

**ALASKA AGRICULTURAL EXPERIMENT STATIONS  
JUNEAU, ALASKA**

Under the supervision of the  
**UNITED STATES DEPARTMENT OF AGRICULTURE**

**CIRCULAR No. 4**

**FIELD CROPS  
FOR INTERIOR ALASKA**

By

**F. L. HIGGINS**

Agronomist, Matanuska



Issued May 31, 1933



**UNITED STATES DEPARTMENT OF AGRICULTURE  
OFFICE OF EXPERIMENT STATIONS**

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**ALASKA AGRICULTURAL EXPERIMENT STATIONS, JUNEAU, SITKA,  
AND MATANUSKA**

[Under the supervision of the Office of Experiment Stations, United States Department of Agriculture]

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**INTRODUCTION**

Many requests for information regarding the best varieties of field crops for interior Alaska have been received by the Alaska Agricultural Experiment Stations. Field crops have been tested by the stations in the interior for a number of years. The purpose of this circular is to discuss briefly the history, characteristics, and field performance of varieties of grain, legumes, grasses, root crops, and potatoes that have been found to be best adapted to local conditions.

**GRAIN CROPS**

**SPRING WHEAT**

Siberian no. 1 is the variety of spring wheat recommended (fig. 1). Seed of this variety was received in 1913 by the stations from the Tulun Agricultural Experiment Station, Irkutsk, Siberia. Siberian no. 1 is a short, fine-stemmed, bearded wheat with small brown heads and small, red, semihard kernels. It is the earliest-maturing variety of spring wheat tested by the stations and can be depended on to ripen every year in interior Alaska. Under normal conditions Siberian no. 1 matures in 90 to 100 days, and it has ripened in 66 days after date of planting. At Fairbanks the flour from it made excellent bread. Acre yields are given in table 1.

TABLE 1.—Yields of Siberian no. 1 spring wheat at the Fairbanks and the Matanuska stations, 1924-30

Place grown	Yield (bushels) per acre							Average
	1924	1925	1926	1927	1928	1929	1930	
Fairbanks.....	19.0	26.7	17.0	15.3	26.0	21.3	11.5	19.5
Matanuska.....	17.7	18.2	14.4	28.0	14.8	10.5	32.0	19.4



## WINTER WHEAT

Varieties of winter wheat have been tested in the interior, but none has been found to survive the winters.

## BARLEY

Barley is an important crop for the agricultural valleys of the interior. It is especially well adapted to the cool growing season, and makes good yields. Not only is its nutritious grain excellent as a

feed for livestock, taking the place of corn in these latitudes where corn cannot be grown, but it can also be used as a food for man. Barley matures somewhat earlier than does either spring wheat or oats. Early-maturing varieties should be planted as soon in the spring as soil conditions permit in order that the crop may be harvested and threshed before the fall rains.

Trapmar (hybrid no. 19b), which was developed from crossings made in 1912 at the Rampart station of hybrid no. 1 and Hull-less S.P.I. no. 12709, is the variety of barley recommended for interior Alaska (fig. 2). Trapmar is early, 6-rowed, hooded, hull-less, and has large heads and stiff straw. The heads do not shatter, and the rachis is not brittle. The glumes are white. Trapmar barley should be seeded at the rate of 90 pounds per acre on land having an exposure favorable for early ripening. Under favorable conditions the variety will yield from 25 to 30 bushels per acre, and at the Fair-



FIGURE 1.—Variety test plat of Siberian no. 1 spring wheat, Fairbanks station.

banks station it has ripened in 78 days after date of seeding. The acre yields of Trapmar barley at the Fairbanks and the Matanuska stations for 1924-30 are shown in table 2.

TABLE 2.—Yields of Trapmar barley at the Fairbanks and the Matanuska stations, 1924-30

Place grown	Yield (bushels) per acre							Average
	1924	1925	1926	1927	1928	1929	1930	
Fairbanks.....	18.9	22.5	30.0	19.1	33.3	28.1	12.7	23.5
Matanuska.....	30.1	19.6	34.0	30.0	19.0	18.5	32.0	26.2



## PLACE IN ROTATION

Diversified farming and the use of a carefully planned crop rotation are strongly recommended for the farmers of interior Alaska. Barley fits well into this type of farming, ordinarily being grown as a grain crop following oats and vetch for hay, or oats and peas for silage. Barley is one of the best companion crops with which to plant grass and clover. For barley it is suggested that a 5-year rotation be used, growing, in the order mentioned, a cultivated crop, such as potatoes and root crops; a forage crop, such as oats and vetch for hay, or oats and peas for silage; and a grain crop, such as barley interplanted with brome grass, alsike clover, and white clover. The grass and the

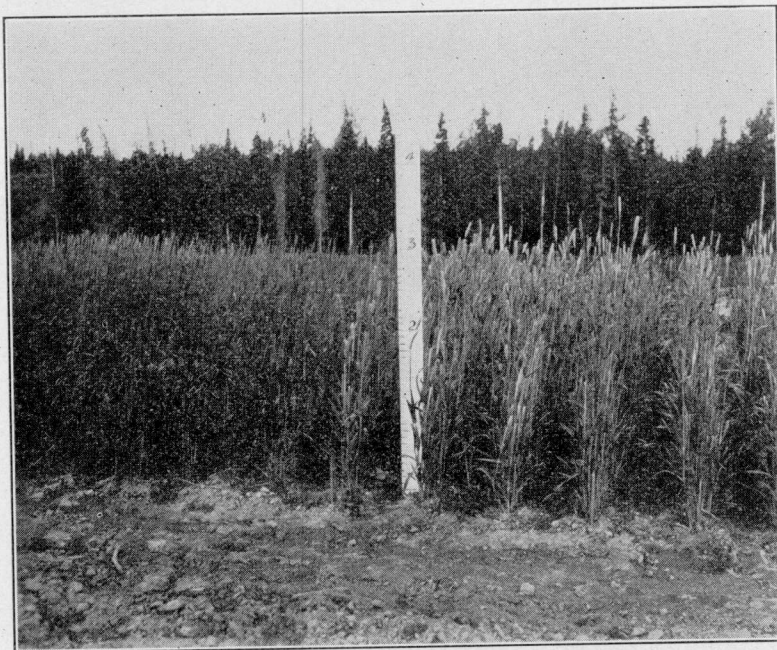


FIGURE 2.—Trapmar barley on the right, rod-row test, Matanuska station.

clover will have become established during the year that the barley is harvested for grain. The area should then be used for 2 years for hay and for pasture, after which it is plowed up and prepared for potatoes and for roots. Peas for plowing under should be used where it is not desirable to include the grass and the clover, making the rotation four years in length. A scheme of rotation should be arranged to suit the needs of each farmer.

## OATS

Canada is the variety of oats (fig. 3) recommended for the Fairbanks region, and Climax (fig. 4) the variety for the Matanuska region.

Canada was received from the California Agricultural Experiment Station in 1914. It is a large, white-grained, open-panicked oat, grows to a good height, is early enough for the Fairbanks region, and will ripen under a favorable growing season. Canada is a good yielder.

In 1919, under exceptionally favorable conditions at the Fairbanks station, it yielded at the acre rate of 79.2 bushels. Canada is recommended for grain and for seeding with vetch or with peas for forage.

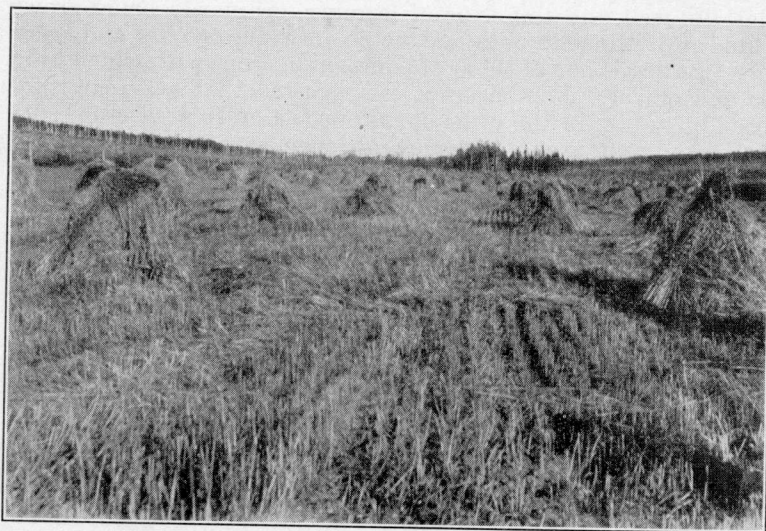


FIGURE 3.—Canada oats on south-slope land, Fairbanks station.

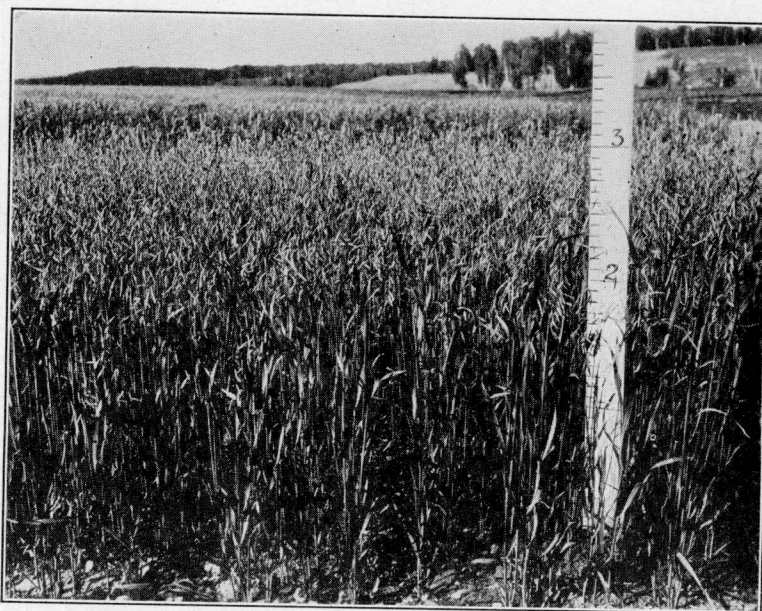


FIGURE 4.—Climax oats, Matanuska station.

Climax, a large, white, early-maturing oat, has proved to be well suited to the Matanuska Valley. Climax has stiff straw, grows to a good height, and is excellent for grain and for seeding with vetch or

with peas for forage. By using Climax oats the farmer can grow his own seed.

Table 3 gives the acre yields of the two varieties for 1926-30.

TABLE 3.—*Yields of Canada oats at the Fairbanks station and of Climax oats at the Matanuska station, 1926-30*

Place grown	Yield (bushels) per acre					
	1926	1927	1928	1929	1930	Average
Fairbanks.....	67.5	35.0	31.5	63.8	28.0	45.2
Matanuska.....	74.8	76.0	51.7	49.9	61.0	62.7

#### SPRING RYE

Results of tests with spring rye indicate that it cannot be satisfactorily grown because it is late in maturing and makes low yields.

#### WINTER RYE

Hogot is the variety of winter rye recommended (fig. 5).

Seed of this variety was received in 1915 from the Russian Government Agricultural Agency, St. Louis, Mo. Hogot is a tall variety and has been found to be superior to all others tested for vigor, hardiness, length of spike, and yield. It is winter hardy and well adapted to the Fairbanks and the Matanuska regions. Unfortunately, Hogot takes 13 months to mature in the interior. The seed should be sown in July to establish a crop before winter and it usually cannot be harvested until August of the following year. Yields of grain range from 20 to 25 bushels per acre.

It is possible that Hogot winter rye can be grown profitably in a rotation by seeding it late in the summer following an early crop of Alaska peas. The rye should make sufficient growth to enable it to withstand the winter. It could then be used during the next year for pasture, green manure, or grain.

#### LEGUMES

##### PEAS FOR CANNING

The best strain of peas for canning is the result of a number of selections made at the Rampart station from the garden variety, Alaska (fig. 6). This is a very early strain with white blossoms and a vine 20 to 30 inches long. The pods are borne singly, the number per plant ranging from three to five. The variety requires approximately 55 days after date of planting to reach the canning stage. However, in 1926 at Fairbanks the peas were at the canning stage 38 days after planting. In 1930-31 at the Matanuska station yields of green peas for canning were determined by the square-yard method and by shelling the peas by hand. The average acre yield for the 2-year period was at the rate of 2,592 pounds.

Alaska peas will ripen seed in the interior unless weather conditions are very adverse. The peas should be grown wherever possible for seed production. The ripe peas are of bluish-gray color, and of medium size, being round and smooth. The number of days from





FIGURE 5.—Hogot winter rye, Matanuska station.

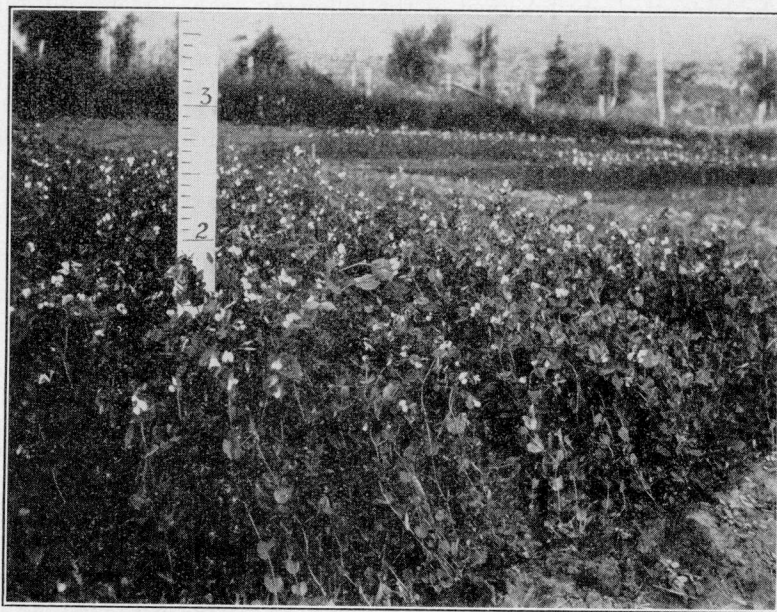


FIGURE 6.—Alaska peas for canning, Matanuska station.

planting to ripening ranges from 70 to 90, depending on the season. Yields of ripe peas on good land vary from 20 to 25 bushels per acre.

The Alaska pea is excellent for hogging off, and pea-fed pork is of fine quality. Alaska peas can also be used for green manuring and for seeding with oats for hay when conditions do not merit the purchase of seed of the more rankly growing Canadian field peas now rather widely used for forage.

#### FIELD PEAS

Golden Vine, a vigorous-growing variety of field pea producing vines 8 to 10 feet long, is well adapted for use as green manure and as forage. It is excellent for seeding with oats for silage, and under

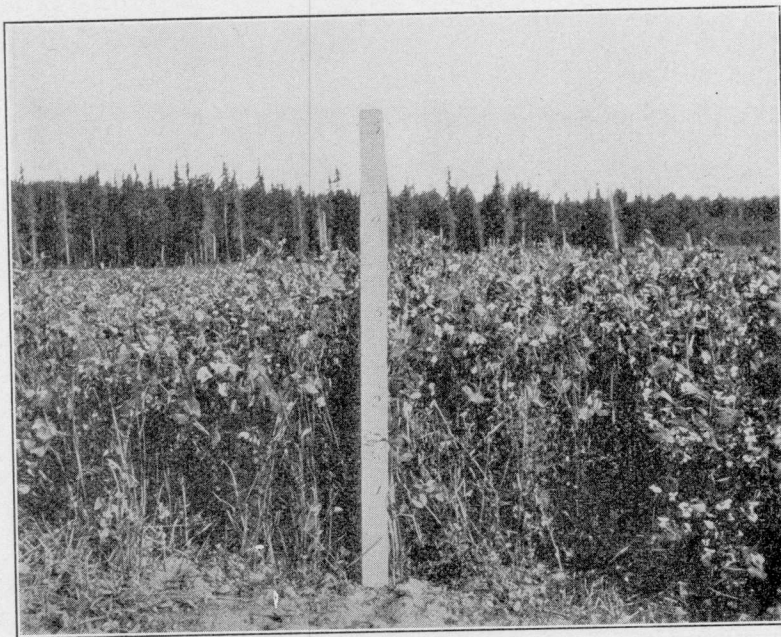


FIGURE 7.—Canada field peas and oats, Matanuska station.

average conditions yields from 6 to 8 tons of silage per acre (fig. 7). The variety bears white blossoms and small, smooth, yellow seed. During very favorable seasons field peas have matured at both the Fairbanks and the Matanuska stations. Ordinarily, however, they cannot be depended on to ripen seed and should not be grown for that purpose.

#### VETCH

The common spring vetch (*Vicia sativa*) is the most important crop for seeding with oats for hay, and is used rather generally for the purpose (fig. 8). The mixture when properly dried is excellent, being palatable and high in feeding value. Good yields vary from 2 to 3 tons of dried hay per acre.

In the absence of such desirable perennial legumes as alfalfa and clover, the farmers should grow an abundance of such annual

legumes as peas and vetch not only to secure a good feed for the animals, but also to maintain the productivity of the soil.

Under ordinary conditions common spring vetch will not ripen seed in the interior. However, it is thought that the seed can be ripened on farms having very favorable exposure, provided the crop is given every care. In 1924 at the Matanuska station, common spring vetch yielded 19.6 bushels of ripe seed per acre. In 1925 the acre yield at the Fairbanks station was 14.5 bushels of ripe seed.

#### ALFALFA

From the time of their establishment the stations have tested alfalfas and clovers, introduced from various sources, in the hope of

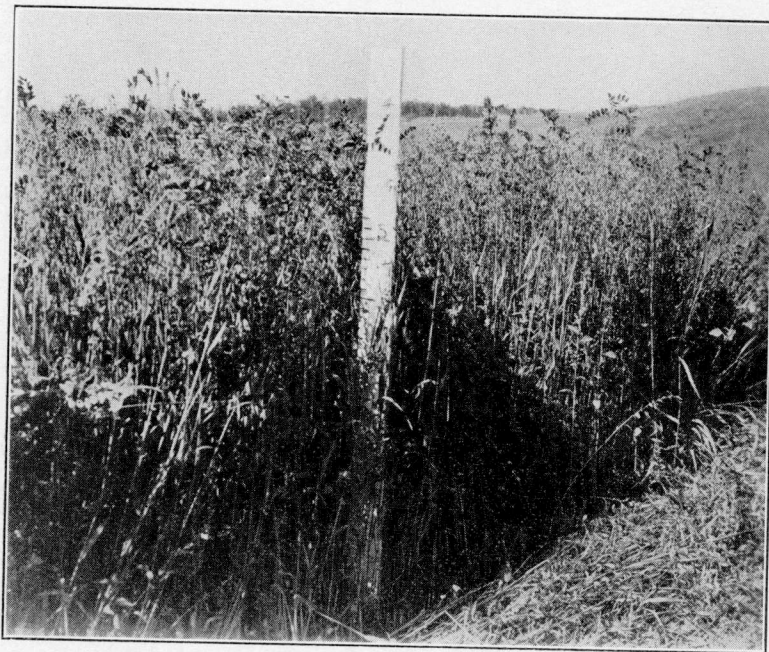


FIGURE 8.—Climax oats and common vetch for hay, Matanuska station.

finding a hardy, high-yielding perennial legume of value in the interior for feed, and for maintaining the fertility of the soil.

Yellow-flowered alfalfa (*Medicago falcata*, S.P.I. no. 24452), introduced from Siberia, is winter hardy, but cannot be recommended for the interior because of its slow growth, correspondingly low yield, and failure to ripen seed regularly. Because of its somewhat spreading habit of growth, this alfalfa is harvested with difficulty. The stems are medium-coarse to slender, and comparatively short, averaging about 18 inches high. The ripe, sickle-shaped pods have a tendency to burst upon ripening and scatter the seed. The leaves are small and fairly numerous. *M. falcata* is a valuable species for use in breeding. Of the hybrids resulting from crossing Grimm alfalfa, a hardy strain of *M. sativa*, with *M. falcata*, S.P.I. no. 24452, the best are more vigorous than *M. falcata*, with more upright stems, larger leaves, and curved, partly spiral seed pods, a character that has been inherited



from Grimm. By virtue of this character, they do not scatter the seed, as the pods do not split open readily.

#### CLOVERS

Red clover, alsike clover, white clover, and sweetclover have been tested at all the interior stations, but no variety has been satisfactorily grown. The dwarf white clover has proved to be the hardiest of the clovers, and usually it will survive the winters. It does not, however, yield enough to merit its use on lands where the cost of clearing is high, except, possibly, in permanent pasture.

When protected by a good snow covering, alsike clover will survive fairly well, but it is not hardy enough for most Alaskan weather and soil conditions.

Common red clover invariably winterkills. However, varieties of Russian and Siberian red clovers received in 1929 from the Office of

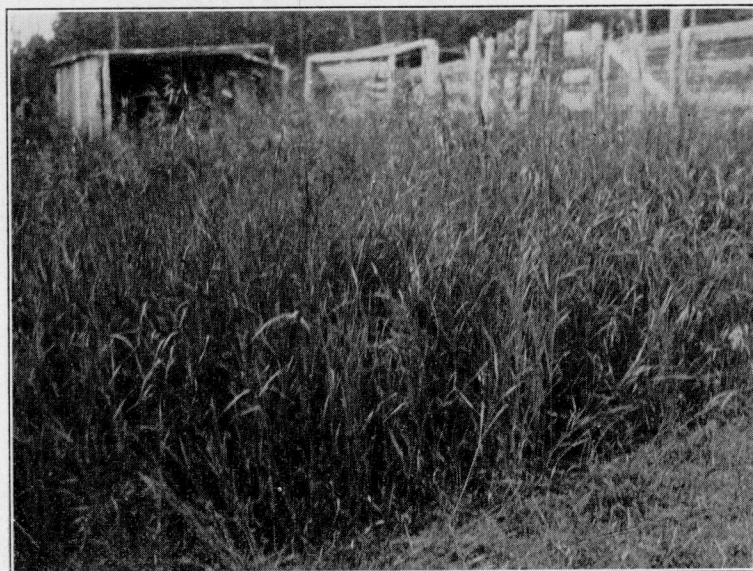


FIGURE 9.—Bromegrass at the proper stage for hay, Fairbanks station.

Forage Crops of the United States Department of Agriculture appear to be very promising.

Results with sweetclover varieties have not been encouraging, although it is thought that from hardy strains received from Saskatchewan a suitable strain can be developed.

#### GRASSES

The grasses recommended are bromegrass (*Bromus inermis*) (fig. 9), and slender wheatgrass (*Agropyron tenerum*).

Bromegrass is winter hardy and is well adapted to areas of comparatively light rainfall. It is the best grass so far found for the interior. It comes on early in the spring and can be used for hay, but is considered better for pasture. Bromegrass responds readily to good soil

management and gives profitable yields on fertile soils. It can be grown in rotation with cultivated crops, grain crops, and silage crops. Land should not be left in bromegrass longer than three years because of the danger of cutworm and wireworm infestation. Bromegrass forms a dense sod and after a few years becomes sod bound, with a consequent material lowering of yields.

Slender wheatgrass is recommended only for seeding in a mixture with bromegrass for use as pasture. Only high-grade seed of brome-

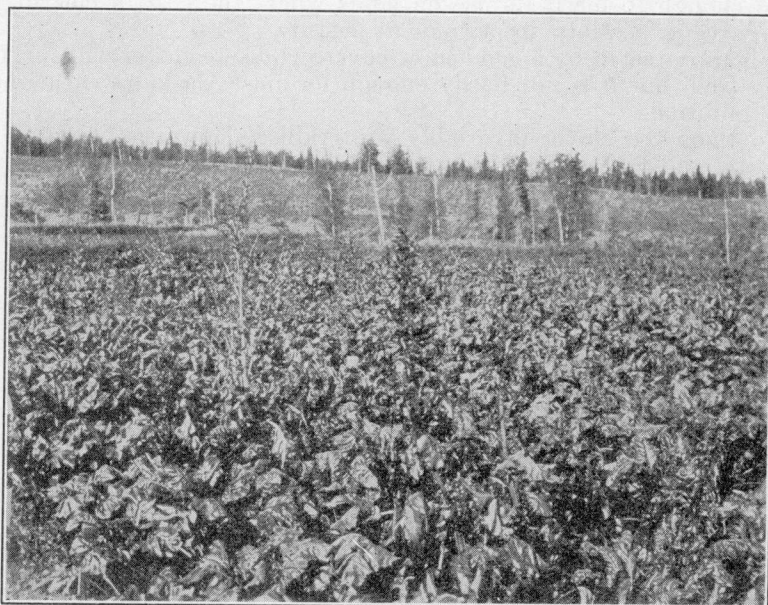


FIGURE 10.—Variety test of mangels, showing tendency to produce seed stalks during the first year, Matanuska station.

grass and slender wheatgrass should be purchased. Low-grade seed is very likely to contain some quack-grass seed.

### ROOT CROPS

Root crops are expensive to grow because they require much hand labor. Otherwise they might well be important as a source of feed for livestock.

#### MANGELS

The varieties of mangels found to be suitable are Heavy Cropper, Yellow Globe, Danish Sludstrup, and Improved Golden Tankard. For good yields mangels require rich soil well supplied with moisture. Yields varying from 15 to 20 tons per acre have been obtained at the Matanuska station (fig. 10).

Mangels will continue to be an important crop in interior Alaska for some time to come, and especially in the Matanuska Valley, where dairying is carried on.

#### RUTABAGAS

The American Purple Top variety of rutabaga has been successfully grown largely for food (fig. 11). Rutabagas are grown for

stock feed in some regions where mangels cannot be grown. Yields range from 8 to 15 tons per acre. Rutabagas are very susceptible to attack by root maggots.

#### TURNIPS

The Petrowski variety of turnip, which was originally introduced from Finland through the United States Department of Agriculture for trial at the Sitka station in 1906, is recommended (fig. 12). The variety has met with favor over all the Territory. The root is yellow, flat, and smooth, and ranges from 4 to 8 inches in diameter. The flavor is excellent, and the variety can be used for the table as well as for livestock. The Petrowski turnip has the important char-



FIGURE 11.—American Purple Top variety of rutabaga, Matanuska station.

acteristic of being highly resistant to attack by the very prevalent root maggot.

Where mangels can be grown successfully they are recommended as a substitute for turnips as a feed for livestock because of the higher yield, superior keeping qualities, and, in the case of dairy cattle, less likelihood of tainting the milk. Rutabagas also are likely to taint the milk. However, where it is desirable to grow turnips and rutabagas they should be fed to dairy cows immediately following, rather than before or during, milking.

#### POTATOES

The varieties of potato recommended are White Bliss and Irish Cobbler (fig. 13). Generally speaking, white-skinned varieties sell more readily on the Alaska market than do red-skinned sorts. However, Triumph and Early Ohio, which are red-skinned, can also be sold readily in some places. To produce high yields of potatoes





FIGURE 12.—Petrowski variety of turnip, Matanuska station.

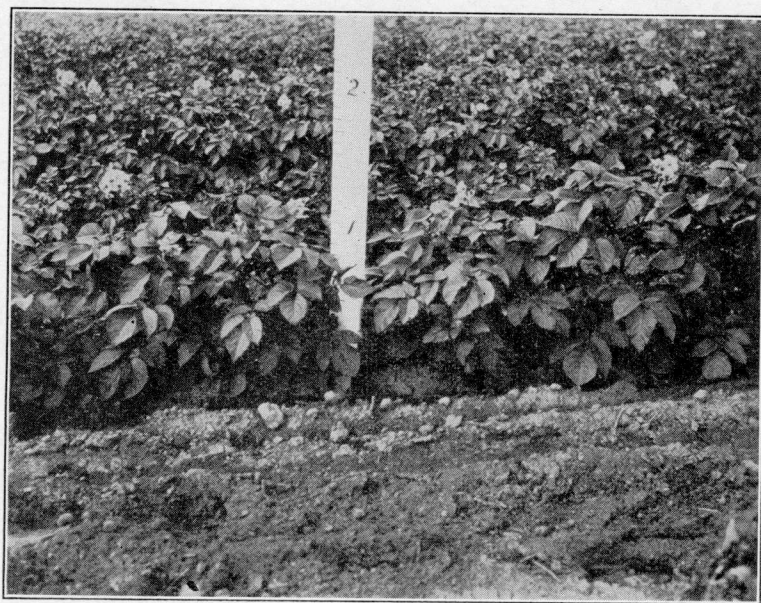


FIGURE 13.—The Irish Cobbler variety of potato in full bloom, Matanuska station.

of fine quality, proper methods of production should be carefully followed, especially in the interior, where the season is short and weather conditions are often adverse. On good soils the yields vary from 200 to 250 or more bushels per acre.

White Bliss is an early potato, and in tests made at the Matanuska station over a period of years it was found to be a high yielder and of excellent table quality.

Irish Cobbler is the most widely grown of all the early potatoes. It has been tested at the Fairbanks and the Matanuska stations, and is well adapted to Alaskan-crop conditions. The tubers are white, block shaped, and medium sized. The variety has an undesirable tendency to produce deep eyes. The blossoms are of purple color, and the skin is sufficiently tough to withstand handling without breaking.

Netted Gem is another variety well suited to the Matanuska Valley. Tests at the station have indicated that it is of superior cooking quality.

Triumph and Early Ohio are red-skinned varieties and are widely grown in the States. Triumph is very susceptible to disease, a factor that limits its use in some parts of the United States.

