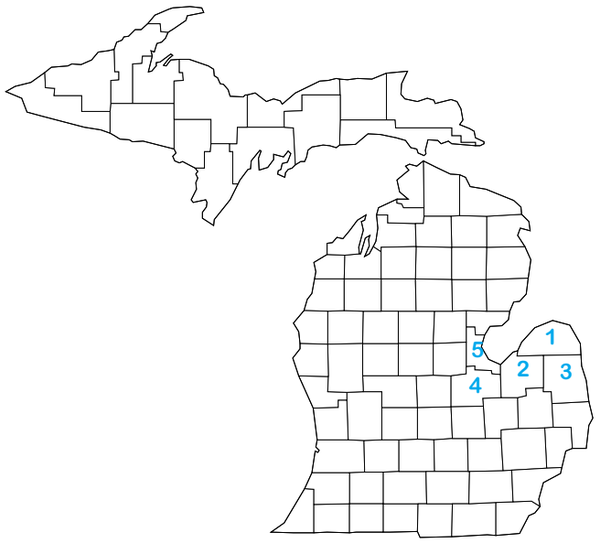
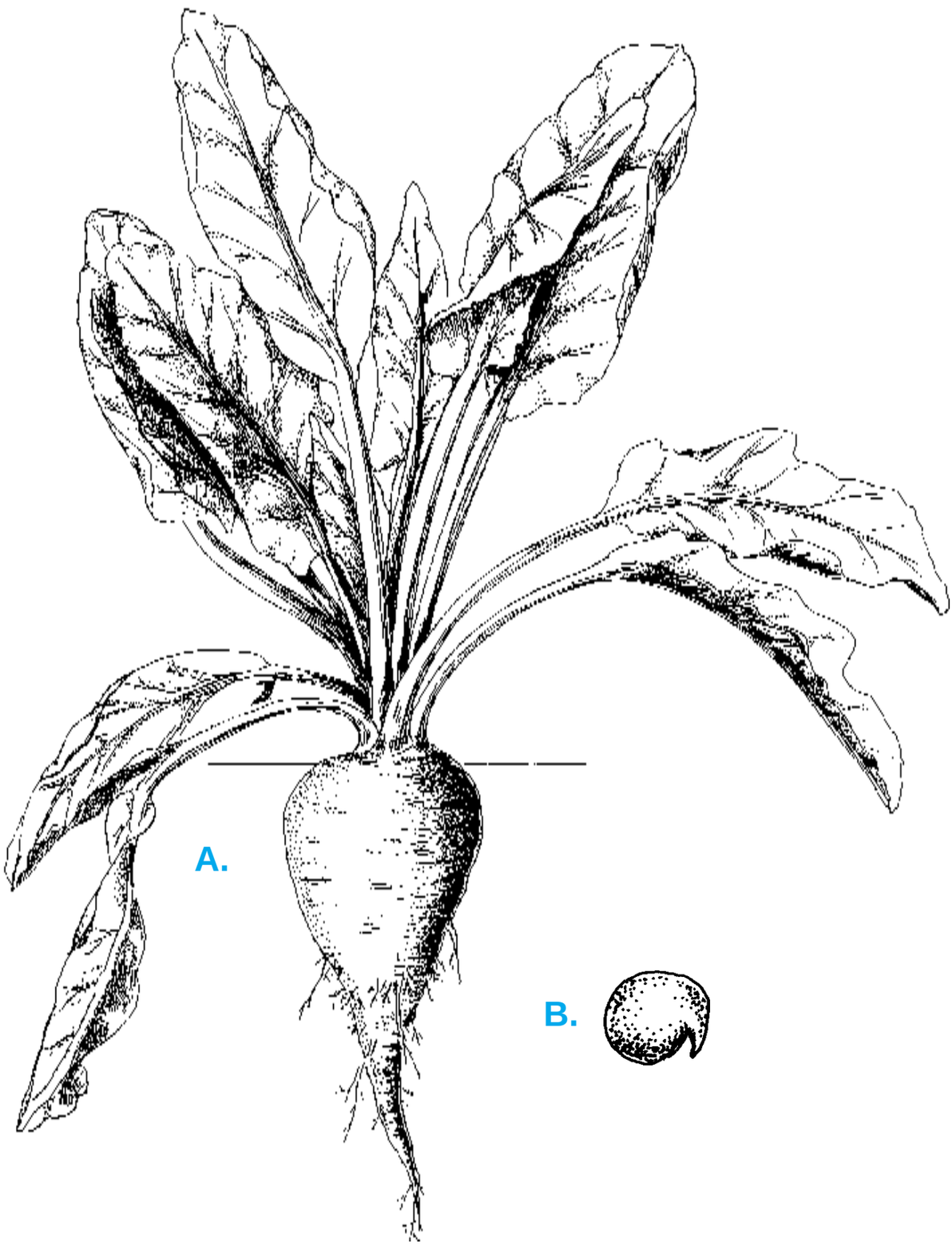
SUGARBEETS



Top 5 MI Counties Producing Sugarbeets (2000)

1) Huron
2) Tuscola
3) Sanilac
4) Saginaw
5) Bay



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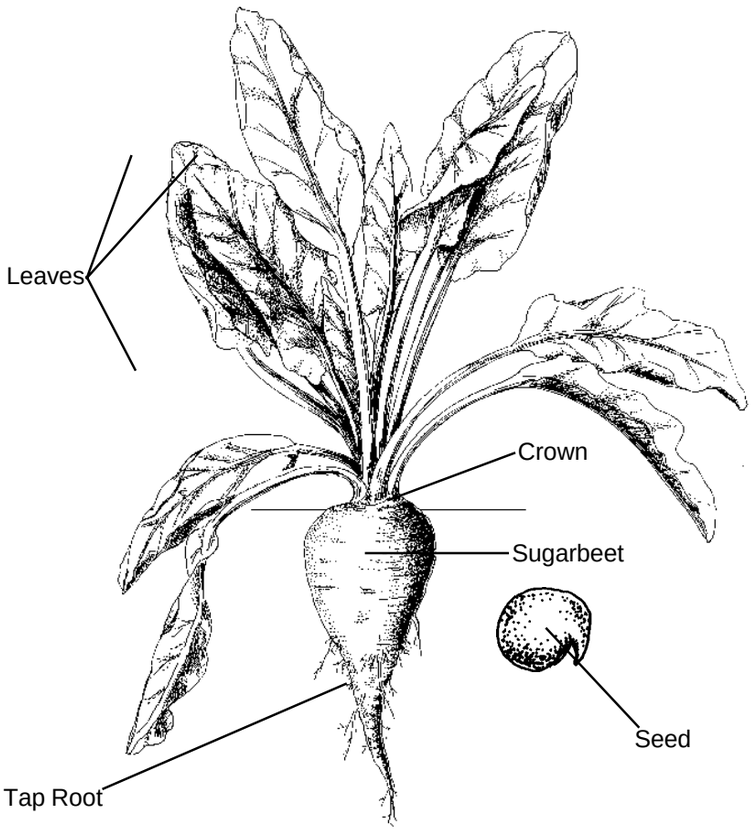

ON THE FRONT

A. Sugarbeet Plant

The sugarbeet is a root crop. The enlarged tap root extends to a depth of six to eight feet. When fully grown, a sugarbeet weighs two to five pounds and yields 10 to 20 percent sugar (average 15 percent) or about 1/3 cup of sugar.

B. Sugarbeet Seed

The sugarbeet seed is tiny -- about half the size of a grain of rice. It is a rough, bumpy seed. Most seed for sugarbeet is produced in the Willamette Valley of Oregon, the destination point of the historic Oregon Trail. The sugarbeet is a biennial plant, which means it takes two years to produce sugarbeet seeds. The first year, the plant produces the root; the second year seed. There are about 22,000 seeds per pound.

Sugarbeets

Sugarbeets are planted in early spring. The combination of cool nights and warm days in this parts of Michigan provide ideal conditions for beets to produce a high amount of sugar. The growing season is from April until October.

Planting is done as early and as quickly as possible in order to give the sugarbeets the maximum number of growing days. Generally, the seeds are planted as soon as the ground temperature reaches 40ºF. This occurs in mid to late April. With good weather, most growers finish planting during the first week of May.

Producers plant about five sugarbeet seeds per foot of row. Only half of those will develop into plants, but the plants still grow too thick to produce a quality crop. Producers must chop out extra beets so there is only one beet every six to ten inches. This is called "thinning" the beets. Some producers use mechanical thinners, an attachment for a tractor that thins up to 12 rows of beets at one time. Other producers hire seasonal workers to thin the beets and chop the weeds during the growing season.

Photosynthesis

The sugarbeet plant produces sugar in its leaves by a process called photosynthesis. In photosynthesis, the plant combines water with carbon dioxide from the air and energy from the sun to produce sugar. The sugar is then stored inside the fleshy root called the beet.

Harvesting

During harvest in the fall, producers use a machine called a roto beater, or defoliator, to cut off the tops of the beets, which are left in the field. A sugarbeet lifter/loader then lifts the beets out of the soil onto a truck, and the beets are delivered to a receiving station or a sugarbeet processing plant. Harvested sugarbeets are very heavy -- an average stack of beets at a receiving station weighs about 40,000 tons, representing about 6,000 tons of sugar. If the weather is good, harvest is done by the third or fourth week of October. Michigan sugar beet farmers harvested 166,000 acres of crop in 2000.

The Factory Process

First, the beets are cleaned in a beet washer. Then, a machine called a slicer is used to cut the beets into long strips that look like shoestring potatoes or noodles. The beet noodles are sent through a machine called a diffuser or extractor. Hot water is mixed with the beets to dissolve and remove the sugar from the beet noodles.

The water and sugar juice are saved, and this solution is called "raw juice." The beet noodles, now free of most of their sugar, are dried into beet pulp for livestock feed. The raw juice is treated with lime and carbon dioxide gas to clean the mixture again. It is sent through a big, round filter to clean it and remove other non-sugars. The raw juice goes into a series of big tanks called evaporators where some of the water is boiled off. At this point, the mixture contains more sugar than water. It is thick, syrup-like and is again filtered to make sure it is very clean.

Crystalizes Into Sugar

The mixture passes through a big tank called a white pan, which allows the thick juice to boil at a low temperature. As the water boils away, the sugar solution becomes a thick mass of sugar crystals, which is dropped into a centrifugal machine. The machine spins very fast to separate the sugar crystals, which drop onto a conveyor belt for further drying and cooling. The finished sugar moves into bulk sugar bins for storage or to the warehouse for packaging.

Granulated sugar, sold in small bags in stores or shipped in bulk, is by far the most common form of processed sugarbeets. Michigan sugar factories also process sugarbeets into brown sugar, powdered sugar and even sugar cubes.

Did you know . . .

- Sugarbeets came to America from Europe in the 1870s with the first sugarbeets planted in California. Over the past 125 years, the industry has grown considerably, especially in the northern states of Minnesota, North Dakota and Idaho. The northern states are ideal for sugarbeet production because of the sunny days and cool nights. The first Red River Valley sugar processing plant was built in East Grand Forks in 1926.
- Michigan ranks #4 in sugarbeet production in the United States both in total sugar production.
- Very little sugar is exported because the United States is a net importer of sugar and other sweeteners.
- Michigan sugarbeet growers are quickly adapting new technology that will reduce fertilizer and pesticide use. New products include: grid soil sampling, variable rate fertilizer applications and herbicide injection systems.
- The major by-products of sugarbeets are molasses, citric acid, vinegar, yeast, anitibotics and beet pulp. The beet pulp is used as livestock feed and some is exported to countries like Japan.
- It takes only 12 beets to make one pound of sugar, which is identical in chemical formula, nutritional value, taste, appearance and sweetening powers to cane sugars.

For information on other programs and materials available, please contact: Michigan Farm Bureau, Attn: Deb Schmucker, 7373 W. Saginaw Hwy., Lansing, Michigan 48909; PHONE: 800-292-2680, FAX: 517-323-6604.