GEORGESON BOTANICAL GARDEN

University of Alaska Fairbanks
Agricultural and Forestry Experiment Station

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Agronomic Crops for Alaska

by

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The average planting time for agronomic crops in Alaska is approximately the first two weeks of May. Harvest occurs between mid August and late September depending on weather conditions. The frost-free growing season is only between 83 and 100 days in which most crops must mature and ripen. Crops such as barley, wheat, oats, rye, triticale, buckwheat, canola, flax, sunflowers, safflower, meadowfoam, faba beans and field peas have all been tested in Alaska, often with limited success due to insufficient information on the climatic, nutrient or cultural requirements of the crop. The Agricultural and Forestry Experiment Station supports an agronomic breeding and variety evaluation program to learn about crop requirements and share that information with local producers. The crops listed below summarize present recommendations and releases as well as some of the more promising new varieties that are the result of ongoing research and testing since the first agricultural experiment station opened in Sitka in 1898.

Barley

Barley is the most successful cereal crop in Alaska because it matures and ripens under far northern cool temperatures and short growing seasons. It will ripen 80 to 100 days after planting. Barley can have either a winter or spring growth habit and have either 6-row or 2-row spike characteristics. Of these, spring barley with 6-row spikes mature the earliest. Winter barleys lack hardiness and succumbs to winter kill, and 2-row varieties often mature 10 days later than 6-row varieties. Most 2-row barley varieties are classified as malting or pearling varieties while the 6-row varieties are used for animal feed. Research to date has shown that Alaska-produced malting barleys are good in such characteristics as kernel weight and plumpness and wort color but they are poor in barley color and soluble and total protein.

Variety	Spike	Harvest Type	Growth Season	Source Habit	Yield per acre (bushels)
Lidal	6-row	early	spring	USDA*	76-78
Datal	6-row	early	spring	USDA*	76-78
Otal	6-row	early	spring	USDA *	68-77
Svendal	6-row	early	spring	Alamasu, Inc.**	45-63
Weal[1]	6-row, hooded	mid	spring	USDA*	64-80
Thual[2]	6-row, hulless	early	spring	USDA*	40-77

* Palmer Research Center, Agricultural and Forestry Experiment Station
** Private farm, Delta Junction, Alaska
[1] awnless—good for forage or seed production
[2] good for human consumption

Oats

Oats are second in importance to barley as a cereal crop in Alaska. Although oats require seven to 10 days more to mature and ripen than barley, they can be harvested green as a forage or hay crop. Oats are grown primarily for livestock feed. The straw is also in high demand for animal bedding since it does not have the rough awns (beards) of barley or wheat straw. Three of the best adapted varieties are:

Variety	Type	Harvest season	Source	Yield per acre (bushels)
Nip	black-hulled	very early	Sweden	111-123
Toral	yellow-hulled	early	USDA*	122-134
Athabasca	yellow-hulled	very early	Alberta, Canada	87-105

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Wheat

Three major types of wheat have been grown in Alaska: hard red spring wheat, winter wheat and durum wheat. Winter wheat varieties frequently have poor winter survival and result in poor yields. Durum wheat varieties require a longer growing season than exists in Alaska and often fail to mature and ripen. Varieties of hard red spring wheat (bread wheat) have shown the best adaptation to the Alaska climate. Hard red spring wheat requires an additional 10 - 15 days to mature and ripen than barley and is a marginal crop in years with early frosts. The best varieties grown in Alaska are:

Variety	Type	Harvest season	Source	Yield per acre (bushels)
Chena	hard red spring	early	Finland	46-73
Gasser	hard red spring	early	USDA*	38-55
Nogal	hard red spring	early	USDA*	40-69
Ingal	hard red spring	early	USDA*	44-61
Vidal	hard red spring	early	USDA*	38-60

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Rye

Rye is a late maturing crop in Alaska and requires seven to 10 days more to mature and ripen than wheat. For this reason it is more marginal than wheat. There are two types, spring and winter rye. Winter rye is susceptible to snow mold damage and few seedlings survive the winter. However, one variety, 'Saskatoon', will have enough survivors to equal the yield of spring rye such as the variety listed here, 'Gazelle'. Both of these varieties are susceptible to a disease called ergot. This is a very conspicuous, blue-black, hard fungal mass that develops in place of the kernel. The ergot sclerotia contains several chemical compounds, most of which are harmful to humans and animals. Average yield per acre for rye is 41 to 65 bushels.

Triticale

Triticale is a hybrid between wheat and rye which combines the hardiness of rye with the high bread-making quality of wheat. It also possesses the late-maturing qualities of both parents making it another marginal crop for Alaska. Like rye, it is susceptible to ergot. Average yield per acre is 30 to 80 bushels.

Canola (rapeseed)

Canola is a high quality edible oilseed crop containing 43% oil and 57% meal for animal feed. There are two types of canola, Argentine and Polish. Argentine canola varieties have large, black seeds and are often late maturing. Polish canola varieties have small yellow seeds and are early maturing. Unlike other members of the *Brassica* species, canola is not affected by the long daylength of Alaska summers, thus it flowers abundantly and produces seed. The main problem experienced in Alaska has been uneven ripening of the seeds resulting in a high percentage of green seeds at harvest. These green seeds add an unacceptable green tint to the processed oil. The primary goal of current research is to reduce this percentage of green seeds. The most popular variety for Alaska at this time is 'Tobin', an early maturing Polish type developed in Canada. Yield averages 25 to 35 bushels per acre. Argentine canolas like 'Legend' will yield about the same but have a much high percentage of green seed.

Other Crops

Buckwheat is used for flour even though it is not a small grain like wheat. It is an indeterminate plant which means that it will flower and produce seed all season long. Timing of the harvest is critical because the plant will lodge (fall to the ground) severely if hit by frost, making it nearly impossible to mechanically harvest. In addition, the seed must be dehulled before the flour can be obtained. Because of all these factors, buckwheat is a marginal crop for Alaska. Average yield is highly variable ranging from eight to 100 bushels per acre.

Sunflowers are classified as confectionery or oilseed. Both types have been grown in Alaska with varying success. Traditional, tall sunflowers will mature and ripen in Alaska, and the newer dwarf sunflower (sunwheat) is even earlier. However, sunflowers heads turn downward when mature, creating a bowl-like depression. The late fall rains common in Interior Alaska will collect in these depressions, keeping the heads moist to a point where they cannot be mechanically harvested. Attempts to leave the sunflowers in the field until after the first snowfall to freeze dry are negated by the local bird populations which can consume more than 50 percent of the crop. Average yield is 90 to 126 pounds per acre.

Flax is classified as fiber or oilseed. The fiber flax is usually taller and yields higher biomass than the oilseed varieties, however both types can be used for fiber or oil. Linen is produced from fiber flax and linseed oil from oilseed flax. Oilseed flax such as 'Norlin' require a long growing season but can reach maturity in good years. It is often slow to emerge and has too much green matter at harvest. This makes it difficult to mechanically harvest and dry prior to storage or processing. Average yield is 10 to 15 pounds per acre.

Field peas are a cool season, early maturing crop that grows well as a forage crop, often interseeded with oats. When grown by themselves the short, leafless varieties are the best. Taller or heavier varieties will lodge, making it difficult to harvest mechanically. Like sunflowers, field peas can be totally decimated by migratory waterfowl in the fall. Average annual yield is 10 to 60 bushels per acre.

Canarygrass is a crop grown specifically for bird food. It requires similar soil, climatic and nutrient characteristics as the small grains and produces seed similar in size and shape to flax. 'Elias' is a typical variety that grows well in Alaska. It will yield on average 10 to 15 bushels per acre.