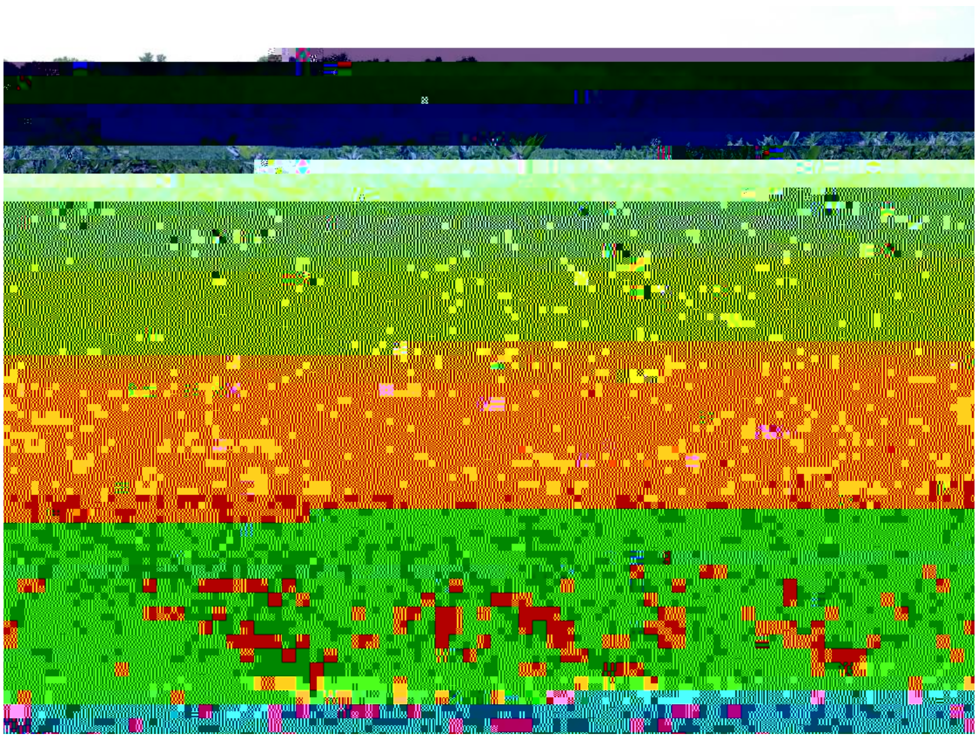
2020 Milkweed Production Trials



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increase plant productivity. In addition, we hypothesize that, as with many deep tap rooted crops, milkweed productivity will increase with increased availability of potassium. However, with both of these, we do not know if the increase in productivity will translate into increased floss yield specifically, or if the level of supplemental fertilizer needed to attain the increased yield will be economical. To help determine optimal and economical nutrient management strategies that support a high yielding milkweed crop, two fertility trials, investigating rates of nitrogen and potassium, were established in 2020.

The experimental design in each trial was a randomized complete block design with four replications. Plots 8ô x 35ô were imposed into an area of milkweed that was established in 2016. Prior to the addition of fertilizer, the soil in the area was sampled to be analyzed for nutrient concentrations (Table 1). Fertilizer treatments were hand applied on 2-Jun in both trials. At the time fertilizer was applied, all milkweed plants were in vegetative stages ranging from one to four pairs of leaves. Plots were also assessed for milkweed populations and height at the time the fertilizer treatments were implemented and again at harvest. Table 2 shows the treatments for each trial. The nitrogen was applied in the form of urea (46-0-0) while potassium was applied in the form of muriate of potash (0-0-60).

Table 1. Soil nutrient analysis, fall 2019*.

Soil chemical parameter	Value	Interpretation**
pH	6.2	N/A
Organic matter (%)	4.1	N/A
Phosphorous	4.6	Optimal
Potassium	64.7	Medium
Magnesium	82.5	Optimal
Iron	4.2	N/A
Manganese	12.2	N/A
Zinc	1.0	N/A

*

milkweed

Table 4. Mil

Table 6. Milkweed pod composition and component yield, nitrogen trial, 2020.

Nitrogen rate	Floss	Pod	Seed	Floss	Pod	Seed
lbs N ac^{-1}	% by fresh weight			lbs ac^{-1} as harvested		
0	14.3	62.5	23.2	555	2783	903
25	15.1	60.5	24.4	489	2432	**789**
50	13.8	63.0	23.2	745	**1955**	1250
75	14.6	**56.4**	**28.9**	650	3399	1285
100	**15.3**	62.6	22.1	**1027**	4205	1487
LSD (*p* = 0.10) À	NSÿ	NS	NS	NS	NS	NS
Trial mean	14.6	61.0	24.4	667	3070	1112

ÿLSD: least significant difference at p=0.10 level.

NS: No significant difference among treatments at the p=0.10 level.

As with any crops, some level of loss at harvest is to be expected, however, it is exceptionally high with milkweed given the extremely low weight of the floss. Harvesting techniques to minimize floss losses and improve purity and cleanliness are currently being developed. Although the floss is the main component of interest in a milkweed crop, the seed may also present opportunities to recoup value, especially as interest in growing milkweed commercially increases.

Table 7. Milkweed pod composition and component yield, potassium trial, 2020.

Table 8. Milkweed harvest characteristics, weed control trial, 2020.

Weed control	Ground cover		Pod production		Pod length	Plant height	Pod moisture	Pod yield
	Spring	Post-harvest						
	%		pods plant^{-1}	% of plants	cm	cm	%	DM tons ac^{-1}
Herbicide	83.1	71.0	2.74	82.3	10.1	75.2	71.7	0.909
Control	37.5	82.0	5.46	84.7	10.0	77.4	70.4	0.986