Excess moisture effects on Sunflower production

Project duration – 2017
Objectives – To determine excess moisture effects on Sunflower phenology and yield.
Collaborators – Bifrost Agricultural Sustainability Initiative Cooperative (BASIC)

Results –

Table 1. Effect of excess moisture on plant phenology and yield of Sunflower at PESAI Arborg.

Treatment	Days to 50% flowering	Days to Maturity	Height at Maturity (inches)	Lodging (1-5 scale)	Yield (lbs/acre)
Irrigated	63	90 (Aug 29)	61.5	1.5	3138
Non- Irrigated	62	93 (Sep 1)	39.0	1.0	2214

Both treatments did not differ in days to 50% flowering. The irrigated sunflowers maturated little early than sunflowers grown in non-irrigated treatment. There was a significant difference in plant height at maturity between the two treatments. Sunflower plants in irrigated trial had average height of 61.5 inches in comparison to 39 inches in non-irrigated trial. Lodging did not differ between two treatments. The irrigated plots produced almost 1.4 times more yield than non-irrigated plots.

Project findings - Overall, the irrigated sunflowers maturated faster and yielded higher in comparison to when grown without irrigation. Looking back on the 2017 growing season, overall temperatures were above normal and the season were drier than normal. This might have attributed to better performance of Sunflowers under excess moisture conditions. More research is needed to back up the findings.

Background/References/Additional Resources – Sunflowers have tendency to keep root system shallow when grown in excess moisture. Shallow roots may not able to access nutrients once the soils begin to dry. Effect of excess moisture on sunflower yield and disease incidence is largely unknown.

Materials & Methods -

Experimental Design – Demonstration with three plots each in irrigated and non-irrigated set up
Treatments – Sunflowers grown in Irrigated and Non-irrigated set ups. Irrigated plots got 8" simulated rainfall during July 15 – Aug 10 in addition to natural rainfall.
Plot size – 10.8 m^2
Variety – Early maturing Honeycomb NS
Data collected – Days to 50% flowering, plant height at maturity, lodging, yield
Agronomic information
Stubble, soil type – Fallow, Heavy clay
Fertilizer applied – N – 39 lbs/acre, P -30 lbs/acre at seeding
Pesticides applied – Glyphosate @ 0.5 L/acre on June 7
Seeding date – May 31
Harvesting date– September 19