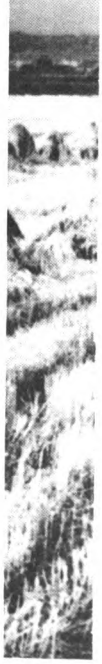
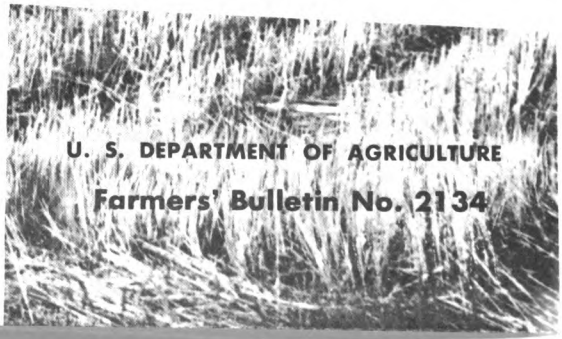
Culture of OATS in the Western States





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Culture of OATS in the Western States

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OAT AREAS

Oats are grown primarily to complete rotations and to meet food requirements for animals on farms. The high nutritive value of oats as food for dairy cows, sheep, horses, and young animals is fully appreciated by stockmen. In many sections of the West where little corn is produced, oats constitute one of the most important concentrate feeds for farm animals.

Oat straw is of considerable value for roughage and bedding and for litter for poultry. Fall-sown oats are an important pasture crop in many Texas and Oklahoma sections.

The western half of the United States produces slightly more than one-tenth of the national oat crop. In acreage, oats, however, rank next to wheat and equal to barley among the cereal crops grown in that region. Acreage of oats is increasing with the distribution of disease-resistant and stiffer strawed varieties. Oats are recommended also as one of the crops to supplant some of the wheat acreage.

The yields and grain quality of oats are fair to good in most western areas. The northern and central irrigated areas are especially favorable for this crop.

On the basis of topography, the western half of the United States that lies west of the 98th meridian may be divided into the Great Plains, the Rocky Mountain and intermountain, and the Pacific coast areas (fig. 1).

Several oat sections are recognized within each of these areas. Irrigation is practiced in parts of the areas. Certain sections of all areas grow red oat varieties almost exclusively. Spring oats are grown throughout the western region, but oats may also be fall-sown in the southern Great Plains and in the Pacific coast area.

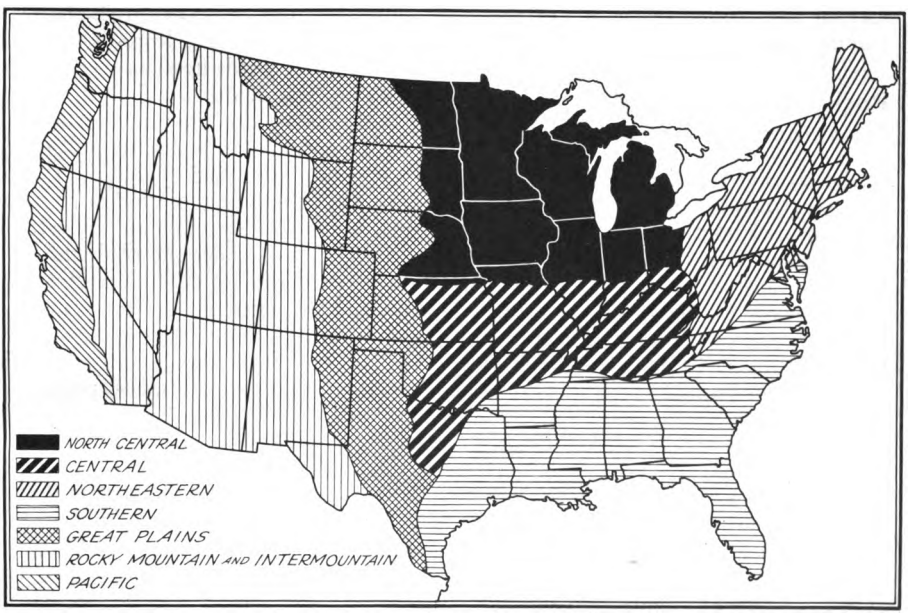

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Figure 1.—Topographical areas in the United States.

Great Plains Area

The Great Plains area comprises the western parts of North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and Texas, and the eastern sections of Montana, Wyoming, Colorado, and New Mexico. The altitude ranges from 1,500 to 5,000 feet. The topography is mostly slightly rolling.

The rigorous weather of the Great Plains fluctuates widely. Except in small areas where oats are irrigated, production of the crop is more or less hazardous and failures frequently occur. Oats produce higher yields in the northern part than in the hotter southern part of the area.

The rainfall averages less than 20 inches annually over the greater part of the Plains and varies widely from season to season. The time of year when rainfall occurs often is more important in determining oat yields in a particular year than is total precipitation.

Temperature in the Great Plains is also very important in influencing oat production. In the northern section frosts and even snowstorms occasionally occur early enough in the fall to damage oats before they are harvested. Hailstorms may cause damage in local areas. In the southern section hot winds occur frequently in summer and often injure oats.

Rocky Mountain and Intermountain Area

The Rocky Mountain and intermountain area includes the western parts of Montana, Wyoming, Colorado, New Mexico, and Texas; the whole of Idaho, Utah, Nevada, and Arizona; and the eastern parts of Washington, Oregon, and California. Because of the general mountainous character of this area, the agriculture is confined to the river valleys, benchlands, and plateaus. Oats are grown at elevations of 1,000 to 8,000 feet.

The annual rainfall is relatively low in most sections, and irrigation is used extensively where sufficient water is available. In many such sections, oats constitute an important crop. In general, oat yields per acre are higher in these irrigated sections than in most other parts of the United States. The quality of the oats is also excellent. Crops are grown without irrigation in sections with sufficient rainfall.

Pacific Coast Area

The Pacific coast area embraces a comparatively narrow strip along the Pacific Ocean, extending from the Olympic Peninsula to lower California. The Willamette Valley of Oregon is also included in this general area. The mild winters throughout this area permit the growing of fall-sown oats. Spring oats also are grown in the cooler sections. Precipitation is sufficient for crop production without irrigation except in parts of the southern half of California.

Total yields of oats in the Pacific coast area sometimes exceed the combined total production for the Rocky Mountain and intermountain area and the Great Plains. In the Puget Sound and Olympic sections of Washington, oats constitute the most important cereal crop. In certain parts of these sections yields frequently exceed 100 bushels per acre.

In California oats are grown principally in the central coastal district and in the Sacramento and San Joaquin Valleys. Owing to shattering of the crop in the great interior valleys, oats are less satisfactory there than under the cool and more moist conditions of the coastal sections. Hot and dry weather during the heading and ripening period frequently lowers yields. For this reason early-maturing varieties are grown in some sections.

SOIL TYPES

The tillable soils of the western half of the United States range from heavy clays to almost pure sands, but most soils are silt loams and clay loams that are adapted to the production of oats. In some irrigated spots the accumulation of soluble salts in the soil makes oat production difficult. The Great Plains soils usually are rather fertile and, except in the sandy areas, have a texture suitable for oat production. Oats are more tolerant of poor soil conditions than either wheat or bar-

ley, but successful production, especially in the Great Plains, depends largely upon the management of the soils to conserve and store moisture.

Most alluvial river valley soils in the Rocky Mountain and intermountain area are well adapted to oats. The soils of river benchlands and uplands of this area are mostly silt or very fine sandy loams. These soils also produce excellent crops of oats when sufficient moisture is available either through rainfall or irrigation.

The silt and clay loams of the Pacific coast area are capable of producing excellent crops of oats.

MANURE AND FERTILIZER APPLICATIONS

In general, the arable soils of the Great Plains have decreased only slightly in productivity since they were brought under cultivation between 1880 and 1920. The light yields of crops frequently obtained do not draw heavily upon soil fertility. Although organic matter has decreased and less nitrogen is available, a considerable quantity of readily available plant food usually is present in the soils of the Plains.

Commercial fertilizers are seldom used on dry lands in the Great Plains, except in the extreme eastern areas. Fertilizers do not regularly give a paying response with oats in average or dry seasons. Even barnyard manure seldom provides an increase in yields to justify the expense of applying it. Heavy applications of manure or nitrogen fertilizer are likely to cause such an extensive early growth in oats that loss will result from "firing" of the crop later in the season when the soil moisture is exhausted. If soil moisture is abundant, the crop may lodge.

In the Rocky Mountain and intermountain area, as in the Great Plains area, little commercial fertilizer is used on oats. Dryland farmers apply barnyard manure sparingly, because little is available.

Farmers obtain satisfactory responses, however, from the application of barnyard manure and commercial fertilizers to irrigated lands. But, usually, such applications are made for other crops in the rotation, such as potatoes or sugar beets. Oats then benefit from the residual effects. On rich lands under irrigation, oats tend to make a rank growth and may lodge. It seldom is advisable to apply manure or nitrogen fertilizer directly to oats even when the new stiff-strawed varieties are grown, although there is less damage from lodging than formerly.

Commercial fertilizers are often profitable in the humid sections of the Pacific area that have been farmed for many years. There, barnyard manure applied to some other crop in the rotation, such as corn or potatoes, often increases yields of oats that follow. However, commercial fertilizers in this area should be applied only when there is some assurance of a return on the investment. Where commercial fertilizers give a satisfactory response, applications of 150 to 200 pounds per acre of superphosphate (acid phosphate) are given. Nitrogen applications also help under some conditions, especially on lands in California. Most soils of the West contain ample potash.

ROTATIONS

As cropping systems differ greatly in different sections, you should consult your county agent or State experiment station on the best system to use.

Dryland Sections

Dryland farming prevails in the Great Plains area and on benchlands and plateaus in the Rocky Mountain and intermountain area. The alternate crop and fallow system of dry farming is followed largely in the drier parts of the intermountain area and the western part of the Great Plains. The tillage methods practiced keep the soil surface roughened and maintain crop residues at the surface to check wind erosion and water runoff. In sections having more rainfall the land is fallowed only occasionally. Oats must be sown early in the spring for good yields. Thus, they are usually sown on fallow of the dry lands of the intermountain area or

follow an intertilled crop that leaves the soil in condition to be prepared quickly for spring seeding.

As in sections farther east, oats produce more when grown after corn than after any other crop. A popular rotation in the northern Great Plains is corn and small grains in alternate years. This rotation probably gives the greatest return for the least expenditure of labor of any followed in this area. Wheat also may follow oats in a 3-year rotation of corn, oats, and wheat. Oats often follow wheat as an interruption of continuous wheat culture. Next to cornland, wheat stubble land, especially when double-disked, is one of the best preparations for oats in the Great Plains.

In the southern Great Plains grain sorghum largely replaces corn. Some oats are grown in rotation with cotton in western Oklahoma and Texas.

In some sections of the Great Plains oats are used as a companion crop for sweetclover, alfalfa, crested wheatgrass, or bromegrass sown in the spring. The oats are harvested early enough to permit the sweetclover, alfalfa, or grass to make a fair growth in late summer and early fall.

Irrigated Sections

In irrigated sections the small grains often are the easiest crop to grow immediately after clearing and leveling new land. Thereafter, cereals, as a rule, are the least profitable crops to grow on well-leveled, highly productive, irrigated land, and oats are less profitable than wheat.

Rotations often used in irrigated sections in Colorado and Idaho include the following: Alfalfa, 3 years or more; sugar beets or potatoes, 2 or 3 years; and cereal crops, 2 or 3 years, the cereal being used as a companion crop for alfalfa in the last year. In other rotations, clover instead of alfalfa is grown for 2 years, sugar beets or potatoes for 2 years, and a cereal crop for 1 year. The land is then cropped to clover again. In Utah and Montana a cereal crop often is used to follow alfalfa in the rotation.

For information on irrigation of oats and other small grains, including directions on time to irrigate and the quantity of water to apply, consult your county agent or your State agricultural experiment station.

Humid Sections

In the Pacific coast area, crop production is highly diversified. Oats occupy about the same position in the rotation as in the humid Eastern States, where they frequently are grown as a companion crop after row crops and before clover. A common rotation for the Pacific coast area is a row crop, such as corn, followed by oats and clover, each for 1 year. Where vegetables are grown for the production of seed or where other special row crops are produced, oats frequently are used as a companion crop for a seeding of clover.

A preceding crop has less influence on oats than on wheat or barley. For this reason, most rotations are arranged to meet the special requirements of other crops, oats usually occupying the less favored position. The adaptability of oats allows this crop to work well in almost any rotation.

In the central valleys of California, oats for grain usually are included in rotations with wheat and barley for the control of root rot.

SEEDBED PREPARATION

Dryland Sections

In dryland sections corn or sorghum stubble leaves the soil in comparatively good physical condition to be prepared for oats with a minimum of tillage. As the soil has been clean-cultivated during the previous year, it usually is less infested with weed seed than if it had been cropped to small grain.

A one-way plow with a packer attached usually provides a good seedbed for oats on corn or sorghum ground or small-grain stubble (fig. 2).

The best seedbed for oats has only 3 or 4 inches of loose, friable soil on the surface and a firm bed beneath. Double disking usually provides this condition. After disking, the land can be smoothed by a

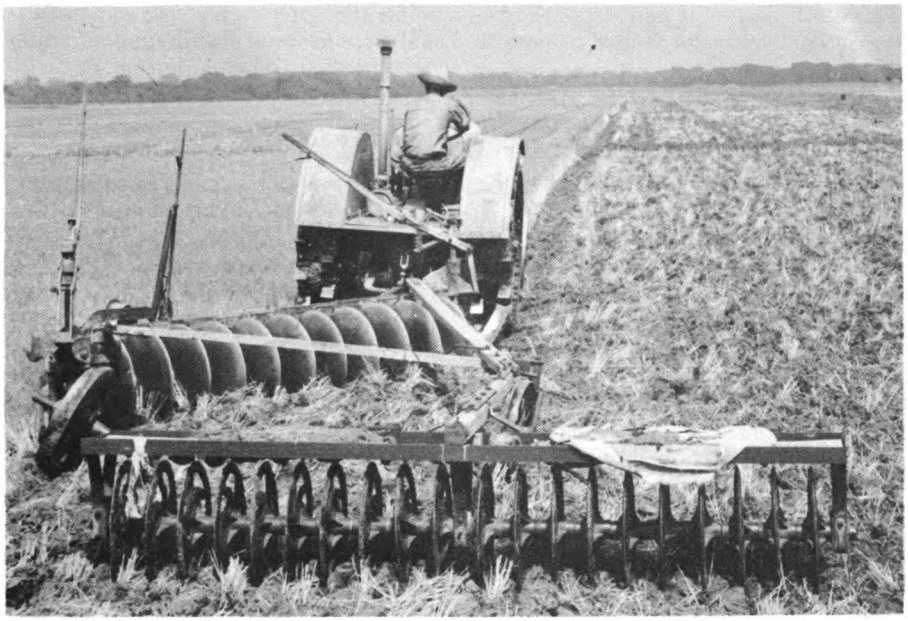

Figure 2.—Preparing a seedbed for oats with a one-way plow and packer in western Kansas. (Courtesy of the Fort Hays Branch Experiment Station, Hays, Kans.)

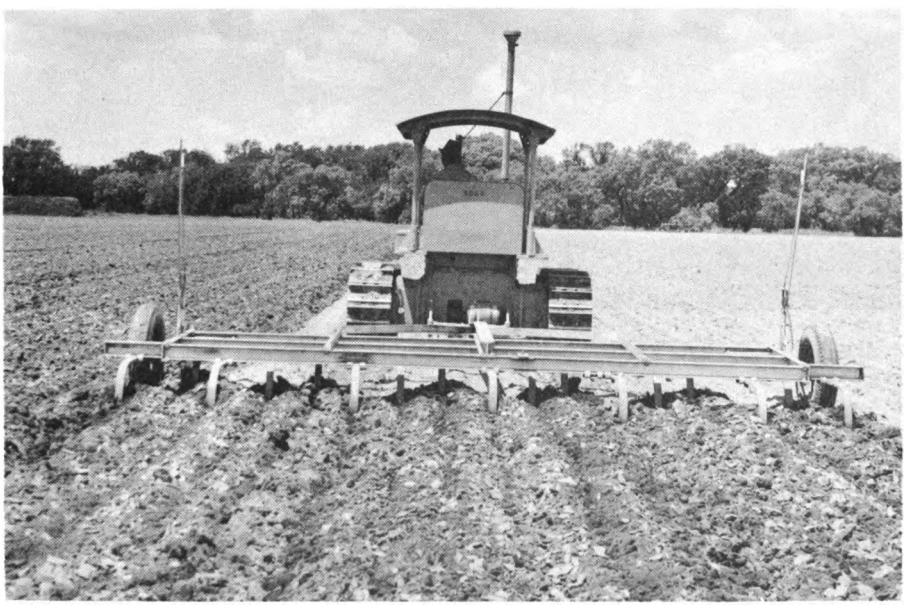

Figure 3.—Preparing seedbed for oats on dry land with a field cultivator in western Kansas. (Courtesy of the Fort Hays Branch Experiment Station, Hays, Kans.)

spike-tooth harrow if necessary. Sometimes a field cultivator is used to prepare the seedbed (fig. 3).

Spring plowing of land for oats may result in increased yields, but the increase is not enough to offset the extra cost of plowing and the loss from probable delayed seeding.

Irrigated Sections

To obtain a good seedbed for oats on irrigated land previously cropped and comparatively level, the land should be either fall-plowed and left rough over winter or spring-plowed, then disked and harrowed. Usually it is well to level irrigated land with a float each season to distribute the water evenly. Leveling of the land permits even distribution of water without danger of washing (fig. 4).

Humid Sections

In the Pacific coast area seedbed preparation is similar to that followed in the North Central and Northeastern States, but most of the oats along the Pacific coast are sown in the fall. Where oats follow corn, potatoes, or some special row crop such as vegetables for seed production, disking provides a satisfactory seedbed. Where oats follow wheat or barley, as oats generally do in California, plowing is usually necessary.

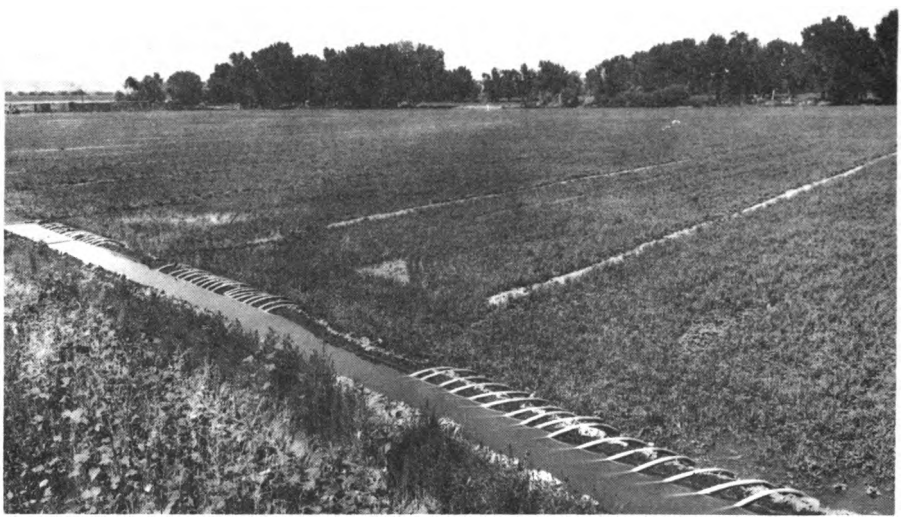

Figure 4.—One method used in irrigating small grain crops in the Western States.

PREPARING THE SEED FOR SOWING

Cleaning the Seed

Oats are easier to thresh than is wheat or barley. Threshed oats, however, often contain considerable trash and weed seed that should be screened out of seed oats. Grading seed oats to the point where only the larger and plumper kernels remain is not necessary.

Seed Treatment[1]

Before sowing oats, you should treat the seed with a good seed disinfectant. This treatment controls infection by smuts and certain other seedborne diseases. You

[1] Prepared by R. W. Leukel, Crops Research Division, Agricultural Research Service.

can apply the fungicides as slurries, dusts, or liquids, in that order.

Dust or slurry treatments

A number of mercurial fungicides are effective in treating oat seed. You can apply one of these fungicides in dust form in a barrel or oil-drum treater, or as a souplike slurry if the material is mixed with water. The slurry form of treatment is generally preferable, because it avoids the discomfort and health hazard caused by the dry chemical dusts in the air. Examples of such fungicides are: Ceresan M, Agrox, and Puraseed. Apply fungicides at the rate of about one-half ounce per bushel a day or two before sowing. Follow the detailed directions given on the containers. If treating equipment is not available, apply these materials as slurries in a barrel or oil-drum churn or with a sprinkling can.

CAUTION

Mercury fungicides are poisonous; avoid breathing the dusts or their fumes, and avoid having the chemicals come in contact with the skin, especially if the skin is moist, as blisters will result. Treat the grain in a well-ventilated place—never in a closed room. If the fungicides are applied as dusts, wear a dust mask that covers the nose and mouth. Roll the sleeves down and protect hands and wrists with gloves. Do not use treated seed for feed or food.

Liquid treatments

In past years the best known and most commonly used liquid seed treatment for oats was formaldehyde. Mercurial fungicides have replaced formaldehyde to a great extent. If properly applied, formaldehyde is effective and cheap, but it frequently causes seed injury. You can apply this fungicide by the spray, sprinkle, or dip methods.

The spray method.—Mix 1 pint of commercial formaldehyde with 1 pint of water. Spray this quart of mixture on 50 bushels of seed as it is being shoveled over on a clean floor. Cover the treated seed with clean or disinfected canvas or blankets for 4 to 8 hours. Sow it immediately or, before storing it, run it through a fanning mill or aerate it by shoveling it over.

The sprinkle method.—Mix 1 pint of commercial formaldehyde with 10 to 30 gallons of water and sprinkle this uniformly over 50 bushels of seed, spread in a thin layer on a clean floor or canvas. Shovel the seed over until it is uniformly moist, then leave it 4 hours or overnight in a pile, covered with canvas or blankets. Sow the seed immediately or, if sowing is delayed, spread out the seed to dry and sow as soon as possible to avoid severe injury. Do not allow the wet seed to freeze. Increase the seeding rate about one-fourth if the seed is moist.

The dip method.—Mix 1 pint of commercial formaldehyde with 40 gallons of water at about 60° to 70° F. Dip burlap sacks, loosely filled with seed, in this solution until the seed is thoroughly wet. Then drain, dry 2 hours, and sow at once. If sowing is delayed, spread out the seed to dry and sow it as soon as possible. This treatment causes injury if seed is held too long after treatment or if it is sown in dry soil. If grain is moist, increase the seeding rate about one-fourth.

The liquid mercurials have several advantages over the mercurial dusts and slurries. You can apply the mercurials in commercial treaters, in barrel or oil-drum treaters, or by sprinkling the liquid fungicide over the seed on a clean floor and shoveling the seed. Although the liquid mercurials present no dust hazard, avoid breathing in the fumes, for these fungicides are volatile. Apply the fungicide at the rate of about one-half ounce per bushel. Examples of these mercurials are: Chipcote, Ceresan 75, Panogen 15, Mema, Setrete, and Velsicol. Complete directions for applying them are given on the containers.

Failure to mention any effective fungicide now on the market is not to be interpreted as any reflection on its utility. The Department does not guarantee nor warrant the standard of the fungicides listed.

SEEDING OATS

Most oats are sown with a drill. However, some are still broadcast on cornland, in order to save time. After broadcasting the seed the ground is disked or harrowed. Drilling requires more labor than does broadcasting, but drilling distributes the seed more uniformly and places it at a uniform depth in moist soil where conditions are favorable for germination. The placing of the seed in moist earth is more necessary in dryland sections than where rainfall or irrigation will wet the soil within a few days after seeding.

Sowing oats with gang drills equipped with large packer wheels on the dry lands of the Great Plains area is shown in figure 5.

Heavier than usual rates of seeding are desirable (1) when the seed is broadcast; (2) when seeding is late; (3) when seeding is done on weedy land or on a poorly prepared seedbed; or (4) when the crop is intended for pasture or hay. Tillering is heaviest where stands are thin, and tillering offsets the effects of much of the variation in stands that may occur.

In the Great Plains seeding rates range from 4 to 8 pecks (32 to 64 pounds) per acre, with 5 or 6 pecks (40 to 80 pounds) as the average rate.

The seeding rate for oats in the Rocky Mountain and intermountain area (irrigated and humid sections) ranges from 6 to 12 pecks (48 to 96 pounds) per acre. The average rate is 10 pecks (80 pounds). When oats are used as a companion crop for alfalfa or clover, the seeding rate ordinarily is reduced by at least one-fourth.

In the Pacific coast area the usual rates of seeding are from 10 to 12 pecks per acre, although under the very favorable conditions for oats in western Washington and Oregon, they are sometimes sown at rates of 14 or even 16 pecks per acre. In California the best rate for red oats is about 10 pecks.

Oats are seeded as early in the spring as the ground is in condition to be prepared satisfactorily. In most seasons yields become progressively lower as time of seeding is delayed. Although there is little advantage from seeding before very

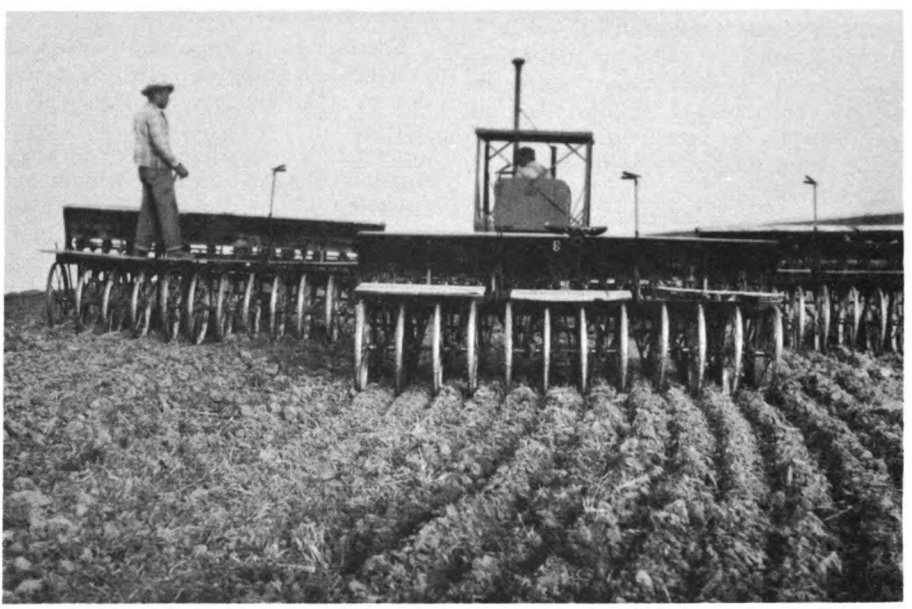

Figure 5.—Gang drills with large packer wheels are frequently used for sowing oats on the dry lands of the Great Plains area. (Courtesy of the Fort Hays Branch Experiment Station, Hays, Kans.)

cold weather is over, oats seldom suffer even from near zero temperatures after they are sown. In most high altitude districts the growing season is short, and early fall frosts may endanger the grain if it is sown too late.

In the Great Plains area seeding usually is done during February in Texas and Oklahoma; during March in Kansas, Nebraska, and South Dakota; and in April or early May in Montana, North Dakota, and Wyoming.

In western Oregon and Washington, winter oats are sown in October and spring oats from February to early April. In California, oats are sown from October 15 to February 15, but best results usually are obtained by seeding in November. If sown later, the crop will have less opportunity to escape heat and drought during the ripening period. Also, considerable loss may result from shattering, especially in the central valleys of California.

Fields of winter oats occasionally benefit from rolling the lands in the spring after considerable heaving has occurred.

WEEDING

In oatfields large, scattered weeds sometimes are pulled by hand or cut with a hoe or corn knife to prevent the weeds from producing seed or interfering with harvesting operations. Spraying to kill weeds in oats is becoming a common practice. Usually amine salts of 2,4-D gives the best results.

Spraying for weed control in oats generally is most effective and least injurious to the crop if spraying is done when the oat plants are from 6 to 8 inches high. Do not use 2,4-D sprays when oats are grown as a companion crop with clover or alfalfa. For more complete information on spraying to control weeds in oats and other grains, consult your county agent or State agricultural experiment station.

HARVESTING THE CROP

Cutting and Shocking

In the Great Plains much of the oat acreage is harvested with the combine, either directly or after windrowing. In irrigated areas, where dikes, ditches, and small fields interfere with the operation of larger machines, the small combine with a 5-foot to 6-foot cut is used.

When the combine is used, allow the grain to stand until ripe and dry enough to store, containing not more than 14 percent moisture (fig. 6). If grain is fully ripe and dry, no loss from heating or from molding in the bin can occur. If the grain is damp after being harvested with a combine, spread it out to dry. It is common practice in the Great Plains area to spread damp, combined grain on the ground in the open without any protective covering. Such grain usually dries with very little loss.

It is common practice in many areas to cut and windrow oats preparatory to combining. This practice is especially advantageous if the field is weedy. A large number of green weeds in a field will seriously hamper the efficient operation of the combine, and their presence adds moisture to the threshed grain. Windrow with a swather or with a binder from which the binding mechanism and bundle carrier are removed; or cut with a mower and then rake into windrows with a side-delivery rake if the soil is stone-free. After the oats, including the weeds, are sufficiently dry, use a combine with a pickup attachment to thresh the crop. In California, windrowing often prevents shattering, which frequently results if grain becomes too ripe.

If the oat straw is not needed for feed or bedding, use a spreader attachment on the rear of the combine to scatter the straw as it comes from the machine. If the straw is to be saved, leave the straw in a swath to be picked up by a mechanical hayloader or field baler. In many fields the straw is baled immediately after combining.

Considerable acreages of oats grown under irrigation and some in certain other areas are still cut with the binder in order to save the straw for feed or bedding.

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Figure 6.—Harvesting oats with a combine in Idaho.

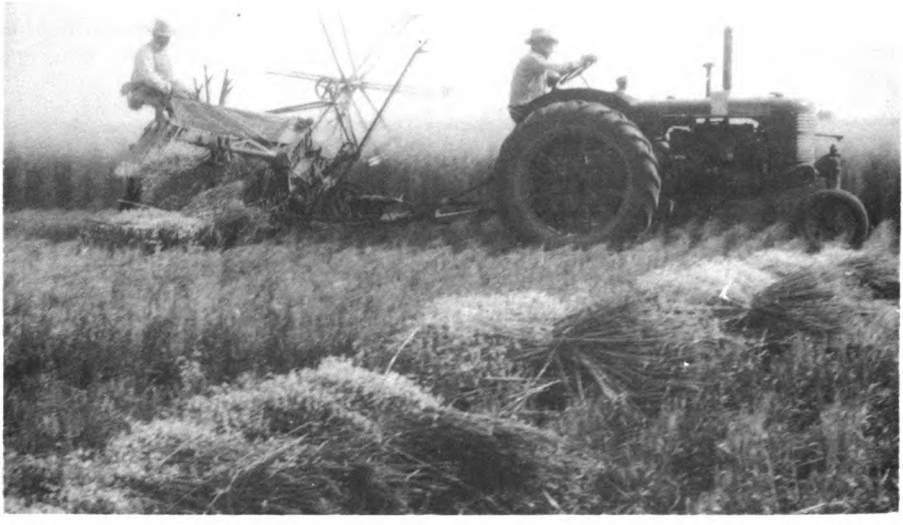

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Figure 7.—Harvesting oats with a grain binder in Idaho. This method is frequently preferable where small fields of oats are grown under irrigation.

The crop is ready for harvesting with the binder after the oat kernels in the upper part of the panicle have passed the hard-dough stage. Cutting when the oats are still green reduces the grain yield, but the straw and grain are then more palatable for feeding in the bundle. Oats grown in the high altitude areas often are fed in the bundle or are cut for hay. Harvesting oats with a grain binder is shown in figure 7.

The dry atmosphere prevailing in the western half of the United States during summer dries the grain in the shock very quickly. Round, uncapped shocks are satisfactory and are less likely to blow down than are long shocks or capped shocks. In some irrigated fields where the soil is dry and danger from rain is slight, the oat bundles are left on the ground without shocking until hauled to the threshing machine.

Lodged oats are gathered most effectively with lifters on the cutter bar of the binder or with a pickup reel on a combine.

Stacking

Oats seldom are stacked in the western region except in an occasional irrigated field in which a legume was sown with the oats. In this instance, the bundles are removed to prevent damage to the growing legume or in order to irrigate the field immediately after oat harvest.

Build the stacks on well-drained or elevated sites. If the stack is built in a field that is to be flooded, build a platform of straw, posts, or poles to keep stack bottom from contact with the ground. Do not stack bundles while damp or wet, as heating and damage from stack burn may result.

Threshing From the Shock or Stack

Do not thresh oats unless they are thoroughly dry (figs. 8 and 9). Damp grain is difficult to thresh, and the threshed grain may heat or mold in storage.

If you thoroughly clean the combine or threshing machine before starting, you may check the spread of such noxious weeds as fanweed, dodder, morning-glory, and Canada thistle, or of smut.

Oat straw is superior to that of all other cereals as roughage for livestock. It is customary to save oat straw for feeding or

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Figure 8.—Threshing Bannock oats grown under irrigation in southern Idaho.

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Figure 9.—Threshing shocked oats from a field in Skagit County, Wash., where the yield was 149 bushels per acre.

bedding. If space is available, store the straw under cover at threshing time. If the straw is stored outside, stack it carefully to avoid weather damage.

OATS FOR HAY

A considerable acreage of oats is cut for hay in the western half of the United States, especially in the Pacific coast and Rocky Mountain areas, where the oats produce heavy hay yields. In unfavorable seasons or when prices drop, oats sown for grain are often cut for hay. When grown especially for hay, oats frequently are sown in combination with field peas, common vetch, or Hungarian vetch. Oats intended for hay are cut in the soft-dough stage. When cut at this stage and properly cured, oats make a very palatable and highly nutritious hay that is relished by all classes of livestock. The addition of peas or vetch usually increases the yield of hay and improves its nutritive quality.

When oats are grown as a companion crop with clover or alfalfa, the oats are cut high, so as to leave a maximum growth of the legume.

Cultural methods for growing oat hay are similar to those described for grain production. When sown in combination with peas, a common proportion is 40 to 48 pounds (5 to 6 pecks) of oats and 60 to 80 pounds (4 to 6 pecks) of peas. Sow the mixture at the rate of 10 to 12 pecks to the acre. For the oats-vetch mixture, the proportion is 48 to 64 pounds (6 to 8 pecks) of oats and 60 pounds of common or Hungarian vetch.

Hay from oats alone or from oats grown in combination with other crops is cut and cured similarly to other hay. Curing in the windrow is a common practice.

The varieties of oats commonly grown for grain in most sections are the most satisfactory for hay. In sections where both the short-strawed early and the taller mid-season varieties are grown, the taller varieties are preferable, because of the heavier yield of forage.

In California about three-fourths of the acreage of cultivated oats is harvested for hay. In addition, about 40,000 acres of wild oats *(Avena fatua)*, mostly in the interior valleys of that State, are cut each year for hay.

The slender oat *(A. barbata)* grows rather profusely as a wild grass in late winter and early spring on the foothills of California. This oat provides extensive and valuable grazing herbage for domestic animals.

The sand oat *(A. strigosa)* also grows wild in California, but its importance for grazing is almost negligible as compared with that of the slender oat. The slender and the sand oats occupy about 10 million acres of foothill land. The oats constitute perhaps one-fourth of the total forage from the foothill areas.

OATS FOR SILAGE

Oats, sown in mixture with some legume crop such as vetch, are being used extensively for silage. Frequently such use is more profitable than when the oats are combined for grain. Oat silage is an excellent feed for cattle, especially dairy cows. A special advantage of oat silage is that it is available much earlier in the season than is corn or sorghum silage. Thus, oat silage provides supplemental feed during the late summer months when pasture often is short.

The most favorable stage for cutting oats for silage is when the kernels are in the soft-dough stage and most of the leaves are still on the stalk. Oats cut for silage removes the crop about 2 weeks earlier than oats cut for grain. The earlier date enables the clover or alfalfa sown with the oats to make a more rapid growth before hot weather arrives. The better stand and growth of the legume provide additional grazing and may permit cutting of a hay crop the first season. Oats for silage are cut with a forage harvester. When oats are used as a companion crop to clover or alfalfa, oats are cut high.

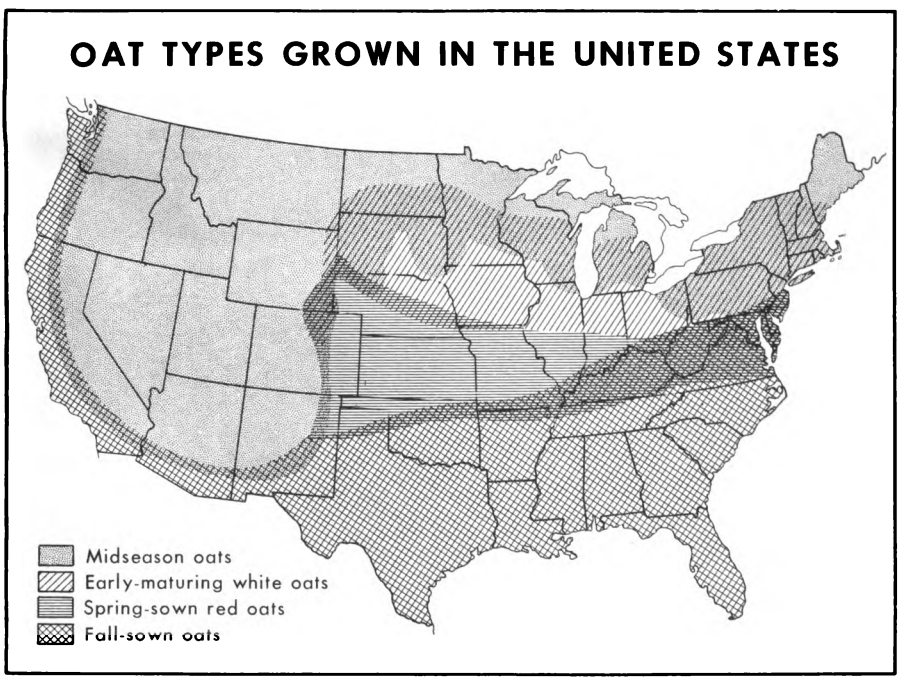

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Figure 10.—General oat areas of the United States: In the southern and Pacific coast areas the crop is grown from both fall and spring seeding; in all other areas the crop is grown from spring seeding only.

VARIETIES GROWN

Climatic and crop conditions in Western United States differ so greatly that almost all oat varieties grown in the United States are adapted to one or more sections in the West. As a result, oats grown differ widely as to type. The general areas of adaptation of different varietal types of oats are shown in figure 10. The different varieties are grouped according to general types and those available in 1958 are listed below. As varieties recommended differ from year to year as new ones become available, you should check frequently with your county agricultural adviser or your State experiment station as to the best variety for your area.

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

Early-maturing white oats:
- Andrew
- Carleton
- Clinton
- Gopher
- Marion
- Minhafer
- Palomino
- Vikota
- Waubay
- Winema

Early-maturing red oats:
- Alamo
- Brunker
- Cherokee
- Dupree
- Fulghum
- Fulton
- Indio
- Kanota
- Mo. 0–205
- Nemaha
- Neosho
- Osage
- Otoe
- Palestine
- Trojan
- Ventura

Midseason red oats:
- California Red
- Coast Black
- Ferguson 922
- New Nortex
- Texas Red

Winter oats:
- Bronco
- Cimarron
- Crater
- DeSoto
- Forkedeer
- Fultex
- Fulwin
- Gray Winter (Winter Turf)
- Lee
- Mustang
- Tennex
- Wintok

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