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Producing Sugar Beets  
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By C. R. OVIATT

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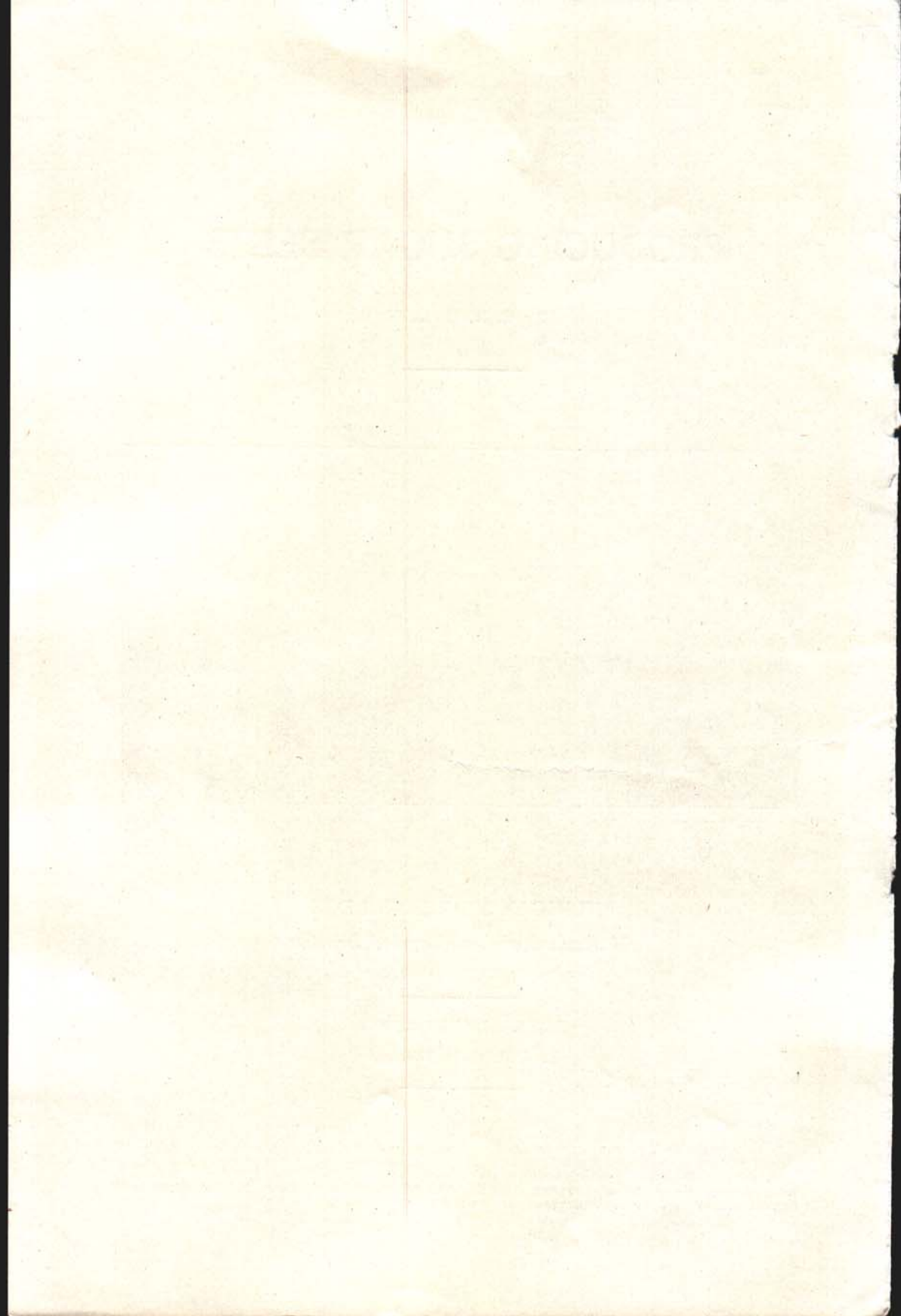
**MICHIGAN STATE COLLEGE**  
**Of Agriculture and Applied Science**

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# PRODUCING SUGAR BEETS

By C. R. Oviatt

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Increased yields and profits in sugar beet culture depend upon observance of certain definite principles in handling the crop. Brief summary and discussion of these effective methods follow.

**Select fields** having the best conditions for high production. Well drained, heavy, fertile soils which are relatively free from weeds should be chosen for this special crop.



Poor drainage reduces stand and yield of beets.

**Soil types** commonly known as loam, silt loam, and clay loam are adapted to sugar beet culture in Michigan.\* Some sandy soils which are high in fertility and organic matter are producing beets successfully. Certain muck soils are giving good yields, but the beets are usually of poor shape and quality.

**Provide good drainage** to secure consistently high yields. Beets will withstand an unusual amount of excess water, but some injury occurs under such conditions. A good crop of beets will often show a sufficient profit in one season to cover the cost of tile drainage for the field.

\*The soils Department of Michigan State College gives the classification of these soils as the loam, silt loam and clay loam types of the Brookston, Napanee, Miami, and Isabella soils of Michigan.

Open drains or furrows are usually necessary, and they must not be neglected on most types of beet soils. Drainage is a very good form of crop insurance.

**Lime all soils showing acidity.** Beets grow best on an alkaline soil. Conditions which permit the successful production of alfalfa and sweet clover are usually satisfactory for beets. A high lime content reduces the danger of crust formation over the seed. The sugar companies are pleased to have the farmers make use of the lime refuse at the factories and are attempting to make it easier for growers to secure and handle this product.

**Fall plow for beets** when possible and plow deep enough, on most soils, to bring a small amount of subsoil to the surface. Fall plowing is important in heavy production because it assists in weed control,



Effect of no fertilizer treatment in a fertilized field. Sugar beets pay large profits on investments in proper fertilization.

increases the available plant food, improves the soil condition, and permits early planting. Spring plow as early as possible when fall plowed land is not available.

**Prepare a seed bed** in which the surface is in fine tilth and the lower section of the furrow slice is firmly compacted. The disc, harrow, and cultipacker are commonly employed in preparing the seed bed for beets, and the surface is often smoothed with a float before seeding. Extreme care in plowing, fitting, planting, and cultivating will pay good dividends in the results obtained.

**Plant beets as early** as conditions are favorable for quick germination and growth. Early beets usually outyield those seeded at a late date by several tons per acre. Quick germination and rapid growth are essential to the control of weeds and soil condition. Large acreages are usually planted at intervals through the planting season to

spread the cultivating and hand labor over a longer period. Under average conditions, get the seed into the ground between April 15th and May 30th.

**Plant plenty of seed** to insure a good stand. Twelve to 18 pounds of seed per acre, depending on the width of rows, soil conditions, and germination of the seed is the amount commonly used. Quick germination is aided by planting just deep enough to cover the seed successfully and to reach the soil moisture, about one inch deep under ordinary conditions.

**Fertilize for sugar beets** because quicker germination, healthier plants, and heavier production will follow this practice. Buy fertilizers according to analysis, and buy the fertilizing elements in the amounts and proportions needed to furnish available plant food for the crop.

**Study the fertilizer requirements** of each field, because soil conditions vary even in adjacent fields. Consider the natural fertility of the soil, the drainage, the previous crops, the amount of manure applied, the amount of clover or alfalfa sods or crops plowed down, and the requirements of the crop to be sown. Most of the sugar beet soils of Michigan require a high percentage of phosphoric acid in the fertilizer; many soils indicate a need for some potash, particularly certain sand, sand muck, and muck soils; while soils which are not in an unusually high state of fertility require a small percentage of nitrogen, especially if alfalfa, clovers, or manures have not been used in the rotation.

**The general recommendations** of the Soils Department of the Michigan State College for Sugar Beets include fertilizers of the following analyses:

Soils—Previous treatment	Heavy sandy loams	Silt loams	Clay loams	
	No mixed meadow, manure or green manure in rotation	Mixed meadows, clovers and alfalfa in rotation	Manure in rotation	Muck
Fertilizer Analysis.....	4-16-4 2-16-2 2-12-6	0-12-6 2-12-6 2-16-2	2-16-2 0-20-0 .....	0-8-24 0-8-32 Muriate of potash

**The amount of fertilizer** which can safely be applied in the row with the seed depends largely on the moisture condition of the soil and the composition of the fertilizer. Large amounts of fertilizer in the row will retard germination in very dry seed beds. Injury to seed germination is likely to follow heavy row applications of fertilizers having a high content of nitrogen. Fertilizers of analyses ordinarily recommended for beets, such as listed above, can be safely applied directly with the seed in amounts up to 250 pounds per acre. It is advisable to divide the application of amounts larger than 250 pounds

per acre, applying from 125 to 200 pounds with the seed and broadcasting the balance. Some growers report profitable results from the stimulation of growth and the decrease of disease injury when an application of about 100 pounds of nitrogen fertilizer is placed beside the rows of beets on soils which do not have a sufficient amount of available nitrogen. County agricultural agents and the Michigan State College will gladly assist farmers in their study of fertilizer requirements for beets.

**Plant with a standard 4-row beet drill** in rows as narrow as plans for cultivation will permit. The 24-inch row is recommended in Michigan by most of the growers and sugar companies, who contend that a larger production is secured with narrow rows. Wider rows may be advisable under certain conditions where the soil may not



A good stand and proper culture are essential for high production of beets.

support a heavy stand of beets or where unusually severe cultivation is necessary.

**Avoid severe crusts** which may form over the seed under certain conditions. The cultipacker is often used immediately after seeding to leave the surface soil in good condition and to pack the soil around the seed, or it is used later to break any crust which develops. The use of the roller or cultipacker after the beets are thinned is advisable under some soil conditions to pack the soil around the roots of the plants or to break down an uneven, lumpy surface.

**Cultivate as soon** as it is possible to see the rows and as often as is necessary to control the weeds and to keep the soil from cracking. Early cultivation should be reasonably close to the row and may be fairly deep, while later work should be farther from the rows and shallow. The feeding roots of beets grow close to the surface of the

soil and should not be pruned or damaged by deep cultivation. Careful and frequent cultivation with properly equipped tools is very essential to heavy production. Properly prepared fields will require less work to keep them in fine condition.

**Establish some co-operative arrangement** with the hand laborers to promote the largest possible production per acre. Carefully supervise, advise, and inspect, and insist on accurate work in blocking, thinning, weeding and harvesting.

**Block and thin the beets** to the desired stand just as soon as conditions will permit. A beet every 12 inches is considered a perfect stand by most growers. Remember that a good, even stand is one of the most important items in the production of large yields. Also make certain that the laborers leave the sturdy, thrifty plants, for the yield will be greatly influenced by the plants which are selected. Avoid "doubles," for they reduce the crop.

**Control the weeds** to increase production. Insist that the laborers remove all the weeds while they are still too small to injure the crop, and that they work through the fields often enough to make certain that all foul growth is kept down.

**Harvest beets** when they have reached full growth, which may be relatively late in the fall with crops which were planted at a late date. Do not rush the harvest, for beets often make a remarkable growth during the fall. Be sure that the lifter loosens all of the beets without breaking or cutting them. See that the topping is done properly to secure a maximum net tonnage of beets.

**Haul beets immediately** after topping to reduce labor and to deliver the largest possible tonnage of high quality beets. Cover the piles with all of the tops when it is impossible to haul at once.

**Spread the beet tops** and disc them into the ground or plow them under during the fall, in order to return to the soil the largest possible amount of plant food and humus. If they are left until spring, they should then be carefully spread and worked into the soil.

**Feed the tops to livestock** if the feed is required, for the tops are good roughage, particularly for cattle. Tops should be allowed to wilt before they are fed to dairy cows to avoid tainting the milk. More satisfactory results can be obtained by feeding the tops in small amounts over long periods. Haul the tops to the feed lot or barn rather than allowing the stock to feed heavily upon them in the field. Pile the tops in small piles in the field, or silo or pit them to keep them for feeding livestock during the winter.

**Plan for sugar beets as a regular crop** where conditions are favorable. A uniform and full production will help to maintain this important crop-industry with the largest profit to both growers and manufacturers.

**Beets can be grown regularly** in three, four, or five year rotations under proper conditions with satisfactory results. Soil fertility can be maintained and actually increased with this crop in the rotation when sufficient attention is given to the use of green manure crops, barnyard manure, and commercial fertilizers.



**Sugar beets follow corn or beans** for the largest acreage in Michigan in such rotations as: (1) Alfalfa, Clover or Mixed Seeding; (2) Hay or Pasture; (3) Hay or Pasture; (4) Corn or Beans; (5) **Beets**; (6) Oats or Barley (seeded).

**Beets and grain crops** are included in the rotation: (1) Red or Sweet Clover; (2) Beans, Corn or **Beets**; (3) Wheat or Oats (seeded); (4) Red or Sweet Clover; (5) **Beets**, Beans or Corn; (6) Oats or Barley (seeded).

**Fall plowed sod land** can be used for beet production but, ordinarily, it is advisable to grow one cultivated crop preceding the sugar beets. The following rotation is suggested for those who are not able to fall plow anything but sod fields: (1) Alfalfa or Clover; (2) Alfalfa or Clover; (3) **Beets**; (4) Oats or Barley; (5) Wheat (seeded).

Get profitable returns from beets by growing them in a well planned crop rotation on a drained, fertile soil where good cultural practices are used.