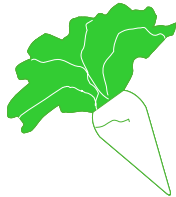


Growing Energy Beets in Nova Scotia

Farmers Fueling the Future

Beets have traditionally been grown for sugar production but have recently been recognized as an excellent source for ethanol. Ethanol is a high octane fuel that is used as a cost effective and clean gas additive. Ethanol is produced from sugar, starch and cellulose. In North America, corn has been the primary crop that has been used for ethanol production. Corn is the least efficient source as it requires 1 unit of energy input to produce 1.5 units of energy. Beets produce multiple units of energy from each unit of energy input. One tonne of beets produce approximately 100 liters of ethanol. AtlanTec BioEnergy Corporation's (ABC) initiative in the Maritimes is to grow beets for ethanol, electricity, thermal energy and liquid fertilizer.



Growth

- beets weigh 2-5 lbs and produce average yields of 20-30 tonnes/acre.
- beets can utilize nutrients and water from soil depths of up to 6 feet.
- beets grow in a wide range of soil types provided soil is relatively stone free for ease of harvest.
- optimum growing day temperatures are 15-26 °C.

Planting

- seeds are planted 0.75"-1.25" deep , 20" row spacings in April and May after risk of heavy frost has passed.
- beets can tolerate some early frost damage and low temperatures of -4°C.
- level firm seed bed is important for good soil to seed contact.
- 54,000 seeds/acre are planted with a 60-70% emergence rate.



Good seedbed preparation is important

Harvest

- beets can be harvested from September through to November.
- beet tops can provide 4 tonnes/acre of organic matter with 30-40 lbs/acre of nitrogen returned to the soil.

Crop Rotation

Beets are typically grown in a 3-4 year crop rotation. Good rotational crops include corn, grain, soybeans, clover, ryegrass and canola.



Atlantec BioEnergy Corporation
Ron Coles
1-866-720-2338 (BEET)
info@atlantecbioenergy.com
www.atlantecbioenergy.com



Betaseed Incorporated
Steve Libsack
1-800-428-8455
slibsack@betaseed.com
www.betaseed.com

Seedbed Preparation

Proper seedbed preparation is **KEY** for successful germination and stand establishment. Beets need a level firm seedbed, achieved with land leveler or secondary tillage equipment with roller baskets.

- Sod** **fall-** spray with glyphosate and moldboard plow
 spring - disc or basket harrow, land level for clod free seedbed
- Corn** **spring** - plow and disc harrow reduce herbicide residue and bury corn stubble.
- Grain** **spring** - disc harrow to level out seedbed
- Vegetables** **spring** – disc harrow or if there is a significant amount of crop residue, plow under.

Disease - Since the crop is new to NS, disease should not be a problem, however, conditions of 21°C+ for 70 hours at 70 relative humidity can increase disease incidence.

Insects - Cutworm, flea beetles and wireworm can cause crop damage at high infestation levels. Seed treatments and insecticides are available.

Weed Control

Early weed control is essential for optimal yield production. Newly emerged beets can lose yield potential during early competition for nutrients and water with weeds. Apply glyphosate at the early cotyledon growth stage (usually within 10 days of planting). A second application is usually required within 2-3 weeks of the first application.

Plan your herbicide program to avoid beet injury from carryover. Residual herbicides can affect emergence and growth. **Beets are sensitive to atrazine (Primextra, Laddock, Converge) carry-over.** Moldboard plow to dilute herbicide carryover to minimize damage. Other herbicides that can cause injury include Accent, Accent Total, Callisto, Banvel and Sinbar.

Fertility

It's critical that fields are soil tested for accurate fertility management.

Nitrogen - apply 120 kg of nitrogen. If following a legume or manure application, reduce fertilizer N as over fertilization can result in poor quality. Excess nitrogen in the last 1/3 of the season can reduce sugar content.

NS typically has low soil phosphorus and potassium levels in many fields, especially those fields that have not had long term manure applications.

Phosphorus - Beets have a high dependence on P fertilizer at the low-medium soil test levels.

Potassium - beets have a high requirement for K, especially in the early stages of growth. A long term program should be developed to ensure that good levels of K are maintained in the field.

Micronutrients – beets do not typically respond to micronutrients unless the soils are very low in boron, manganese or zinc. NS soils can have very low levels of boron.

pH - beets will perform better at pH levels of 6.5.

