

# 4-H Small Grains Manual

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Extension Service  
Shawnee Brown, Director  
Oklahoma A. & M. College  
Stillwater

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# ***4-H Small Grains Manual***

by  
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Extension Agronomist

This circular is designed to help you, as a 4-H Club member, conduct a successful 4-H small grain project. Each year, 4,000 Oklahoma club members enroll in this project, making it one of the most popular in the state. The small grain project includes wheat, oats, barley, and rye.

The purpose of the 4-H small grain project is to help you learn the best methods in small grain production. By participating in this project, you gain practical experience in seedbed preparation, planting, and harvesting small grain crops.

You are encouraged to enroll in the 4-H small grain project each year for a period of several years in order to become more familiar with the various phases of small grain farming.

## **General Requirements**

- A. Boys between the ages of 10 and 21 are eligible to enroll in the 4-H small grain club.
- B. In becoming a member of the 4-H small grain club, you agree to:
  - Obtain parents' consent to use land suitable for small grain production.
  - Plant pure seed of an adapted variety. Obtain registered or certified seed if possible.
  - Plant a minimum of five acres of wheat, oats, barley, or rye. A larger acreage may be planted if desired.
  - Keep a complete record of all items of expense in connection with growing the small grain crop and make a report to the county agent at the completion of the year's work.

- Select one peck of grain to be exhibited at the community, county, or state fair.

## **The Small Grain Exhibit**

An exhibit of your grain at the county fair is the final step toward completion of the small grain project. One peck of grain is required for this exhibit. The sample should be carefully selected and thoroughly cleaned. If your grain is selected as one of the top five in its class at the county fair, it is eligible for entry at one of the state fairs. The following suggestions will help you select and prepare your small grain exhibit:

- Select samples with large, plump kernels of uniform size. The preferred color for wheat is dark red with bright luster. Bright color in oats and barley indicates high quality and freedom from heat or weather damage.
- Eliminate any mixtures of other varieties or other crops in the sample. Mixtures of rye or vetch are particularly objectionable in wheat.
- Avoid mixtures of weed seeds, such as Cheat, Johnson grass or Bindweed.
- Carefully clean the sample to eliminate any insect damage, cracked kernels or other foreign material.

## **Wheat**

Oklahoma is one of the leading wheat producing states in the nation. The state ranks second in the production of hard red winter wheat and third in total wheat production. Hard red winter wheat occupies more than 95 percent of the annual wheat acreage in the state. Soft red winter wheat, comprising less than 5 percent of the annual acreage, is grown mainly in the northeastern counties.

### **Soil Adaptation**

Wheat will grow on a wide range of soil types, but well drained loam, silt loam, and clay loam soils are generally considered best adapted for wheat production. Deep sandy soils, such as are found along the river valleys and in certain other areas, usually do not produce satisfactory yields of high-quality wheat. These soils are better adapted to the production of sorghums and rye. Wheat tends to lodge when planted on fertile bottom land in central and eastern Oklahoma. On such soils, corn or alfalfa will usually be more profitable.



Fertilizers, properly used, will increase the yield and improve the quality of wheat. Fertilizers, applied on the basis of soil tests, increased the yield of wheat from 11.5 bushels to 19.4 bushels per acre. B. B. Jones' farm, Logan county, 1953.

#### **Fertilizers for Wheat**

Fertilizers, properly used, will increase the yield and improve the quality of wheat on many of the soils where wheat is grown in Oklahoma. Phosphorus stimulates early fall growth, increases root development, and reduces the danger of winterkilling. Nitrogen stimulates plant growth and increases the protein content of the grain.

The selection of a fertilizer will depend upon which of the elements needed by the wheat plants are lacking in the soil. It is best to have the soil tested to determine the kind and amount of fertilizer which should be used.

#### **Seedbed Preparation**

A good seedbed for wheat has a firm, granular surface. It is also free from weeds and well supplied with moisture and plant nutrients.

Early plowing to destroy weed growth and loosen the soil for the absorption of moisture is very essential in seedbed preparation. Weeds, if allowed to grow during the summer, take moisture and plant nutrients from the soil. Late plowing will usually result in a loose, open, dry soil in which conditions are unfavorable for seed germination and plant growth. Early plowing will also provide more time for the

decay of organic matter, thus increasing the quantities of available nitrogen, phosphorus, and other plant nutrients in the soil at seeding time. Land for wheat should be plowed in late June or early July. If a spring crop such as small grain is grown on the land, plowing can usually be done as soon as the crop is harvested.

The practice of plowing or otherwise tilling the land immediately after harvest is followed by nearly all farmers in western Oklahoma. Many farmers in the eastern section also practice early tillage for wheat and other fall-planted crops. In experimental tests, early plowing has given large increases in wheat yields. At Stillwater, land plowed July 15 averaged 27.1 bushels per acre. Land plowed August 15 averaged 24.2 bushels per acre. When plowing was delayed to September 15 the average was only 22 bushels per acre. Similar results have been obtained at Woodward, Lawton, Granite, and Enid.

In tests conducted by the Oklahoma Experiment Station, the mold-board plow, the one-way, and the subsurface tiller have given similar results when plowing is done at the same time and the implements are operated at approximately the same depth. Plowing with a mold-board plow has usually given slightly higher yields than the one-way, particularly in seasons favorable for wheat, but the average differences over a period of several years have been very small.

During the summer and early fall, a field cultivator or some other suitable implement should be used as often as necessary to destroy weed growth, break crusts, and keep the soil in condition to absorb moisture.

### **Time of Seeding**

The usual time for seeding wheat in most of the hard red winter wheat area of Oklahoma is September 15 to October 15. The best time is about October 1. Slightly earlier seeding may be advisable when wheat is planted on land where soil blowing is a serious problem. Earlier seeding is also desirable when the wheat is to be used for fall and winter pasture.

At Woodward, highest yields of wheat have been obtained from October 1 seedings. The average annual yield from seedings made on this date is 1.8 bushels more than the September 15 average, and one bushel more than the yield from October 15 seedings. The average yield from November 1 seedings was 4.6 bushels less than the October 1 seedings.

The best time for seeding wheat in the Panhandle is about September 15, although slightly earlier seeding is practiced in seasons when moisture conditions are favorable.

In areas where wheat is likely to be damaged by Hessian fly, seeding is usually delayed until after the fall brood of insects has disappeared. This will be about October 10 for north central Oklahoma and October 16 for the northeastern section.

#### **Rate of Seeding**

The rate of seeding wheat in Oklahoma varies from 5 pecks per acre in the eastern section to about 2 pecks per acre in the Panhandle. Results of studies conducted at Woodward indicate that the proper rate of seeding in that area is about 3 pecks per acre.

In the central part of the state, where the average annual rainfall is somewhat higher, the rate of seeding should be increased to 4 pecks per acre.

#### **Wheat Variety Recommendations**

Wheat variety recommendations are based on yield per acre, resistance to disease and insect damages, strength of straw, milling and baking characteristics, and other factors which affect the desirability of a variety from the standpoint of the grower, the miller, and the baker. The following varieties are recommended for Oklahoma:

**Concho wheat—the highest yielding variety ever tested in Oklahoma.**

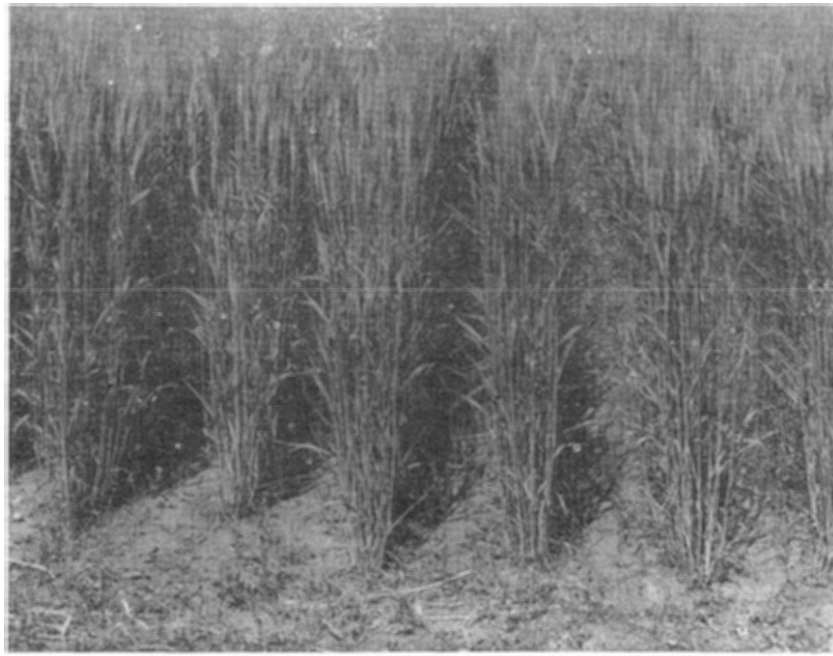


- A. Hard red winter wheat—  
Concho, Comanche, Westar, Ponca, Pawnee, Cheyenne, Triumph, and Wichita.
- B. Soft red winter wheat—  
Clarkan.

**Variety Descriptions**

**Concho**, a medium maturing, high-yielding variety of hard red winter wheat, was released by the Oklahoma Experiment Station in 1953. It has moderately stiff straw and bronze-colored glumes which are bearded. Concho is highly resistant to soil-borne mosaic and bunt or stinking smut. It is moderately resistant to leaf rust but is susceptible to stem rust and loose smut. It has satisfactory milling and baking characteristics. Concho is superior in yield and test weight to all other varieties of wheat now recommended in Oklahoma. It is adapted throughout the state.

**Comanche** is a bearded, mid-season, hard red winter wheat. It has fairly stiff straw and a good test weight. Comanche is highly resistant to soil-borne mosaic and bunt or stinking smut, but is susceptible to loose smut. The variety is also susceptible to leaf rust but is not seriously injured by stem rust. Comanche has excellent milling and baking



Comanche wheat—the standard of excellence for milling and baking quality.





**Westar wheat is highly resistant to some strains of leaf rust. It is well adapted to western Oklahoma.**

characteristics. It is adapted throughout Oklahoma and is especially recommended in the western part of the state.

**Westar**, a mid-season variety, has produced slightly higher yields than Comanche in western Oklahoma. It has moderately stiff straw and a good test weight. Westar is highly resistant to soil borne mosaic and some strains of leaf rust, but is susceptible to stem rust and the smuts. It produces acceptable bakery flour. Westar is especially well adapted in western Oklahoma.

**Ponca**, a medium-early variety, was released jointly by the Oklahoma and Kansas Experiment Stations in 1941. It has short, stiff straw, is non-shattering, and has a good test weight. Ponca has high resistance to Hessian fly injury. It is also highly resistant to leaf rust and to loose smut. The variety has some tolerance to bunt smut. It has good milling and baking characteristics. Ponca is slightly less winterhardy than Comanche and Concho. It is recommended in all of Oklahoma except the northwestern section, including the Panhandle.

**Cheyenne** is a late-maturing variety of hard red winter wheat. It has good straw, does not shatter easily, and is well suited for combine harvesting. Cheyenne has some resistance to Hessian fly injury, but is susceptible to both rusts and smuts. It produces fair yields and the flour has excellent baking characteristics. Cheyenne is grown to some

extent in the High Plains (Panhandle) of western Oklahoma.

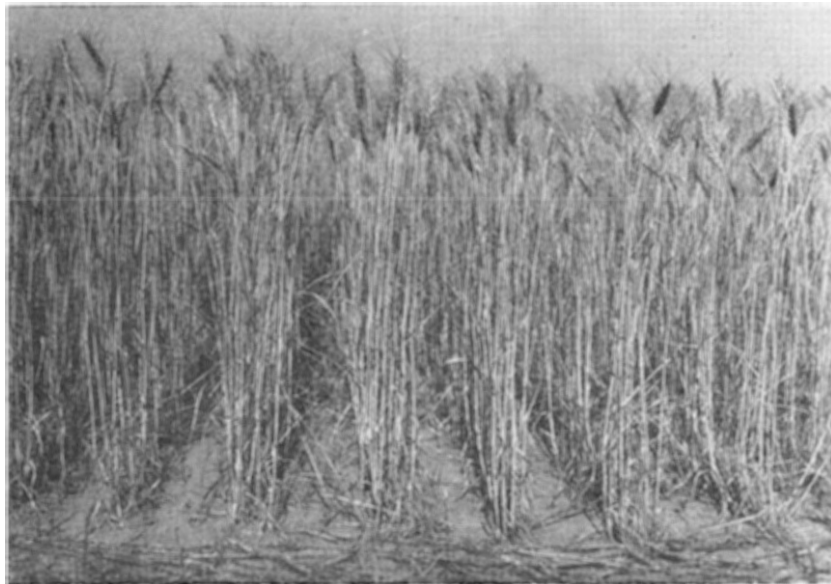
**Triumph** is an early-maturing variety with short, moderately stiff straw. It is very susceptible to soil borne mosaic, bunt smut and leaf rust, but sometimes escapes severe rust damage, due to its earliness. It has moderate resistance to loose smut. Flour made from Triumph wheat is good for home baking but is only fair to poor for commercial bakery uses. Triumph is recommended in eastern, central, and southwestern Oklahoma.

**Wichita**, an early-maturing variety, has produced good yields in northwestern Oklahoma, where it is well adapted. It has weak straw, especially when grown under humid conditions. Wichita is susceptible to the smuts and the rusts, and very susceptible to soil borne mosaic. It is similar to Triumph in milling and baking characteristics. Wichita is recommended in western and northwestern Oklahoma.

**Clarkan**, a soft red winter wheat, is beardless and has white glumes that sometimes develop faint black stripes. It is very susceptible to both loose and bunt smuts. It is also susceptible to leaf and stem rusts. Clarkan is the only variety of soft red winter wheat recommended in Oklahoma.

#### **Rotation Systems for Wheat**

Much of the land normally planted to wheat in central and eastern Oklahoma is rapidly becoming deficient in phosphorus, nitrogen, and  
**Wichita wheat, an early-maturing variety, is well adapted to northwestern Oklahoma.**





Superphosphate applied at the rate of 150 pounds per acre increased the yield of wheat from 15.2 bushels to 21.4 bushels per acre (10 year average).

organic matter. Adequate quantities of available phosphorus and nitrogen in the soil are necessary to produce good yields of high-quality wheat. Phosphorus can be supplied in the form of phosphate fertilizer, but legume rotations are needed to provide nitrogen and organic matter.

Sweet clover is the most important legume for soil improvement in Oklahoma, and rotations which include this legume should constitute the basis for maintaining soil fertility in the wheat-producing section of the state. Other legumes which can be used in rotations with wheat are alfalfa and Austrian winter peas. Korean lespedeza may be used in the eastern part of the state, but it is less desirable than sweet clover or alfalfa in a crop rotation to improve soil fertility.

#### **Diseases of Wheat**

The most important diseases of wheat in Oklahoma are leaf rust, stem rust or black stem rust, bunt or covered smut, loose smut, and foot rot or root rot.

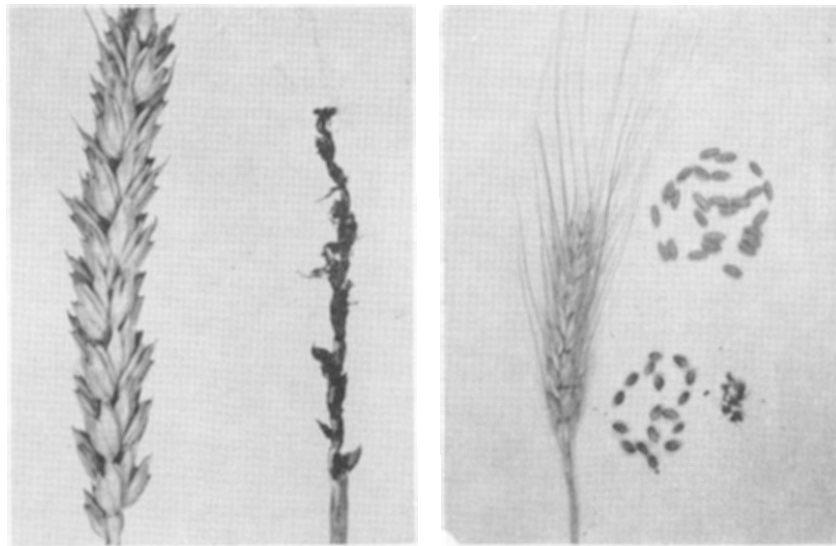
**Leaf rust**, also known as orange leaf rust, is the most destructive wheat disease in Oklahoma. It appears on the leaves in powdery masses of bright, orange-colored spores, after which the leaves may die. When severe attacks occur early in the season, the yield will usually be reduced and the grain may be light in weight.

**Stem rust**, also known as black stem rust, first appears in dark red masses of powdery spores, mainly on the stems of the wheat plants. The disease soon reaches the black-spore state, giving the stems a black and roughened appearance. Severe outbreaks of the disease result in shriveled kernels and greatly reduced yields.

Wheat rusts are not controlled by seed treatment. The only means of control is to plant resistant varieties where they are available. Concho and Ponca are highly resistant to leaf rusts. Westar and Comanche also have some resistance to this disease. Comanche is the only recommended variety which is not seriously injured by stem rust. Fortunately, stem rust does not often cause severe damage to the wheat crop in Oklahoma.

**Bunt**, also known as stinking or covered smut, is widespread in the wheat sections of Oklahoma and causes considerable damage in some years. It first becomes apparent just before harvest time. Instead of grain, the heads contain balls of smut which resemble grains of wheat in size, but are shorter and wider. The smut balls contain a black, foul-smelling powder, which consists of the spores of the fungus causing the disease.

Bunt can be controlled by treating wheat seed with Cerasan M or with Agrox at the rate of one-half ( $\frac{1}{2}$ ) ounce per bushel. The dust should be thoroughly mixed with the seed. Small lots of seed can be



**Loose smut of wheat cannot be effectively controlled by seed treatment. Obtain new, clean seed when this disease strikes.** **Bunt or stinking smut of wheat can be effectively controlled by seed treatment.**

dusted with a homemade treater. For dusting large quantities of seed, a commercial treater may be used.

Panagen has also given effective control of bunt. This chemical is in liquid form and must be applied with special seed treating equipment.

**Loose smut** in wheat is readily apparent at heading time. When plants are effected with the disease, the heads become dark-colored masses of powdery spores which soon blow away, leaving only the rachises or center stems in place of heads.

Since the loose smut fungus is on the inside of the seed, dusting with chemicals will not control the disease. It can be controlled only by using the hot water treatment. In most cases, it is best to purchase new, disease-free seed for planting, rather than undertaking to treat infected seed.

## Oats

Oats are grown in Oklahoma primarily as a feed grain for livestock. The crop is grown in every county, but the largest acreages are in the northeast, central, and southwestern parts of the state.

Oats may be divided into two general classes: (1) fall sown or winter oats, and (2) spring oats. Fall sown oats have certain advantages over spring oats. They serve as a winter cover crop and provide excellent pasture during the winter and early spring. Adapted varieties of winter oats usually produce higher yields of grain than spring sown varieties. Fall seeding is also important in areas where weather conditions are frequently unfavorable for spring seeding. Since new and improved varieties of winter oats are now available they are rapidly gaining in popularity.

### Soil Adaptation and Seedbed Preparation

Oats are best adapted on loam, silt loam, and clay loam soils. Coarse, sandy soils are not well suited for oat production.

Fall sown oats require the same seedbed preparation as wheat. A seedbed that is firm, free of weeds, and well supplied with moisture is essential for best results.

Fall plowing of the land in preparation for spring seeding of oats is desirable when this can be done without creating serious erosion hazards. If the crop is to be seeded on land where erosion is severe and if plowing cannot safely be done in the fall or late winter, the land may be plowed shallow or double disced before seeding in the spring.

### **Fertilizers for Oats**

Oats respond well to fertilizer treatments when soil and moisture conditions are favorable. Profitable increases in yields were obtained in 52 fertilizer demonstrations conducted throughout the oat section of Oklahoma in 1954. The fertilized plots averaged 72.9 bushels per acre while those receiving no fertilizer averaged only 42.3 bushels. This represents an increase of 30.6 bushels per acre.

Fertilizers are recommended when oats are planted on soils of medium to low fertility. The soil should be tested and fertilizer applied as needed to provide the plant nutrients required for high yields.

### **Seeding**

The best time for seeding winter oats is September 15 to October 15. Seeding should usually be done as soon after September 1 as soil and moisture conditions are favorable. The recommended rate of seeding is 1½ bushels per acre for Wintok and 2 bushels per acre for all other varieties of winter oats.

For spring oats, the usual seeding dates are February 1 to February 15 for the southern part of the state; February 10 to February 20 in



Forkeddeer, a leading variety of winter oats in Oklahoma, is adapted in the central and southern parts of the state.

the central section; and slightly later in the northern counties. The recommended rate of seeding spring oats is 2 bushels per acre.

### **Spring Seeding of Winter Oats**

In recent tests conducted by the Oklahoma Experiment Station, yields of certain varieties of winter oats seeded in January or early February have equalled or exceeded those of the better spring varieties seeded at any time. Of the winter varieties tested for spring planting, Cimarron, Forkedeer, Tennex, and Stanton have given the most satisfactory results. When winter varieties are seeded in the spring, seeding should be done not later than February 15.

### **Winter Oat Varieties**

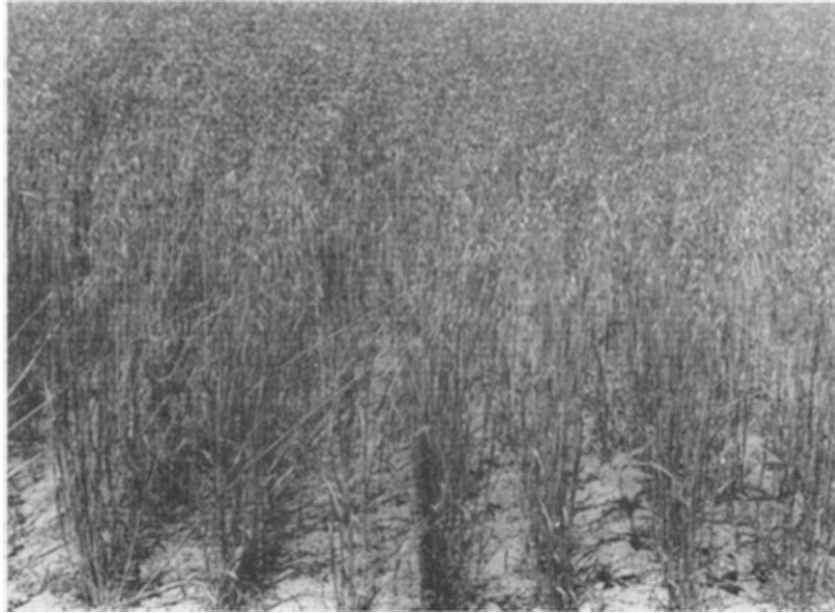
The varieties of winter oats recommended in Oklahoma are Cimarron, Forkedeer, Tennex, Traveler, Mustang, Stanton (strain 1), Wintok and DeSoto.

**Cimarron**, a new variety produced by the Oklahoma Agricultural Experiment Station, is adapted to either fall or spring seeding. It matures very early and is only slightly less winterhardy than Wintok. It produces comparatively high yields from both fall and spring seedings. In Experiment Station tests, fall seedings of Cimarron have out-yielded other good winter varieties at Stillwater, Cherokee, and Woodward. In similar tests, spring seedings of Cimarron have equalled or exceeded the better spring varieties in yield. The variety has short, stiff straw and is well adapted to combine harvesting. Cimarron is very susceptible to leaf rust and another foliar disease when grown under humid conditions. For this reason, it is recommended only in western and northwestern Oklahoma.

**Forkedeer** is a selection of Winter Fulghum. It is very uniform in appearance and is moderately winterhardy. Forkedeer is susceptible to the smuts and to the rusts, but is resistant to Victoria blight. It produces high yields of good-quality grain. Forkedeer is adapted in the central and southern parts of the state.

**Tennex** is a red winter oat, maturing in mid-season. It is slightly more winterhardy than Forkedeer. The variety is susceptible to the rusts and to the smuts but is resistant to Victoria blight. Tennex is recommended in the central and southern parts of the state.

**Traveler** was developed by the Arkansas Experiment Station. It is similar to Forkedeer in winterhardiness and has considerable resistance to leaf rust. Traveler is grown extensively in eastern and southwestern Oklahoma.



**Andrew** is a popular variety of spring oats. It has yellow-colored grain and a high test weight.

**Mustang**, a relatively new variety of winter oats, was developed in Texas. It has considerable resistance to several races of leaf rusts. It also has some tolerance to Victoria blight. Mustang is similar to Traveler in winterhardiness and is recommended in Oklahoma south of U. S. Highway 66.

**Stanton (Strain 1)** is slightly less winterhardy than Tennex. It is characterized by vigorous growth and heavy stooling. Stanton has relatively stiff straw and short, plump, yellowish-red kernels. It has some resistance to smut and rusts. Stanton is recommended in the southern part of the state.

**Wintok** is an early-maturing variety of winter oats. It is very winterhardy and the grain is high in feeding value. Wintok has weak straw and is very susceptible to both rusts and smut. Due to earliness, it sometimes escapes serious rust damage. Wintok is recommended in the northern part of the state.

**DeSoto** was developed by the Arkansas Experiment Station. It has short, moderately stiff straw. DeSoto is resistant to many races of crown rust and the oat smuts. It has been relatively free from Victoria blight in the areas where it is grown. DeSoto is somewhat less winter-



hardy than the other winter oat varieties grown in Oklahoma. It is recommended only in the southeastern part of the state.

**Arkwin** was developed in Arkansas. In appearance, winterhardiness and grain yield, it is similar to Traveler. It produces an upright growth and is becoming popular as a pasture variety. Arkwin is being tested by the Oklahoma Experiment Station, but more time will be required before it can be completely evaluated for Oklahoma conditions.

### **Spring Oat Varieties**

The varieties of spring oats recommended in Oklahoma are Andrew, Nemaha, Neosho, Cherokee, Kanota, New Nortex, Fultex, and Texas Red. Cimarron is adapted for either fall or spring planting.

**Andrew** is medium early and has moderately stiff straw. The yellow-colored grain has a high test weight. It is resistant to Victoria blight and is moderately resistant to leaf rust and to smut. Andrew has a very wide range of adaptation and is recommended in all sections of Oklahoma where spring oats are grown.

**Cimarron**, a very early-maturing variety, produces relatively high yields from both spring and fall seedings. The variety is more fully described on page 15. Cimarron is recommended in western and northwestern Oklahoma.

**Nemaha**, a spring variety, was developed in Nebraska. It has relatively short, stiff straw and can be combined. Nemaha produces good yields of grain and is medium in maturing.



Fertilizer, applied on the basis of soil tests, increased the yield of oats from 39 bushels to 86 bushels per acre, Kenneth Hughes farm, Hughes county.

**Neosho** is an early-maturing, light-red oat. It has very stiff straw and is suitable for combine harvesting. Neosho has high resistance to leaf and stem rusts but is susceptible to Victoria blight. The variety does not stool as much as Kanota and may require a slightly higher rate of seeding.

**Cherokee** was developed in Kansas. It is medium in maturity and produces fair to good yields of grain. Cherokee has short, stiff straw and is adapted for combine harvesting. It is resistant to Victoria blight.

**Kanota** is grown extensively in Oklahoma. It matures 10 to 14 days earlier than Texas Red and produces good yields of high-quality grain. The variety is susceptible to the rusts and to the smuts. For best results it should be sown early. Kanota is adapted throughout the state.

**New Nortex** is a selection of Nortex which previously had been selected out of Texas Red. It resembles the parent variety in appearance; however, it is more uniform in plant type and ripens more evenly than Texas Red.

**Fultex** is an early-maturing variety of spring oats. It has short, stiff straw and is suitable for combining. The variety is resistant to smut and to many races of crown rust. When seeded early, Fultex has produced good yields of grain in southwestern Oklahoma. It is recommended in that area.

**Texas Red or Red Rustproof** has been grown in Oklahoma for many years. The grain has a high percentage of hulls, numerous awns, and a relatively low test weight. It is mid-season to late in maturity and is often damaged by the rusts and by hot weather. Under favorable conditions, Texas Red produces good yields of grain.

### **Seed Treatment**

Oat seed should be cleaned and treated with a seed disinfectant before planting. The recommended disinfectants are Cerasan M, Agrox, and Aagrano. Each chemical should be used at the rate recommended by the manufacturer. These treatments will control loose smut, covered smut, root rots, and seedling blights. They will also give partial control of Victoria blight.

Cleaning and treating seed oats is always a good practice to increase yields and improve the quality of the oat crop.



Tenkow barley is adapted to either fall or early-spring planting.

## Barley

Barley is adapted on the better soils in northern and western Oklahoma. The crop does not thrive on coarse, sandy soils or soils that are low in fertility. Barley is very susceptible to chinch bug injury and will give best results when planted in areas where chinch bugs are not likely to appear in large numbers.

Barley should be seeded in a well prepared, firm seedbed. The land should be prepared in the same manner as for wheat. (See page 5.)

Barley can be seeded from September 1 to about November 1, but September 15 to October 15 seems to be the best time to seed this crop. The usual rate of seeding is two bushels per acre. The recommended varieties are Ward, Tenkow, and Harbine.

### Fertilizers for Barley

Fertilizer, properly used, will increase the yield of barley on soils of medium to low fertility when moisture conditions are favorable. The soil should be tested and fertilizers applied according to need as indicated by the test.

### Barley Varieties

Harbine was developed by the Oklahoma Experiment Station. It has a short, stiff straw and produces good yields of grain with high test weight. It is similar to Tenkow, in winterhardiness. Harbine is recommended in the central and southern parts of the state.

**Tenkow** is mid-season to late in maturity. It is large-seeded and has a high test weight. The variety will normally produce grain from either fall or spring seeding, although fall seeding is recommended. Tenkow is only moderately winterhardy and is recommended for the central and southern parts of the state.

**Ward** was released by the Woodward Experiment Station in 1936. It is early to mid-season and has moderately stiff straw. Ward is one of the most winterhardy varieties grown and is especially recommended in the northwestern part of the state.

## **Rye**

Rye is grown extensively for winter pasture and for winter cover in central and eastern Oklahoma. It usually makes a steady growth throughout the fall, winter, and spring, and produces a large amount of winter grazing. It is better adapted to sandy soils that are low in fertility than any of the other small grains; however, it makes much better growth on the more fertile soils. Rye is especially valuable for planting on sandy soils following peanuts to provide winter cover. A mixture of rye and hairy vetch is more valuable than rye alone for improving soil fertility.

For grain production, the usual rate of seeding rye varies from three pecks per acre in the western part of the state to five pecks in the eastern section. Where rye is grown primarily for pasture and winter cover, the rate of seeding should be increased by approximately one peck per acre. The recommended seeding dates for rye are the same as for wheat (see page 6.)

**Rye should not be grown on farms where wheat is grown commercially, since mixtures of rye in wheat are highly objectionable.**

### **Varieties**

The recommended varieties of rye are Abruzzi and Balbo. Abruzzi has been grown in the state for many years. It is very winterhardy and produces slightly higher yields of grain and forage than Balbo. Abruzzi is adapted throughout the state.

Balbo is slightly less winterhardy than Abruzzi and is recommended especially in the eastern and southern parts of the state.