes	0.3	0.3%
622C2	Wyanet silt loam, 5 to 10 percent slopes, eroded	75.7	73.3%
727B	Waukee loam, 2 to 5 percent slopes	18.4	17.8%
939D	Rodman-Warsaw complex, 6 to 12 percent slopes	5.6	5.4%
939E	Rodman-Warsaw complex, 12 to 20 percent slopes	0.2	0.2%
Totals for Area of Interest		103.3	100.0%

*All of the soils have been under no till agriculture for 10 years. Above are basic descriptions, a complete soil test is needed to determine specific soil characteristics. For more additional information see Soil Web Survey website: <http://websoilsurvey.nrcs.usda.gov/app/>

Topography

The general topography of the 2016 planting consists of rolling hills. The elevation is lower to the north and west, rising to the highest point in the south east corner. The dry hills and ridges are easily

distinguishable as they break up the general sloping landscape. There is an average slope of 3.5% with a maximum slope of 9.8%. There are some drainage channels between the slopes that mostly lead toward the creek. Two channels are partially fed from elevated seeps.

Agricultural History

The 103-acre planting was in a low diversity (smooth brome) CRP contract for 20 years prior to being converted to row crops. The planting site was converted to no-till row crops to preserve the soil ecosystem since it had not been tilled for 20 years prior. Corn and soy bean have been the main crops. The site was no-tilled farmed since 2008. In 2016, the southern half (40 acres) of the 2016 crop was soy beans while the northern half was corn.

Site Preparations

The crops were harvested in mid-October. The 2016 season was very wet throughout the whole year, only beginning to dry in October. The temperatures stayed warm (highs in the mid 60's) until after planting.

On November 9th, the corn stubble was burned. The square ruderal, non-row cropped island in the center of the planting and the triangular ruderal, non-row cropped island bordering the planting did not burn well.

The fields were not disked in order to maintain the previously established soil communities. That decision was determined after consulting with Sara Baer at SIU. Two small, heavily eroded ruts were tilled to smooth them out.

Cody harrowed both the corn and bean fields, being sure to only go over the bean field once in order to prevent the bean stubble from clumping. In years past harrowing bean stubble created large clumping. This year the bean stubble did not clump as badly. I drove faster, about 18 mph.

I am glad we didn't till the fields to maintain the soil communities. However, after planting, I see that it would have been nice to lightly disk in order to establish better seed-soil contact. Strong winds easily blow away the seed with such little contact. Knowing that bean stubble does not burn, I am curious as to how the lack of ash influences germination rates. However, the stubble holds the planted seed to down and hides it from the birds. It will also be interesting to see the differences, if any, between the burned corn stubble and the unburned bean fields.

Planting the seed

Weather: The winds were variable from 5 to 20mph, depending on the day. It did stay dry during planting and prep.

The entire area was seeded using three broadcast seeders pulled by Katie McBride, Shanon Hankin, and Kaleb Baker in the Silver, White, and Blue trucks. Some of the smaller mixes were either hand seeded or seeded using the pendulum seeder.

Dry Mesic

The dry mesic area was split into two sections: the corn and soybean field, which divided the area roughly in half with a north and south section. All areas were planted by Katie McBride, Shanon Hankin, and Kaleb Baker.

Soybean field (~50 acres) – The first pass was completed driving east-west transects and then the second pass with north-south transects. All seeders were set to full open except Katie's which was set to $\frac{3}{4}$ open. The perimeter 15-20ft was used as a turn-around area, knowing it would be planted with Canada Rye in the future. Two east and west passes warranted another 1.5 barrels to be added to each seeder, so the brown truck and cattle trailer full of seed were left on one side of the field as a refill station. For the north-south transects, more back and forth travel to the brown truck was needed for refilling. The blue truck could only carry 6 refill barrels as white and silver had pumper units in the back. This led to more seed planted where we drove back and forth to the brown truck. The cones were used on the second pass since it was harder to see our tracks as the bean stubble was already packed down from the first pass. After both the soybean and the corn field was planted, a third pass was done where it was thought to be needed. Planting took about 1.5 days.

Corn Field (~50 acres) - The first pass was completed driving east-west, following the corn rows. All seeders were set in the same position as the soybean field. The second pass was harder for the north-south transects due to the irregular shape of the plot, the islands of production areas, the islands of wetland, and the islands of undisturbed, ruderal prairie. Cones were used on the second pass since the corn rows went perpendicular to the transects. Otherwise it was similar to the soybean field in terms of refilling. A third pass was done where it was thought to be beneficial. Planting took about 2 days.

Wet

Wet (less than $\frac{1}{4}$ acre) – Several wet species were planted in the elevated wet seep polygons. Sedges were already growing in these two spots despite many years of row crop. These areas were hand seeded by Katie McBride, Kirk Hallowell, and Kaleb Baker. These spots stayed wet despite not receiving rain for a couple of weeks. We put down 1.5 barrels of seed into these areas; they were seeded heavily. The wind was strong on the day of planting, so the seed may have spread further than the polygons show.

Combine Production (3 plots) – 2 acres

3 plots were step measured out to be a 1 acre and 2 $\frac{1}{2}$ acres. Cody planted the three plots using the pendulum seeder. One acre was used for *Echinacea palida*, one half acre for Prairie Brome, and one half acre for a combination of white and purple prairie clover. Nothing else was planted in these plots to allow us to combine the entire area in the future, collecting a single species easily and quickly.

Hand Production (1 hill top) – $\frac{3}{4}$ acre

A circle was flagged off before planting the general area with dry mesic mix. Individual species were hand planted in rows, using the corn rows to guide the planting. It was incredibly windy, so the rows will likely fade into one another. The hand production area was planted in hopes of being able to more easily

collect some more time consuming species and as a test to see if this type of setup would work for future, larger production areas. Only about half of the seed that was initially set aside for this project was used, so the rest was added to the step-in mix. The extra nodding onion was planted on the north side of the triangular ruderal area. Katie McBride, Kirk Hallowell, and Kaleb Baker performed the planting.

Step In (2 hill tops) – ¼ acre

There were 2.5 barrels of “step in” which quickly became a hill top mix. Two sandy/rocky hill tops were chosen and Kaleb planted them with the pendulum seeder while dragging the harrow. The step in mix areas had already been planted with the dry mesic mix. It was planted on a very windy day therefore multiple passes were made. The harrow made it easier to see what had been planted.

The hill farthest to the east was planted doing east west transects partially down the slopes. A second pass was made doing concentric circles about 1/3 of the way down the slopes. The hill more to the north and west was planted driving concentric circles about 1/3 of the way down the slopes as well. The last of the step in mix was planted by driving chaotically over the remaining ridge tops to increase the area available to those species.

Echinacea Mix (along ridges)

Katie McBride, Kirk Hallowell, and Kaleb Baker planted a combined Echinacea mix along the top third of the ridges using the three broadcast seeders pulled behind three trucks. This was done to help make the ridges look nice. After the first pass along most of the ridges with all three trucks, Katie and Kirk drove around chaotically to plant the rest of the mix, focusing on but not sticking to the upper ridges. A total of about 15 barrels were planted in such a fashion.

Canada Rye Border

A Canada Rye border was planted around the entire planting except where the 2016 planting meets the 2015 planting. Katie McBride, Shanon Hankin, and Kaleb Baker drove three trucks, side by side, around 4 times, using 12 barrels of Canada Rye.

Prairie Brome and Prairie Wedge Grass

After planting, we received 2 more polys of prairie brome and another 5 lbs of prairie wedge grass from Ace at Boone County. Using the pendulum seeder, Kaleb Baker planted the grassed waterways with that mixture.

Planting Mixes

One main mix was made for the majority of the 2016 Clear Creek Planting. They were mostly dry to dry mesic species; however, some mesic species were added as well. A number of new species were added to the preserve this year through seed trade and kind donations from Ace Minson in Boone County. Having mostly one soil type to pick seed for simplified the task of both picking and mixing the seed. The

total species richness was similar to that of previous years for this soil type. The main focus this year was collecting enough seed to plant 100 acres while maintaining a relatively high amount of diversity. A secondary goal was to build an area easily allowing future crews to continue planting large acreages. The dry mix was planted at 56lbs/acre not including the Echinacea mix. The wetlands were planted at 72lbs/acre and the step in addition was planted at 103lbs/acre. The combine production clovers were planted at 92lbs/acre, the Echinacea at 35lbs/acre, and the prairie brome at 46lbs/acre.

Species Richness

Dry Mesic: 93

Step In: 57

Hand Production: 10

Wet: 25

Total Species for Planting: 173

SCIENTIFIC NAME	COMMON NAME	Dry Mesic - 100 acres lbs/acre	Step-In 3/4 acre Total lbs	Combine Production total lbs.	Hand Production total lbs.	Wet lbs.
Agastache scrophulariaefolia	Purple Giant Hyssop	0.000	0.000			
Agrimonia parviflora	Swamp Agrimony	0.000				1.375
Agalinis tenuifolia	Slender False foxglove	0.000				0.950
Agrostis hymenalis	Tickle Grass	0.000	0.700			
Allium cernuum	Nodding Wild Onion	0.030			2.000	
Amorpha canescens	Leadplant	0.372				
Andropogon gerardii	Big Bluestem; Turkeyfoot	0.000				
Anemone canadensis	Meadow Anemone	0.000				0.500
Anemone cylindrica	Thimbleweed	0.233				
Antennaria neglecta	Field Cat's Foot	0.000				
Antennaria plantaginifolia	Pussy Toes (Everlasting)	0.148				
Aristida longiseta	3 Awn Grass	0.000	1.100			
Artemisia caudata (campestris)	Beach Wormwood	0.571				
Asclepias incarnata	Swamp Milkweed	0.000				0.010
Asclepias syriaca	Common Milkweed	0.001				
Asclepias verticillata	Whorled Milkweed	0.013				
Aster azureus (oolentangiensis)	Sky-blue Aster	0.000				
Aster ericoides (prostratus)	Heath Aster	0.043				
Aster laevis	Smooth (Blue) Aster	0.000				
Aster linariifolius	Stiff Aster (Flax-Leaved)	0.104				
Aster novae-angliae	New England Aster	0.035				
Aster oblongifolius	Aromatic Aster	0.000	2.200			
Aster ptarmicoides	White Aster (Stiff Aster)	0.000	0.375			
Aster sericeus	Silky Aster	0.000	4.000			
Astragalus canadensis	Canadian Milk Vetch	0.072				
Baptisia leucantha	White Wild Indigo	5.453				
Baptisia leucophaea	Cream Wild Indigo	0.000	9.300		2.000	
Blephili ciliata	Downy Wood Mint	0.000	0.063			
Bouteloua curtipendula	Side-Oats Grama	0.082				
Bouteloua hirsuta	Hairy Grama	0.000	0.200			

Brachyelytrum erectum	Long Awned Wood Grass	0.000			
Bromus kalmii	Prairie brome	0.392		23.000	
Cacalia atriplicifolia	Pale Indian Plantain	0.095			
Cacalia muhlenbergii	Great Indian Plantain	0.003			
Cacalia plantaginea (tuberosa)	Indian Plantain	0.000			1.000
Calamagrostis canadensis	Blue Joint Grass	0.000			7.100
Camassia scilloides	Wild Hyacinth	0.000	0.010		
Carex bicknellii	Copper-shouldered oval Sedge	0.241			
Carex buxbaumii	Buxbaum's Sedge	0.000			0.063
	Sand Bracted Sedge				
Carex muhlenbergii (enervis)	(Muhlenberg's)	0.026			
Cassia fasciculata	Partridge Pea	0.023			
Castilleja sessiliflora **	Downy Yellow Painted Cup	0.000	23.400		1.500
Ceanothus americanus	New Jersey Tea	0.000	7.500		2.000
Cephalanthus occidentalis	Buttonbush	0.000			0.900
Chrysopsis camporum (Heterotheca)	Golden Prairie Aster	0.000	1.950		
Cirsium hillii *** (pumilum)	Hill's Thistle	0.000	0.250		
Coreopsis lanceolata	Sand Coreopsis	0.115			
Coreopsis palmata	Prairie Coreopsis	0.318	0.625		
Coreopsis tripteris	Tall Coreopsis	0.699			
Cyperus filiculmis	Slender Sand Sedge	0.000	0.438		
Danthonia spicata	Poverty Oat Grass	0.000			1.050
Desmodium canadense	Showy Tick Trefoil	0.000			
Desmodium illinoense	Ill. Tick Trefoil	0.071			
Dodecatheon meadia	Shooting Star	0.111			
Echinacea pallida	Pale Purple Coneflower	2.656		35.000	
Elymus canadensis	Prairie Wild Rye	3.072			
Elymus villosus	Silky Wild Rye	0.000			
Eragrostis spectabilis	Purple Love Grass	0.012			
Erechtites hieracifolia	Fireweed	0.000			5.000
Erigeron strigosus	Daisy Fleabane	0.039			
Eryngium yuccifolium	Rattlesnake Master	0.565			
Eupatorium altissimum	Tall Boneset	0.192			
Eupatorium maculatum	Spotted Joe Pye Weed	0.000			9.700
Eupatorium perfoliatum	Boneset	0.166			
Eupatorium purpureum	Purple Joe-Pye Weed	0.000			
Euphorbia corollata	Flowering Spurge	0.334			
Festuca obtusa (subverticillata)	Nodding Fescue	0.000			
Gaura biennis pitcheri (longiflora)	Common Gaura	0.074			
Gentiana (alba) flavida	Cream Gentian	0.105			
Gentiana (Gentianopsis) crinita	Fringed Gentian	0.000			0.125
Gentiana andrewsii	Bottle (or Closed) Gentian	0.000			0.050
Gentiana purberulenta	Prairie Gentian	0.000	0.300		
Gentianella quinquefolia	Stiff Gentian	0.000	0.063		
	Prairie Smoke (Long-plumed				
Geum triflorum	Purple Avens)	0.000	0.010		
	Sweet Everlasting (Old-Field				
Gnaphalium obtusifolium	Balsam)	0.097			
Habenaria leucophea	E. Prairie Fringed Orchid	0.000			
Helenium autumnale	Sneezeweed	0.000			3.000
Helianthemum bicknellii	Rock Rose	0.000			

Helianthemum canadense	Common Rockrose (Frostweed)	0.000	10.150	
Helianthus occidentalis	Western Sunflower; Naked S.	0.506		
Helianthus rigidus (laetiflorus)	Prairie Sunflower	0.026	0.375	
Heliopsis helianthoides	False Sunflower; " Ox-eye "	0.073		
Heuchera richardsonii grayana	Rough Heuchera; Alum root	0.000	0.375	0.500
Hieracium gronovii	Hairy Hawkweed	0.000	0.550	
Houstonia (Hedyotis) longifolia (canadense)	Long-Leaved Bluets	0.001	0.125	
Hypericum pyramidatum	Great St. Johnswort	0.000		4.250
Hypoxis hirsuta	Yellow Star Grass	0.000	0.010	
Hystrix patula (Elymus hystrix)	Bottlebrush Grass	0.000		
Isanthus (Trichostema) brachiatus (m)	False Pennyroyal	0.000	0.050	
Juncus Greenei	Greene's Rush	0.073	2.300	1.000
Juncus tenuis	Path Rush	0.029		
Koeleria cristata (macrantha)	Prairie June Grass	0.797		
Krigia biflora	Two-flowered Cynthia (False Dandelion)	0.000		
Krigia virginica	Dwarf Dandelion	0.000		
Kuhnia eupatoroides	False Boneset	0.094		
Lechea stricta	Bushy Pinweed	0.000	0.938	
Lechea tenuifolia	Slender-Leaved Pinweed	0.000	0.800	
Lespedeza capitata --	Round-headed Bush Clover	0.329		
Lespedeza leptostachya ****	Prairie Bush Clover	0.000		
Liatris aspera	Rough Blazing-star (Rough Gayfeather)	0.313		
Liatris cylindracea	Dwarf Blazingstar	0.000	0.375	
Liatris pycnostachya	Tall Gayfeather; Prairie Blazing Star	0.850		14.400
Lilium michiganense	Turk's Cap lily	0.000		0.060
Lilium philadelphicum andinum	Prairie Lily; Wood Lily; Western Lily	0.000	1.000	
Linum sulcatum	Groved Yellow Flax	0.000	0.150	
Lithospermum canescens	Hoary Puccoon	0.000	0.650	
Lithospermum incisum	Fringed (Narrow-leaved) Puccoon	0.000	1.400	
Lobelia cardinalis	Cardinal Flower	0.000		
Lobelia inflata	Indian Tobacco	0.001		
Lobelia siphilitica	Great Lobelia	0.000		3.125
Lobelia spicata	Pale-spike Lobelia	0.000	0.450	
Lupinus perennis	Wild Lupine	0.019		
Monarda fistulosa	Wild Bergamot	0.108		
Monarda punctata villicualis	Horse Mint	0.287		
Napaea dioica	Glade Mallow	0.004		
Oenothera biennis canescens	Common Evening Primrose	0.000		
Oenothera clelandii (rhombipetala)	Sand Evening Primrose	0.102		
Onosmodium bejariense hispidissimum	Softhair Marbleseed	0.000	1.000	
Onosmodium hispidissimum	Marbleseed	0.066		3.400
Oxalis violacea	Violet Wood-sorrel	0.000	0.200	
Panicum leibergii	Prairie Panic Grass	0.000		
Panicum oligosanthos scribneria	Scribner's Panic Grass	0.019	1.375	
Panicum virgatum	Prairie Switch Grass	0.000		
Parthenium integrifolium	Wild Quinine (Feverfew)	2.549		

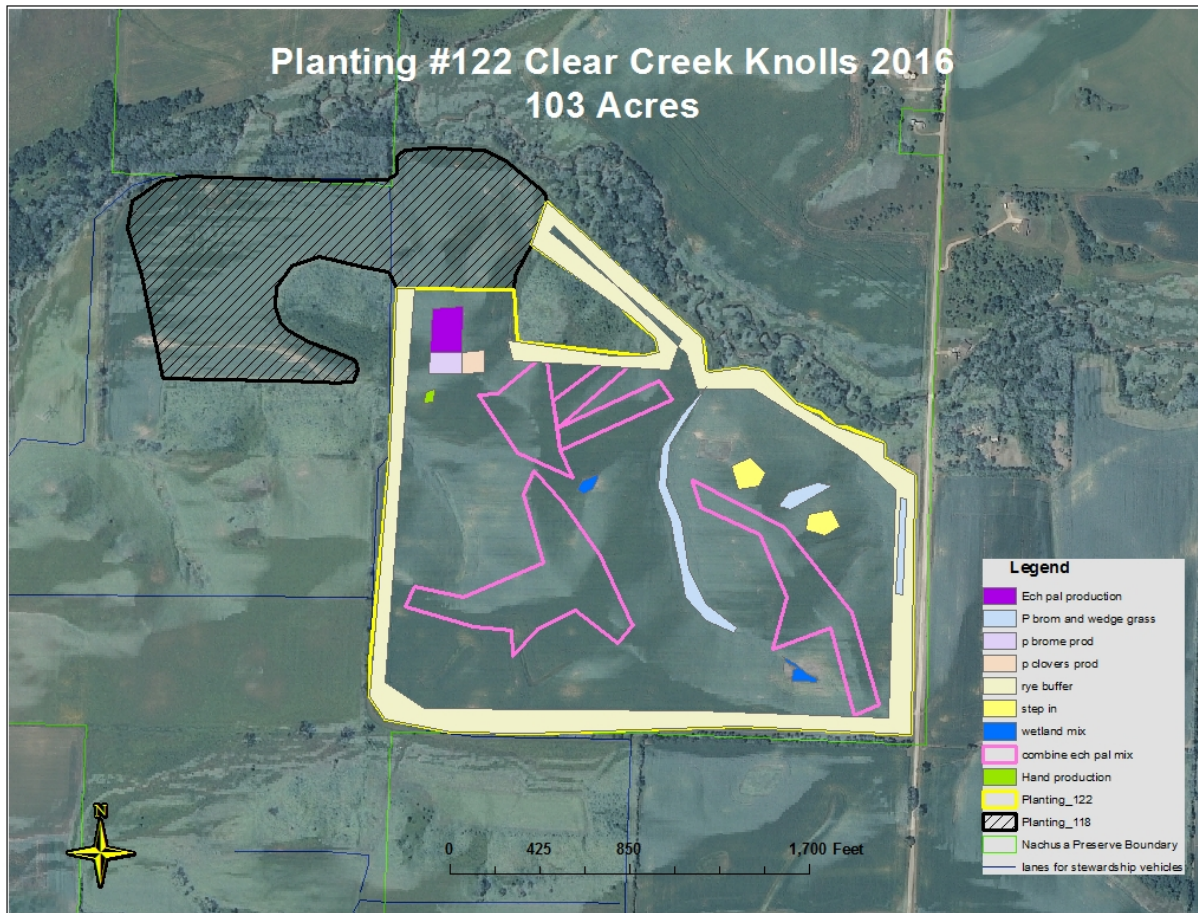
Pedicularis canadensis	Wood Betony	0.029			3.450
Pedicularis lanceolata	Fen (Swamp) Betony; Lousewort	0.000			3.000
Penstemon digitalis	Foxglove Beardtongue	0.376			
Penstemon grandiflorus	Large Flowered Beardtongue	0.000	0.200		
Penstemon hirsutus	Hairy Beard tongue	0.197			
Petalostemum (Dalea) candidum	White Prairie Clover	0.686		19.000	
Petalostemum (Dalea) purpureum	Purple Prairie Clover	1.897		27.000	
Phlox bifida	Sand Phlox	0.000	0.063		
Phlox pilosa	Prairie phlox	0.000			
Physocarpus opulifolius	Ninebark	0.000			
Platanthera leucophaea	Eastern Prairie Fringed Orchid	0.000			0.050
Polygala incarnata **	Pink Milkwort	0.000			
Polygala polygama obtusata	Purple Milkwort	0.000	0.010		
Polygala sanguinea	Field Milkwort	0.000	0.100		
Polytaenia nuttallii	Prairie Parsley	0.000	2.300		1.000
Potentilla arguta	Prairie Cinquefoil	0.259			
Prenanthes aspera	Rough White Lettuce Mountain mint (Prairie Hyssop)	0.000	1.050		
Pycnanthemum virginianum	Hyssop)	0.201			
Ratibida pinnata	Yellow Coneflower	0.120			
Rhus aromatica	Fragrant Sumac	0.000	0.100		0.275
Rosa carolina	Pasture Rose	0.060			
Rudbeckia hirta	Black-eyed Susan	0.147			
Ruellia humilis	Wild Petunia	0.000	0.500		
Scirpus atrovirens	Dark Green Rush	0.000			7.360
Scirpus cyperinus	Wool Grass	0.102			
Scutellaria parvula leonardi	Small Skullcap	0.000	0.120		
Senecio plattensis	Prairie Ragwort	0.036			
Silphium integrifolium	Rosinweed	0.251			
Silphium laciniatum	Compass plant	0.592			
Silphium perfoliatum	Cup-plant	0.220			
Silphium terebinthaceum	Prairie Dock	0.760			
Sisyrinchium albidum	Common Blue-eyed Grass	0.000	1.600		
Solidago (Euthamia) graminifolia nuttallii	Grass-leaved Goldenrod	0.594			
Solidago missouriensis fasciculata	Missouri Goldenrod	0.144			
Solidago nemoralis	Gray Goldenrod; Oldfield	0.000			
Solidago patula	Swamp Goldenrod	0.000			1.000
Solidago riddellii	Riddell's goldenrod	0.000			
Solidago rigida	Stiff Goldenrod	0.000			
Solidago speciosa	Showy Goldenrod	0.000			
Sorghastrum nutans	Indian Grass	0.000			
Spartina pectinata	Prairie Cord Grass	0.000			1.300
Sphenopholis obtusata	Prairie Wedge Grass	0.050	1.200		1.000
Spiranthes cernua	Nodding Ladies Tresses	0.000	0.060		
Sporobolus heterolepis	Prairie Dropseed	1.726			
Stipa spartea	Porcupine Grass	0.028	0.500		
Taenidia integerrima	Yellow Pimpernel	0.000	0.010		
Talinum rugospermum ***	Sand Fameflower	0.000			
Tephrosia virginiana	Goat's Rue	0.000	16.150		
Teucrium canadense	American Germander (Wood Sage)	0.155			

Tradescantia ohiensis	Ohio Spiderwort	1.938	
Triosteum aurantiacum	Early Horse Gentian (Orange-fruited)	0.000	1.500
Triosteum perfoliatum	Horse Gentian (Feverwort)(Tinker's Weed)	0.000	0.125
Verbena hastata	Blue Vervain	0.130	
Verbena simplex	Narrow-leaved Vervain	0.000	0.010
Verbena stricta	Hoary Vervain	0.481	
Verbena urticifolia	Hairy White Vervain	0.011	
Veronicastrum virginicum	Culver's Root	0.181	
Viola pedata lineariloba	Birdsfoot Violet	0.000	0.500
Viola pedatifida	Prairie Violet	0.000	
Viola sagittata	Arrow-leaved violet	0.000	0.020
Wulfenia bullii *** (Besseyia)	Kittentails	0.000	0.188
Zizia aptera	Heart-leaved Meadow Parsnip	0.032	3.700
Zizia aurea	Golden Alexanders	0.503	
Schizachyrium scoparium	combine	6.082	
Big blue and Indian some switch grass	combine	4.927	
Combined Asters, lia asp, and Oldfield GR	combine	10.810	

Note: The aster and goldenrod combine mix contained: smooth aster, sky-blue aster, silky aster, old field goldenrod, showy goldenrod, Missouri goldenrod, stiff goldenrod, round headed bush clover, Liatris aspera, and Echinacea pallida. The value of 0000 means that the species was accounted for in a combine mix.

**The excel spreadsheet where this list was copied from is found T:\Nachusa Project\Stewardship\PLANTING HISTORIES & INVENTORIES\Planting 122 Crew CCK East 103 Acres 2016.

Map:



Map saved in T:\Nachusa Project\Stewardship\PLANTING HISTORIES & INVENTORIES\Planting 122 Crew CCK East 103 Acres 2016

Lessons Learned

Take your time determining what species will go in which mix, and if a container needs to be split between two plantings, do so earlier rather than later. It is also helpful to double check each barrel as it is going into the mix, making sure it is appropriate for the mix. We accidentally included wool grass in our dry mesic mix which is not appropriate for that plant.

Try not to end up with such a large amount of step in mix so there is less competition for those species. Also, maybe mark off an area in field not to be planted with the general mix, again to decrease competition.

ArcCollector would be a great help when planting so that day the polygons could be drawn and notes taken of what was done in each planting area.

Next year make a spiderwort and nodding onion production mix

End.