



## **YOUTH SUGAR BEET PROJECT STUDY GUIDE**

- The Sugarbeet seed you plant is grown in the Willamette Valley of Oregon.
- Post-emergent herbicides (Betamix, Upbeet, Assurell) are applied after the Sugarbeet crop has emerged.
- Roundup should be sprayed the first time on Sugarbeets when the weeds are less than 2-inches tall.
- Some products that come from Sugarbeets are: Sugar, Pulp, Molasses, Condensed Molasses Solubles (CMS) and Betaine.
- A tare sample is taken at the piler while the truck unloads Sugarbeets and it is used to calculate a growers tare and sugar percent.
- Low purity in beets will affect the Sugarbeet payment, because less sugar can be extracted.
- The Sugarbeet Cyst Nematode attacks the Sugarbeet roots, lowering yield and sugar content.
- Michigan Sugar Company has been a grower-owned cooperative since 2002, when the local farmers purchased the company.
- There are 15 calories in a teaspoon of pure, natural sugar.
- Cercospora Leafspot disease will hurt the sugar content of beets.
- Sugarbeets are classified as a biennial crop, because it takes a winter dormancy (vernalization) over the course of two growing seasons.
- Michigan Sugar Company is a grower-owned cooperative.
- Rhizomania, or Crazy Root Disease causes bearding or excessive root hair growth.
- A pre-emergent herbicide can be used as part of a Roundup ready Sugarbeet program to help break the resistance weed threat.
- Sugarbeet seed should be planted about one-inch deep for it to germinate properly.

- Roundup ready Sugarbeet seed is genetically modified.
- Sugarbeet Cyst Nematode populations can be reduced by planting an oilseed radish crop in rotation before Sugarbeets.
- Piling Sugarbeets when the weather is cool will reduce pile loss or shrink.
- Piling Sugarbeets high over ventilation works, because cool air can be used to control pile temperature.
- Mustang is an example of an insecticide.
- Sugarbeet seed is sold in units, with a unit being 100,000 seeds.
- AMS (Ammonium Sulfate) is added to Round-up tank mixes to help with weed control.
- The letters DSV stand for Disease Severity Value, which is used to track Cercospora leafspot spray intervals.
- Reaching 55 DSV's means that temperature and humidity have reached a threshold for the onset of Cercospora Leafspot.
- Beet Cast is the tool used to track DSV's and other information on Sugarbeets.
- Rhizoctonia is a disease that attacks the crown and/or root of the Sugarbeet, usually showing up in mid-summer when air and soil temperature is warm.
- Rhizomania can sometimes be seen in fields as an area of light green leaves.
- Root Aphids show up when the soil is dry and the weather is hot.
- Quadris fungicide is used to prevent Rhizoctonia.
- Giant Foxtail is an example of a grass weed.
- Ragweed is an example of an annual weed.
- Headline is a fungicide used to control Cercospora Leafspot in Sugarbeets.
- *"The Road to 19"* – This is a new motto for the direction of the cooperatives Sugarbeet variety breeding program and sugar production. It is intended to help raise the average sugar content, so more sugar can be produced from a ton.

- Your percent stand is the number of Sugarbeet plants per 100 feet of row.
- Cutworms, Flea Beetles and Springtails are insects that can do damage to Sugarbeets.
- Virtually all Sugarbeet seed sold in Michigan is now primed and pelleted for better seed placement and germination.
- Nitrogen would be an example of a macro-nutrient.
- Your beet field has 250 acres; you must spray a chemical on that field requiring 32-ounces or 1-quart per acre. How many gallons of this chemical will you need to spray on this field? Please show your work.
- Know your Agriculturalist (Fieldman), Agricultural Manager, VP of Agriculture and CEO.
- Know your Corporate Board of Directors and District Board members.
- Be able to calculate the amount of N, P, K from various fertilizer analysis.
- Be able to calculate multiple chemicals put into chemical tanks to spray.
- Besides Roundup, distinguish what chemical will kill a roundup resistant weed (corn, soybeans, etc.).
- Distinguish different chemicals that control pests such as Cercospora Leafspot, insects and weeds.
- You will want to know what '*varieties*' are approved to plant and the beet seed companies (Sygenta, Beta Seed, Seedx, ACH seeds).
- Know what brands of sugar we sell (Pioneer Sugar, Big Chief Sugar, Peninsular Sugar).
- Scientific name for Sugarbeets is Beta Vulgaris
- Factors that affect grower payment (sugar content, purity, tare %).
- Become familiar with the Beet Cast model.
- Cotyledon classification (Dicot)

- Michigan Sugar Company factory locations; Bay City, Caro, Croswell, Sebawaing. Storage facilities: Carrollton, MI; Fremont, OH and Findlay, OH.
- Size and scope of Sugarbeet production around the country, also percentage to cane production (40% cane, 60% beet).
- States where Sugarbeets are grown: Michigan, California, North Dakota, Minnesota, Montana, Wyoming, Idaho, Colorado and Nebraska.
- What does the Corporate Board of Directors do? What do the District Boards do?
- How many counties in Michigan grow sugarbeets?
- Explain the selling aspects of sugar (bulk to specialties)
- Steps in sugar production in field and in the factory (see questions below).
- Interview Questions:
  - Talk about planting and care of your sugarbeet crop through the summer.
    - Date
    - Weather
    - Seed size; kind and depth
    - Herbicides, Roundup or conventional
    - Seedbed preparation
    - Fungicide applications; Leafspot, Rhizoctonia
  - Talk about what happens at harvest to your sugarbeet crop.
    - Field harvest operations
    - Unloading at the factory
    - Weigh in – tare dirt
    - Tare samples
    - Tare lab and the samples that are generated
  - Be prepared to also talk about the following:
    - Any current topics about Sugarbeets
    - Current government regulations
    - Free trade agreements
    - Be familiar with factory operations