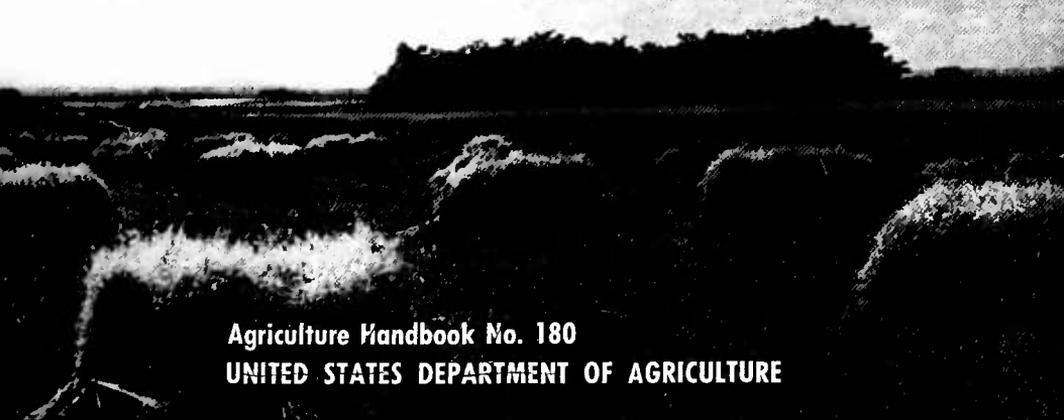


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WHEAT VARIETIES IN THE WESTERN STATES

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Agriculture Handbook No. 180
UNITED STATES DEPARTMENT OF AGRICULTURE

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OAT VARIETIES IN THE WESTERN STATES

By Franklin A. Coffman, principal agronomist, and Harland Stevens, senior agronomist, Crops Research Division, Agricultural Research Service

AGRICULTURAL AREAS

The western half of the United States is usually defined as that portion of the country that lies west of the 98th meridian. On the basis of topography, this region is divided into three primary agricultural areas: The Great Plains, the Rocky Mountain and intermountain, and the Pacific coast. Each area includes several entire States or parts of several States, and within each area a number of different farming systems are used. For information concerning culture of oats in the Western States, see Farmers' Bulletin No. 2134.

In the western half of the United States oats rank below wheat and barley in acreage and production. In recent years an estimated 125 million bushels of oats have been harvested annually from about 4½ to 4¾ million acres.

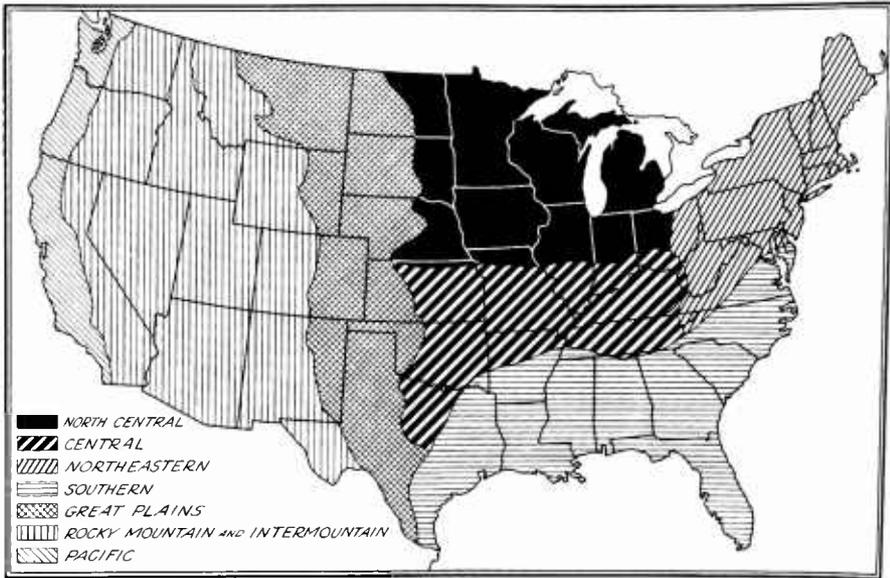
Oats grown in the Western States differ greatly as to type because of the wide range of climatic and crop conditions. Some varieties are adapted for growing over wide areas under different farming systems, and others are grown in limited areas and are comparatively narrow in their adaptation.

Most oats in this region are spring sown. In several sections, however, only fall-sown oats are grown. In other sections oats may be either fall sown or spring sown. For information on varieties recommended for your particular area, consult your county agent or your State experiment station.

VARIETIES GROWN

Oat varieties grown in the western half of the United States are classed in general as spring or winter, midseason or early, "white" or "red." Spring oats are midseason or early-maturing varieties grown almost exclusively from spring seeding. Winter oats are grown primarily from fall seeding, although under some conditions they may be sown in late winter or very early spring.

The descriptions "white" and "red" have been used loosely for decades to differentiate oats classed botanically as belonging to *Avena sativa* and those classed as belonging to *Avena byzantina*. Among the so-called white



BN-7144

Figure 1.—Topographical areas in the United States.

oat group are some varieties that are actually white and some that are yellow, gray, or even black in kernel color. Among the red oat group are some varieties that are red, gray, black, and reddish-yellow or reddish-white. As a result, differentiation of white and red varieties has been made more and more on botanical characters other than color; and on the basis of these other characters varieties are assigned to the type they most closely resemble.

Varieties grown in the western half of the United States are grouped as follows:

SPRING OAT VARIETIES

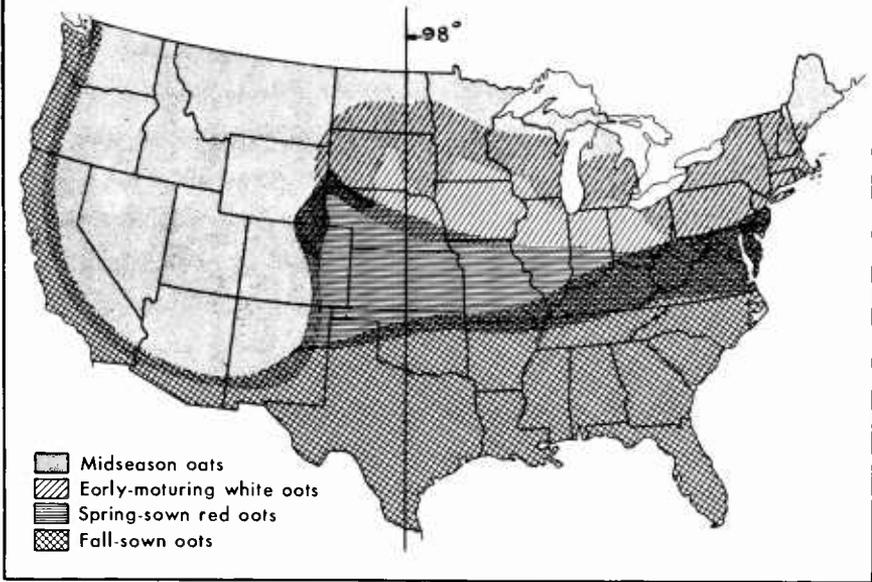
Midseason White Oats

Abundance	Colorado 37	Rainbow
Ajax	Improved Garry	Rodney
Banner	Marida	Shasta
Bannock	Markton	Simcoe
Beaver	Marvic	Swedish Select
Bridger	Mission	Uton
Centore	Overland	Victory
Cody	Park	

Early-Maturing White Oats

Andrew	Gopher	Vikota
Carleton	Marion	Waubay
Cedar	Minhafer	Winema
Clinton	Palomino	

OAT TYPES GROWN IN THE UNITED STATES



PN-799

Figure 2.—Areas where different types of oats are grown in the United States. (Western United States includes that portion of the country to the west of the 98th meridian.)



PN-800

Figure 3.—A field of Marion, an early white oat variety.

Early-Maturing Red Oats

Alamo
Brunker
Cherokee
Dupree
Fulghum
Fulton

Indio
Kanota
Mo. 0-205
Nemaha
Neosho

Osage
Otoe
Palestine
Trojan
Ventura



PN-801

Figure 4.—A field of Brunker oats on dry lands of northeastern Colorado.

Midseason Red Oats

California Red
Coastblack
Ferguson 922

New Nortex
Red Rustproof (Texas Red)

WINTER OAT VARIETIES

Bronco
Cimarron
Crater
DeSoto
Forkedeer

Fultex
Fulwin
Gray Winter (Winter Turf)
Lee
Mustang

Stanton
Support
Tennex
Traveler
Wintok



PN-802

Figure 5.—A field of typical Red Rustproof type oats in western Texas.



PN-803

Figure 6.—A field of Gray Winter (Winter Turf) oats in northwest Pacific coast area.

VARIETIES ADAPTED

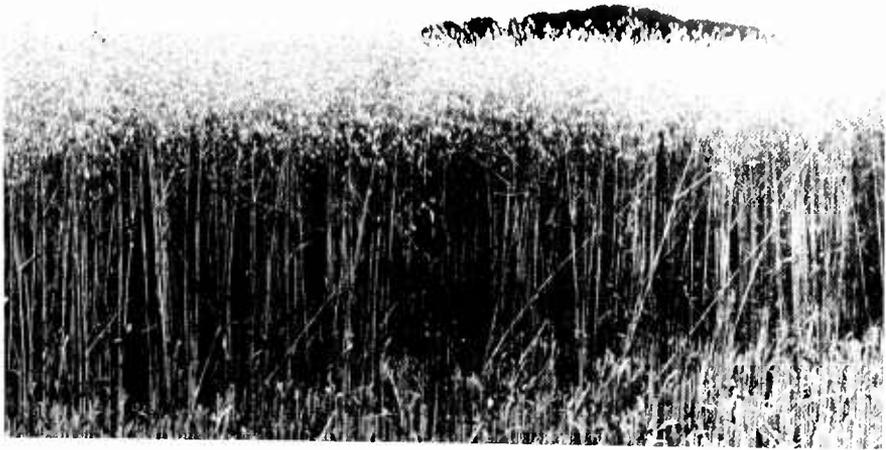
For convenience, oats grown in the western half of the United States are listed by States for the Great Plains area, the Rocky Mountain and intermountain area, and the Pacific coast area.

GREAT PLAINS AREA

The Great Plains area includes the western parts of North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and Texas, and the eastern sections of Montana, Wyoming, Colorado, and New Mexico. No one oat type is adapted to all sections of this area, as the range of climatic conditions is so great. Early-maturing oats are favored in the central and southern parts of the Great Plains, whereas midseason varieties are more popular in the northern Great Plains area. In some sections oats are grown from both spring and fall seeding.

The following varieties have yielded well in the Great Plains:

- Colorado Bruner, Fulton, Trojan, and Kanota
Kansas Cherokee, Nemaha, Mo. 0-205, Fulton, Kanota, Neosho, and Osage
- Montana:
 Dry land Gopher and Mission
 Irrigated land Park, Bridger, and Mission, with Rodney and Improved Garry for "rust areas"
- Nebraska:
 Dry land Andrew, Bruner, Mo. 0-205, and Otoe
 Irrigated land Andrew, Mo. 0-205, Ajax, and Overland
- New Mexico Markton
- North Dakota Gopher, Ajax, Marion, Rainbow, Palomino, Improved Garry, Rodney, and Simcoe
- Oklahoma:
 Winter varieties for fall seeding . . . Wintok, Tennex, Cimarron, Forkedeer, Mustang (south of U.S. Highway 66), and DeSoto (southeastern Oklahoma only)
 Winter varieties for early spring seeding . . . Cimarron, Forkedeer, Tennex, and Wintok
 Spring varieties for spring seeding . . . Andrew, Cherokee, Fultex, Kanota, Nemaha, Neosho, New Nortex, and Texas Red
 Spring varieties for early spring seeding . . . Fultex, Kanota, New Nortex, and Texas Red
- South Dakota Bruner, Trojan, Dupree, Waubay, Osage, Vikota, and Mo. 0-205
- Texas:
 For fall seeding . . . Mustang, New Nortex, Ferguson 922, Texas Red, Bronco, and Fultex
 For spring seeding . . Mustang, New Nortex, Ferguson 922, Texas Red, Fultex, Alamo, and Fulghum
- Wyoming Markton, Overland, Cody, and Bruner



PN-804

Figure 7.—A field of Overland oats growing under irrigation in Idaho.

ROCKY MOUNTAIN AND INTERMOUNTAIN AREA

The Rocky Mountain and intermountain area comprises the western parts of Montana, Wyoming, Colorado, and New Mexico; all of Idaho, Utah, Nevada, and Arizona; and the eastern parts of Washington, Oregon, and California. Midseason varieties of oats are more productive in this area, but a few early varieties are grown in the dryland sections.

Varieties adapted for the Rocky Mountain and intermountain area are listed below:

Arizona	Markton, California Red, and Palestine
California	California Red, Kanota, Palestine, Indio, and Ventura
Colorado	Colorado 37, Bannock, Markton, Clinton, and Overland
Idaho	Overland, Marida, Bannock, Victory, Cody, and Park
Montana:	
Dry land	Gopher and Mission
Irrigated land	Park, Mission, and Bridger
Nevada	Victory and Bannock
New Mexico	Markton
Oregon (Eastern dryland section).	Markton, Cody, Carleton, Centore, Victory, Shasta, and Park
Utah	Overland and Uton
Washington (Eastern dryland section).	Markton, Marvic, Marida, and Cody

Wyoming:

Dry land Colorado 37, Cody, Overland, Bannock, and Park

Irrigated land Cody, Overland, and Park

PACIFIC COAST AREA

The Pacific coast area comprises the Willamette Valley of Oregon and a comparatively narrow strip along the Pacific Ocean, extending from the Olympic Peninsula to lower California. Fall-sown oats are more productive in this area, but spring-sown oats also are grown in the cooler sections.

Varieties adapted for the Pacific coast area are listed below:

California California Red, Red Rustproof (Texas Red), Kanota, Palestine, Indio, Ventura, and Coastblack

Western Oregon and Wash- Victory, Winema, Swedish Select, Centore, ington. Abundance, Bannock, Simcoe, Beaver, and Banner

Oregon (Willamette Valley) Gray Winter (Winter Turf, Oregon Gray), Victory, Carleton, and Crater

DESCRIPTIONS

Brief descriptions of varieties grown in the western half of the United States follow. For more detailed technical descriptions of many of these oats, see U.S. Department of Agriculture Technical Bulletin No. 1100.¹

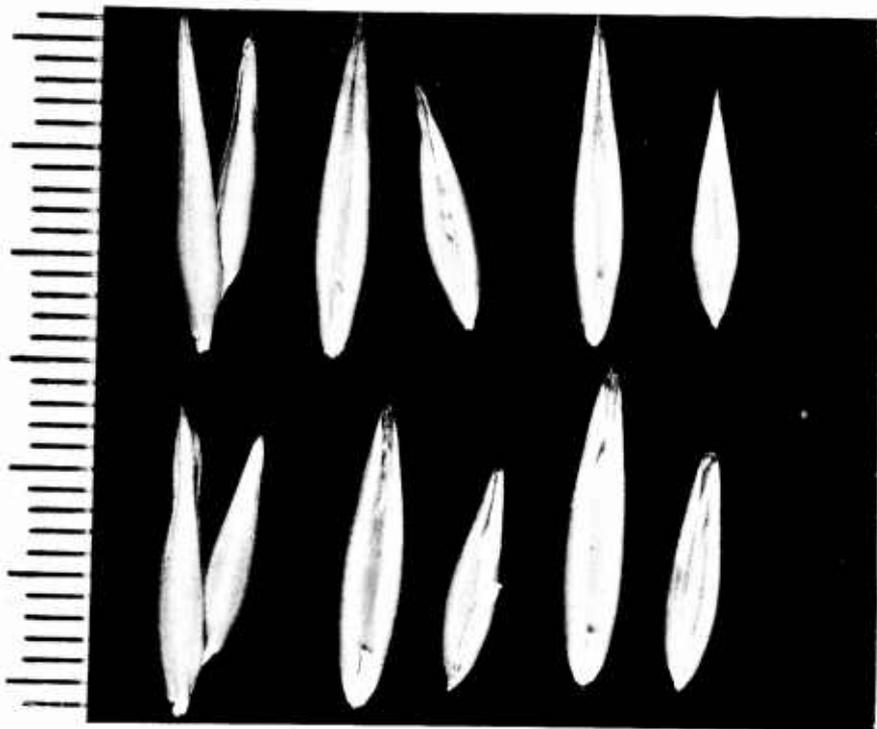
SPRING OAT VARIETIES

Midseason White Oats

Abundance.—Abundance is a tall, rather weak-strawed oat, with large, spreading panicles and plump, white kernels that are often awned. So far as is known, it has no particular resistance to any of the prevalent races of the major oat diseases. It was produced in England and introduced into this country about 1900. Limited acreages of Abundance are grown in western Washington and Oregon.

Ajax.—Ajax is a tall, moderately stiff-strawed, very productive oat, with large panicles that droop somewhat at maturity and midsized, yellowish-white kernels that frequently bear awns. It has considerable resistance to prevalent races of stem rust and moderate resistance to some races of crown rust. Ajax was introduced into the United States from Canada about 1945. It is especially well adapted to the dryland area of North Dakota and to the Rocky Mountain and intermountain area.

¹ Stanton, T. R. OAT IDENTIFICATION AND CLASSIFICATION. U.S. Dept. Agr. Tech. Bul. 1100, 206 pp., illus. 1955.



PN-805

Figure 8.—Spikelets and kernels of white oats: Upper, *Gopher* (early); lower, *Victory* (midseason).

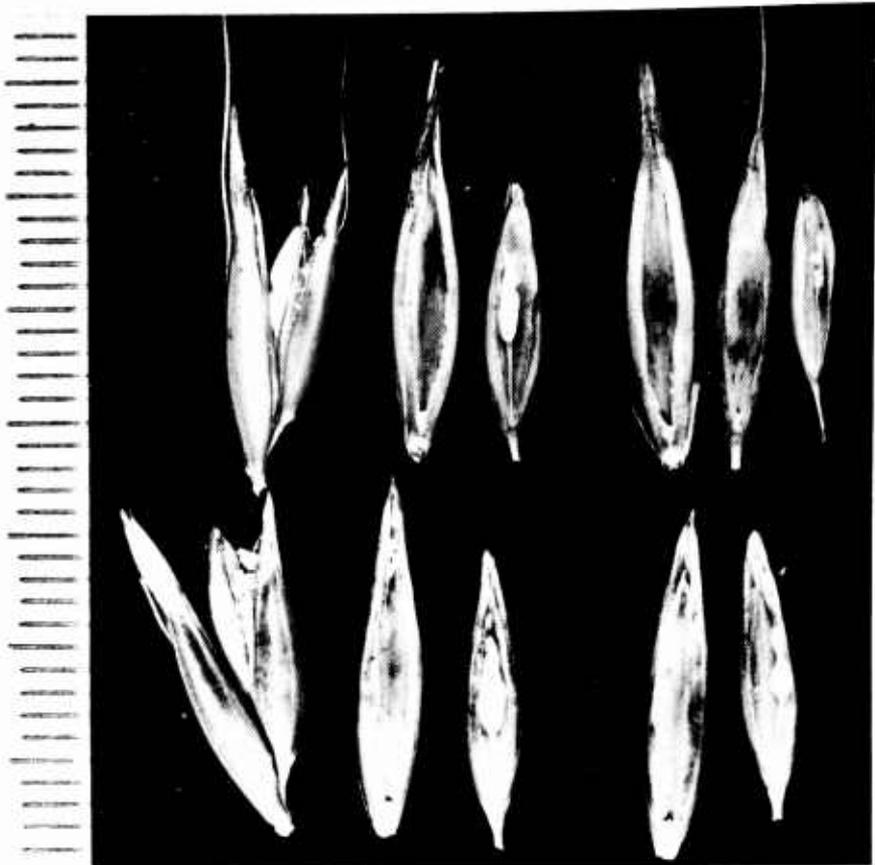
Banner.—Banner is a midtall, moderately stiff-strawed oat, with mid-sized, spreading panicles and plump, white kernels. It has few basal hairs, but awns are common and are slightly twisted at the base. It has no resistance to any of the prevalent races of the major oat diseases, so far as is known. Banner is a little earlier than Colorado 37 and Victory.

Bannock.—Bannock is a tall, rather weak-strawed, very productive oat, with large, spreading panicles, plump, white kernels that are seldom awned, and a few hairs at the stem nodes. It is highly resistant to smuts but susceptible to rust. Bannock is a sister strain of Bridger, Marvic, Mission, and Shasta, and was released in Idaho in 1938.

Beaver.—Beaver is a midtall, moderately stiff-strawed oat, with large panicles and large, white kernels with medium-thin hulls. It is resistant to most stem rust races and to Victoria blight and has some tolerance to crown rust.

Bridger.—Bridger is a tall, moderately stiff-strawed oat, with large panicles and large, plump, white kernels. It is resistant to smut but not to rust. Bridger is a sister strain of Bannock, Marvic, Mission, and Shasta, and was released in 1941. It is almost identical with Bannock.

Centore.—Centore is a short, moderately stiff-strawed oat, with large



PN-806

Figure 9.—Spikelets and florets of red oats: Upper, *Red Rustproof* (midseason); lower, *Fulghum* (early).

panicles and plump, yellow, usually awnless kernels. It is resistant to some prevalent races of stem and crown rust and is highly resistant to smut, but it is susceptible to Victoria blight. Centore is similar to Cody in plant and kernel characters and in disease resistance. It was released in 1956 for growing in Oregon.

Cody.—Cody is a short, moderately stiff-strawed, exceptionally productive oat, with large panicles and plump, yellow, occasionally awned kernels. It has considerable resistance to many races of the rusts and high resistance to smut, but it is susceptible to Victoria blight. Cody II, a purification of Cody, was released by the Wyoming station for growing in that State.

Colorado 37.—Colorado 37 is a tall, rather weak-strawed oat, with large panicles and very plump, white, frequently awned kernels. So far as is known, it is not resistant to any prevalent races of the major oat diseases. Colorado 37 was released about 1920 in Colorado, where it has been a leading variety in irrigated areas. Swedish Select, grown to some

extent in western Oregon and Washington, differs from Colorado 37 in having more numerous awns and in being slightly taller and less uniform in height.

Improved Garry.—Improved Garry is a midtall, very stiff-strawed oat, with large panicles and plump, white, almost awnless kernels. It is resistant to all prevalent races of stem rust and has considerable resistance to Victoria blight. It was introduced from Canada in 1956. It has given good yields in irrigated and dryland areas of the Northwest from North Dakota westward.

Marida.—Marida is a midtall, stiff-strawed oat, with large, spreading panicles and very plump, white, awnless kernels. It is highly resistant to smut but has no resistance to the rusts. Marida was released about 1940 and soon became a leading variety in the northern Idaho area.

Markton.—Markton is a midtall, weak-strawed oat, with very large, widespread panicles, hairy nodes, and yellow, midplump, awned kernels with a few hairs at the base. It is highly resistant to the smuts of oats but is one of the most susceptible of all varieties to the rusts. Markton was released in 1922.

Marvic.—Marvic is a midtall, moderately stiff-strawed oat, with large panicles and large, plump, white kernels occasionally awned. It is resistant to smut but not to rust. Marvic is a sister strain of Bannock, Bridger, Mission, and Shasta, and was released in Washington.

Mission.—Mission is a midtall, rather stiff-strawed oat, with spreading panicles and plump, white, awnless kernels. It is smut resistant but lacks resistance to rust. Mission is a sister strain of Bannock, Bridger, Marvic, and Shasta, and was released in Montana in 1945.

Overland.—Overland is a short, very stiff-strawed oat, with medium-sized panicles and plump, white, practically awnless kernels. It is resistant to smut and to certain prevalent races of crown and stem rust, but it is highly susceptible to Victoria blight. Overland was released in Idaho in 1947 and has become a leading variety on irrigated land in the Northwest.

Park.—Park is a midtall, stiff-strawed, highly productive oat, with medium-sized, erect panicles and plump, white, awnless kernels. It is resistant to smut and to many races of crown and stem rust, but it is susceptible to Victoria blight. Park was released in 1953 in Montana and is becoming increasingly popular in the Northwest.

Rainbow.—Rainbow is a tall, weak-strawed, early midseason oat, with large, spreading panicles and midsized, yellow, medium-plump, seldom awned kernels that do not have hairs. It is resistant to many prevalent races of stem rust and has moderate resistance to some races of crown rust. So far as is known, it lacks smut resistance. Rainbow was released in North Dakota in 1929.

Rodney.—Rodney is a medium-tall, stiff-strawed, productive Canadian oat, with large panicles and very plump, white kernels. It is resistant to

many prevalent races of stem and crown rust but lacks resistance to some of the newer races of each. It is resistant to smut and to Victoria blight. Rodney was released in 1954 in Canada.

Shasta.—Shasta is a tall, rather weak-strawed oat, with large, spreading panicles and plump, white kernels that are seldom awned. It is highly resistant to the smuts, but it lacks rust resistance. Shasta is a sister strain of Bannock, Bridger, Marvic, and Mission, and was released in Oregon.

Simcoe.—Simcoe is a tall, not too stiff-strawed Canadian oat, with large panicles and plump, white kernels. It has resistance to some races of stem rust but lacks crown-rust resistance. Simcoe was released in 1953. It is grown to a limited extent in Washington and North Dakota.

Uton.—Uton is a midtall, rather weak-strawed oat, with large, wide-spread panicles and plump, white, awned kernels. It is highly resistant to smut but lacks rust resistance. Uton was released in Utah in 1937.

Victory.—Victory is a tall, weak-strawed oat, with large panicles and exceedingly plump, frequently awned, white kernels. So far as is known, it is not resistant to any prevalent races of the major oat diseases. Victory was introduced from Sweden in 1908 and was at one time the leading midseason white oat in the United States. It has been largely supplanted by varieties with stiffer straw.

Early-Maturing White Oats

Andrew.—Andrew is a midtall, comparatively stiff-strawed oat, with large, spreading panicles with somewhat drooping branches. At maturity the panicles recurve at the tips. The yellow kernels are rather long, are enclosed in long glumes, and have few awns. Andrew is resistant to most smut races, to the more prevalent races of stem rust, to many races of crown rust, and to Victoria blight. It is one of the most widely adapted early oats because it heads early but does not ripen especially early. Andrew was released in Minnesota in 1949.

Carleton.—Carleton is a midtall oat with rather weak straw, large, spreading panicles that recurve when mature, and long, yellow, midplump kernels with few awns. It is highly resistant to smut but susceptible to rust. Carleton was released in 1937.

Cedar and Vikota.—Cedar and Vikota are midtall, moderately stiff-strawed oats, with large, spreading panicles and yellow, medium-plump kernels that rarely bear awns. These varieties are highly resistant to smut and to many races of crown and stem rust, but they are susceptible to Victoria blight. Cedar was released in Nebraska in 1944, and Vikota was released in South Dakota in 1943.

Clinton.—Clinton is a midtall, very stiff-strawed oat, with midsized panicles having stiff main stems and short side branches. The kernels are yellow, midsized, plump, and rarely awned, and they seldom have hairs. Clinton is resistant to Victoria blight and to most races of smut, but it is susceptible to some of the more prevalent races of crown and

stem rust. It was released in 1946 and was at one time the leading early-maturing oat of the United States.

Gopher.—Gopher is a midtall, rather weak-strawed oat, with midsized panicles and plump, white kernels with few awns. So far as is known, it has no resistance to any of the prevalent races of the major oat diseases. Gopher was released in 1923.

Marion.—Marion is a tall, productive, comparatively weak-strawed oat, with large, spreading panicles and large, white, very plump kernels with thin hulls and few awns or hairs. It has hairy stem nodes. Marion is highly resistant to smut and Victoria blight, is resistant to the more prevalent races of stem rust, and is tolerant to many races of crown rust. It was released in Iowa and Illinois in 1940.

Minhafer.—Minhafer is a midtall, stiff-strawed oat, with midsized, spreading panicles and plump, yellow kernels with few awns. It was resistant to all races of crown rust, stem rust, and smut prevalent in North America at the time of its release in 1957.

Palomino.—Palomino is a midtall, rather stiff-strawed oat, with large, spreading panicles and somewhat drooping branches. It has rather long, yellow, midplump kernels with an occasional awn. It is resistant to Victoria blight and to most races of smut but is susceptible to some of the more prevalent races of crown and stem rust. Palomino was released in North Dakota in 1955.

Waubay.—Waubay is a midtall, very stiff-strawed oat, with midsized panicles and plump, white, awnless kernels. It is highly resistant to most races of smut and to the more prevalent races of stem rust. It is resistant to Victoria blight, susceptible to Septoria, and only moderately tolerant to crown rust. Waubay was released in South Dakota in 1954.

Winema.—Winema is a short, vigorous, only moderately stiff-strawed oat, with large panicles and midplump, yellow, usually awnless kernels. It has resistance to some races of stem and crown rust. Winema was released in 1954.

Early-Maturing Red Oats

Alamo.—Alamo is a short, stiff-strawed oat, with medium-sized, erect panicles and plump, reddish-yellow, awnless kernels. It has some resistance to smut and to prevalent races of crown and stem rust, but it is susceptible to Victoria blight. Alamo was released in Texas in 1953.

Brunker.—Brunker is a midtall, weak-strawed oat, with small, spreading or somewhat drooping panicles and slender, red kernels. It is highly resistant to smut but, so far as is known, lacks resistance to the rusts. Brunker was released in Colorado in 1929.

Cherokee and Nemaha.—Cherokee and Nemaha are short to midtall, very stiff-strawed oats, with equilateral panicles and plump, short, grayish to reddish-yellow kernels that are awnless. Both varieties are resistant to Victoria blight, to smut, and to many races of crown and stem rust.

They are grown extensively in Nebraska and Kansas, where they were released in 1948.

Dupree.—Dupree is a short, weak-strawed, very productive oat, with rather large panicles and slender, yellowish to reddish kernels sometimes bearing awns. It is resistant to smut and to some races of crown and stem rust. Dupree was released in South Dakota in 1954.

Fulghum.—Fulghum is a medium-short, weak-strawed oat, with large panicles and plump, red to reddish-gray kernels sometimes bearing awns and a few hairs at the base. It has some smut resistance and some cold resistance. Fulghum was once a leading variety in the southern part of the Great Plains area, but it has been supplanted largely by newer varieties having more resistance to disease.

Fulton.—Fulton is a midtall, weak-strawed oat, with rather large panicles slightly drooping or recurved at the top at maturity and with rather short, usually drooping side branches. The kernels are plump, reddish-yellow, and awnless. Fulton has smut resistance but lacks rust resistance. It was released in Kansas in 1939.

Indio.—Indio is a short, moderately stiff-strawed oat, with midsized panicles. It tillers profusely and has rather slender red kernels that bear straight awns. The kernels are somewhat pubescent. Indio has resistance to certain races of stem and crown rust. It was released in California in 1956.

Kanota.—Kanota is a medium-tall, rather weak-strawed oat, with rather large panicles with drooping side branches. It has resistance to a number of races of smut but, so far as is known, lacks resistance to the rusts. It appears to be at least tolerant to barley yellow-dwarf virus. It was released in Kansas in 1921.

Mo. 0-205.—Mo. 0-205 is a tall, productive, moderately stiff-strawed oat, with medium-sized, spreading panicles and rather small, thin-hulled, gray-striped, awnless kernels lacking hairs. It has considerable resistance to prevalent races of crown and stem rust and to smut and is resistant to Victoria blight. It was at one time the most widely grown spring-sown oat in the United States. Mo. 0-205 was released in Missouri in 1951.

Neosho.—Neosho is a short, very stiff-strawed oat, with large, wide-spreading panicles and erect leaves. The kernels are plump, grayish-red, and awned, and they often have hairs. Neosho has considerable resistance to most prevalent races of crown and stem rust and to smut but lacks resistance to Victoria blight. It was released in Kansas in 1945.

Osage and Ventura.—Osage and Ventura are short, moderately stiff-strawed oats, with large panicles and yellowish-red kernels that are usually awnless and without hairs. Both varieties tiller rather profusely. They have considerable resistance to prevalent races of the rusts and the smuts but are highly susceptible to Victoria blight. Osage was released in Kansas and Ventura in California in 1946.

Otoe.—Otoe is a short, moderately stiff-strawed oat, with midsized pan-

icles and occasionally awned, grayish-red kernels. It has some resistance to stem rust. Otoe was released in Nebraska in 1941.

Palestine.—Palestine is a rather short, weak-strawed oat, with rather large panicles and slender, very hairy, red to reddish-brown kernels that bear straight awns and have a so-called suckermouth at the base. It has produced comparatively well in the Sacramento Valley in California.

Trojan.—Trojan is a short, very stiff-strawed oat, with moderate sized panicles and small, slender, awnless, white kernels. It has considerable smut resistance and may have some resistance to crown rust. It is grown to some extent in Colorado, Nebraska, and South Dakota.

Midseason Red Oats

California Red.—California Red is a midtall to tall, rather weak-strawed oat, with occasional hairs on the node and large panicles with drooping branches. The outer glumes are long, and the reddish-brown kernels are long and bear straight awns. The lower florets have a suckermouth-shaped base with considerable basal pubescence and occasionally some hairs on the back of the kernel. The kernels of the spikelet are inclined to remain together. California Red has been one of the most important varieties grown in California for more than 50 years.

Coastblack.—Coastblack is a midtall to tall, rather weak-strawed oat, with large panicles. It has black kernels but otherwise is very similar to California Red in kernel characters.

Other Varieties.—Ferguson 922, New Nortex, and Red Rustproof (Texas Red) are short to midtall, fairly stiff-strawed oats, with rather large panicles with drooping side branches. These varieties are very similar in kernel characters to California Red. New Nortex is considered to be slightly more winter hardy than Ferguson 922.

WINTER OAT VARIETIES

Bronco.—Bronco is a midtall, hardy, vigorous, moderately stiff-strawed oat, with large, spreading panicles and plump, reddish kernels that have few awns and slight pubescence. It is somewhat resistant to soilborne mosaic and to several races of smut and crown rust, but it lacks stem rust resistance. It is very productive where it is not affected by hot weather. Bronco was released in Texas in 1956.

Cimarron.—Cimarron is a short, stiff-strawed oat, with small panicles that frequently bear multiflorous spikelets at their tips. The kernels are small, usually awnless, without hairs, and vary from gray to red. Cimarron lacks resistance to prevalent races of crown and stem rust, but it has some resistance to smut. It frequently develops a physiologic leaf firing that may affect yields. It is the earliest maturing of the more hardy winter oats. It was released in Oklahoma in 1954.

Crater.—Crater is a tall, late, moderately stiff-strawed oat, with large,

plump, gray kernels. It was released in southern and western Oregon in the fall of 1956.

DeSoto.—DeSoto is a short to midtall, fairly stiff-strawed oat, with small, erect to drooping panicles. The kernels are reddish-yellow, rather short, plump, relatively awnless, and frequently have some hairs at the base. DeSoto is resistant to some races of crown rust and smut but is susceptible to stem rust and Victoria blight. It is moderately winter hardy. It was released in Arkansas in 1942.

Forkedeer.—Forkedeer is a tall, weak-strawed variety, with large, spreading panicles that are recurved at the tips when mature. The kernels are red, plump, and usually awnless, and they have few hairs. Forkedeer has resistance to some smut races but lacks resistance to rust. It was released in Tennessee in 1939.

Fultex.—Fultex is a short, stiff-strawed, winter-hardy oat, with short, erect panicles and plump, reddish, mostly awnless kernels. It lacks stem rust resistance but has considerable resistance to crown rust and to smut. It is susceptible to Victoria blight. Fultex was released in Texas in 1940.

Fulwin.—Fulwin, a sister strain to Forkedeer, is similar to the latter in plant characters except that Fulwin is somewhat taller, earlier, and more hardy, and has somewhat weaker straw. It was released in 1939.

Gray Winter (Winter Turf, Oregon Gray).—Gray Winter is a tall, weak-strawed oat, with large panicles. The kernels are more or less plump and gray with striped lemmas frequently bearing awns and hairs. Gray Winter was one of the most hardy varieties grown in this country 50 years ago. It is highly susceptible to the rusts and smuts and is the latest maturing of the winter oats. Oats of this type have also been grown under the names Virginia Gray and Grazing.

Lee.—Lee is a midtall, moderately stiff-strawed oat, with large, spreading panicles and short, plump, yellow to reddish-yellow kernels that are seldom awned but often have a few hairs. Lee has no rust resistance and is very susceptible to smut. It is moderately hardy and is very productive where adapted. Lee was released in the 1920's.

Mustang.—Mustang, a sister strain to Bronco, is a short, stiff-strawed oat, with large, spreading panicles and plump, gray kernels that have a few awns and a few basal hairs. It is resistant to certain crown rust races and to smut but has no stem rust resistance. It is somewhat tolerant to Victoria blight but is less resistant than Bronco to soilborne mosaic. Mustang was released in Texas in 1948.

Stanton.—Stanton is a tall, vigorous, moderately weak-strawed oat, with large, spreading panicles and plump, grayish-white kernels that are usually awnless and lack hairs. It is resistant to some strains of crown rust but not to stem rust. It is susceptible to some races of smut and to Victoria blight. Stanton has many of the characters of Lee but is less hardy. It was released in 1941.

Support.—Support is a midtall to tall, stiff-strawed, late-maturing, vig-

orous growing oat. The kernels are gray and medium plump, and the straw is somewhat reddish in color. Support has no disease resistance. It was released in Oregon in 1931.

Tennex.—Tennex is a tall, weak-strawed oat, with large, spreading panicles and plump, red kernels. It is very similar to Fulwin and Forkeddeer in plant and kernel characters and in hardiness. Tennex was released in 1939.

Traveler.—Traveler is so variable that it is difficult to describe. It is a rather short, stiff-strawed oat, with rather large, spreading panicles. The kernels are usually gray and they vary in awning, hairiness, and kernel shape. Traveler has some resistance to crown rust and to smut, but it lacks stem rust resistance. It is moderately winter hardy and is grown to a limited extent in Oklahoma from both fall and spring seeding.

Wintok.—Wintok is a short, weak-strawed oat, with mid-sized panicles and medium-plump, gray kernels. In early growth the plants are decumbent and have hairy leaves. It is not resistant to the rusts or smuts. Wintok is the most winter-hardy oat grown on farms in the United States. It was released in Oklahoma in 1941.