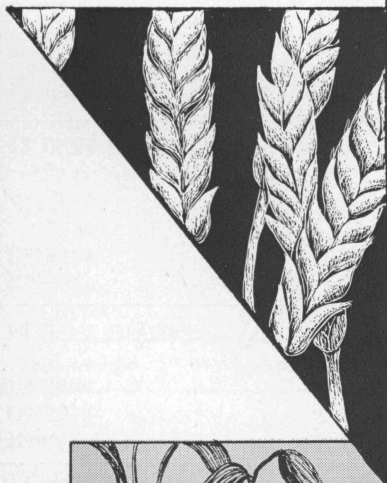


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Recommended Practices for Producing Small Grains



in
Texas



THE AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS
TEXAS AGRICULTURAL EXTENSION SERVICE
J. E. HUTCHISON, DIRECTOR, COLLEGE STATION, TEXAS

RECOMMENDED PRACTICES FOR PRODUCING SMALL GRAINS IN TEXAS

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SMALL GRAINS are important crops in

Texas, both for grain and forage production. The total acreage of wheat, oats and barley frequently exceeds 6,000,000. These crops are seeded from the Gulf Coast to the Panhandle of Texas. Most of the acreage of small grains is planted for grain but is also used as temporary grazing for livestock. In East and South Texas and parts of the Rolling Plains these crops frequently are used exclusively for grazing. The State is divided into seven areas for identification in making recommendations, Figure 1.

VARIETIES

The development of varieties and recommendations is difficult because of great differences in annual rainfall, temperature, soil type, length of growing season, disease and insect problems.

Early maturing varieties are desirable as a means of evading diseases during growth and adverse weather conditions during harvest. Short, strong-strawed varieties will resist lodging and subsequent loss of yields. Emphasis is placed on higher baking quality wheat in price support premiums. In many areas of Texas, winter hardiness is an important consideration.

Recommendations in order of preference appear in Table 1 by growing areas. The recommended varieties were selected on the basis of yield of grain and forage, plant characteristics, disease resistance, earliness, cold tolerance and quality. New varieties are released and recommended only after they are proved to have definite advantages over the varieties currently in production.

*Respectively, extension agronomist and agronomist in charge of small grain research, Texas Agricultural Experiment Station and Crops Research Division, Agricultural Research Service, U. S. Department of Agriculture.

SEEDBED PREPARATION

Proper seedbed preparation is important for good yields of small grains. Methods of preparing the seedbed vary with the area of production and soil type. Important considerations are:

- Proper physical condition to allow penetration and conservation of rainfall.
- Adequate drainage for normal plant growth and to avoid puddling of the soil during grazing.
- Control of weeds.
- Wind and water erosion control.
- Avoidance of excessive undecomposed organic material in the seed zone near the planting date.
- Sufficient planting depth to assure adequate moisture for germination and survival until plants are established.

QUALITY SEED

Use good-quality seed of an adapted variety. They should be well developed, true to variety, high germination and free from other crop and weed seed. *Certified seed* should consistently meet all of the above requirements. If the bag of seed has the blue certification tag and the small tin seal of the State of Texas attached, the following production conditions should have been met:

- Seed were produced in fields properly isolated from other fields of the same crop.
- Most off-type plants were removed from the field prior to maturity.
- The seed are free from noxious weeds and essentially free from seed-borne diseases.
- The seed will have a satisfactory germination.
- The pedigree of the seed traces back to foundation seed of that variety.

- Contamination by other crops and varieties was avoided during the harvesting and cleaning operation.

SEED TREATMENT

All small grain seed should be treated with an approved fungicide. Such treatment controls many seed-borne diseases and may reduce infection from diseases in the soil or crop residue. Seed treatment is good insurance against seedling blights and some smuts (exception—loose smut of wheat and barley). Several effective fungicides are available. Ask your county agent for USDA Miscellaneous Publication No. 219, *Treat Seed Grain*.

WEED CONTROL

Weeds may be controlled by adequate cultural practices or by chemicals. Successful and economical control of weeds includes the use of weed-free planting seed, crop rotation, delayed seeding in the fall and proper seedbed preparation. Broad-leaved annual weeds may be controlled with 2,4-D. Use this material in accordance with the manufacturer's instructions on the U. S. Department of Agriculture approved label and laws regarding use of herbicides. For control of spring weeds, the crop may be sprayed after tillering and before booting. Damage from 2,4-D treatment is most likely to occur prior to and during the boot, flowering and heading stages. For most effective control apply 2, 4-D when weeds are small. Under these conditions, 1/2 pound per acre of active ingredient of 2,4-D will control most weeds. Fall applications may reduce tillering, delay maturity and lower yields.

FERTILIZATION

A soil test is the best means of determining the type and amount of fertilizer needed. The rate required depends on man-

agement, moisture and utilization of the crop. If the crop is to be grazed heavily, higher rates of nitrogen may be profitable. If phosphorus and potassium are needed, they should be applied at or prior to seeding. A portion of the nitrogen may be applied at seeding and additional amounts if needed may be topdressed in early spring. In South Texas, where growth is continuous during the winter, several applications of nitrogen may prove profitable when the crop is grazed heavily. In years of low rainfall, fertilizers may not be profitable in the western part of the State. Under irrigation higher amounts of fertilizers are utilized and required. Specific recommendations for your area are available from your county agricultural agent.

DISEASE AND INSECT CONTROL

Losses from diseases can be costly factors in the production of small grains in Texas. The following practices will aid in controlling diseases:

- Kill all volunteer grain to destroy leaf-borne diseases.
- Rotate with nonsusceptible crops for the control of certain diseases.
- Choose resistant varieties, if available.
- Treat seed with an effective fungicide.
- Plant within recommended dates.

The diseases of wheat, oats and barley are described in detail in Texas Agricultural Experiment Station Bulletin 921, *Diseases of Small Grains in Texas*. Other references are L-465, *Diseases of Oats* and L-564, *Controlling Loose Smut of Wheat*, available from your county agricultural agent.

Under favorable conditions, insects may cause serious damage to small grains in Texas. Rotation of crops and killing all volunteer grain often reduces damage by

destroying aphids, spider mites and breaking the cycle of production. Detailed information on insect control is MP-339, *Texas Guide for Controlling Insects on Grain and Forage Crops*.

GRAZING VALUE

Wheat, oats and barley provide a dependable source of green forage for Texas livestock during the late fall, winter and early spring. Returns from grazing often equal the value of grain. Controlled grazing may not seriously reduce grain yield and the value of the forage may off-set any losses in grain provided grazing ceases at the proper time. Rank, succulent growth of small grain plants is easily damaged by low temperatures. Properly controlled grazing may reduce damage from low temperatures and save the crop for grain. As much as 1 million acres are seeded exclusively for forage purposes.

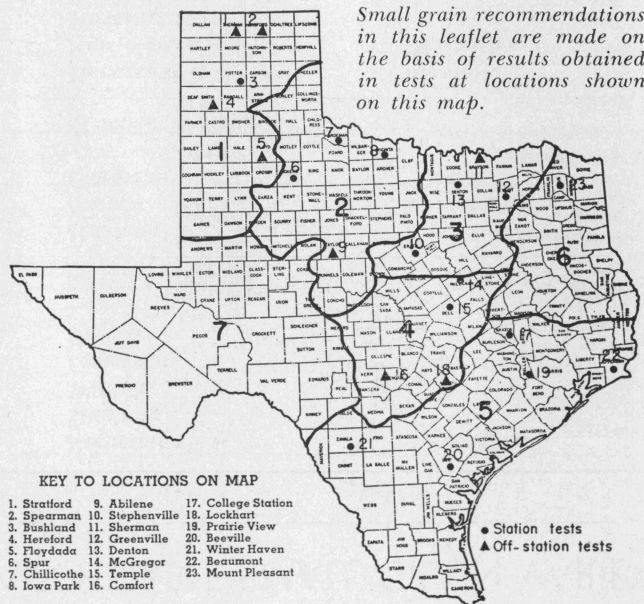


Figure 1. Small grain growing areas and test locations.

RECOMMENDED AND ACCEPTABLE SMALL GRAIN VARIETIES FOR FALL SEEDING*

AREAS	WHEAT		OATS		BARLEY	
1.	Recommended: Tascosa Bison Kaw Aztec Ponca 30 lb./A Dryland	Acceptable: Crockett Comanche Concho Imp. Triumph 60 lb./A Irrigated	Recommended: Mustang Wintok Cimarron Bronco 64 lb./A Dryland	Acceptable: New Nortex ^{1,3} Moregrain ¹ Wintok 92 lb./A Irrigated	Recommended: Kearney Rogers Cordova 48 lb./A Dryland	Acceptable: Harbine Wintex Ward 72 lb./A Irrigated
2.	Tascosa Bison Kaw Ponca 45 lb./A	Crockett Comanche Imp. Triumph Concho	Mustang Bronco Cimarron 64 lb./A Dryland	Rogers Cordova Harbine 60 lb./A Dryland	Kearney Wintex Texan 72 lb./A Irrigated	
3.	Kaw Ponca Quanah Comanche Crockett 60 lb./A	Tascosa Knox ² Frisco ²	Moregrain New Nortex ³ Mustang Bronco 80 lb./A	Alamo-X Midsouth 72 lb./A Dryland	Rogers Cordova	Harbine Texan
4.	Quanah 60 lb./A	Milam ¹ Crockett	Alamo-X Moregrain Suregrain New Nortex ³ 80 lb./A	Alamo Mustang 72 lb./A Dryland	Cordova Rogers	Texan
5.	Milam 60 lb./A	Seabreeze	Suregrain Moregrain Alamo-X Radar I 80 lb./A	Alber Camellia New Nortex ³ 72 lb./A Dryland	Goliad	Cordova Arivat
6.	Quanah Kaw Crockett 60 lb./A	Knox ² Frisco ²	New Nortex ³ Moregrain Suregrain 80 lb./A	Mustang Alamo-X 72 lb./A Dryland	Cordova Rogers	
7.	Tascosa Kaw Crockett Bison 60 lb./A	Quanah ¹	Mustang Bronco New Nortex ^{1,3} Alamo-X ¹ 80 lb./A	Kearney Rogers Cordova 72 lb./A Dryland	Harbine 72 lb./A Irrigated	

*See your county agent for recommendations on spring seeding.
¹Less winter hardy than other recommended varieties.

²Soft wheat where market is available.

³New Nortex represents the red rustproof type. Other strains satisfactory.

DISEASE AND PLANT CHARACTERISTICS

WHEAT	Leaf rust ¹	Stem rust ¹	Bunt	Loose smut	Maturity	Height	Straw strength	Test weight	Quality	Chaff color	Awned or awnless
Tascosa	S	S		S	M/Early	Short	V/Good	Excellent	Excellent	Brown	Awned
Bison	S	S	R	S	Midseason	Tall	Good	Good	Excellent	White/Black Strp	Awned
Kaw	R	MR	R	S	M/Early	Tall	Poor	Excellent	Excellent	White	Awned
Aztec	S	S		S	Late	Tall	Good	Good	Excellent	White	Awned
Ponca	MR	S	MS	R	Midseason	Tall	Fair	Fair	Good	White	Awned
Quanah	MR	MR	R	VS	Late	Tall	V/Good	Fair	Excellent	White	Awned
Comanche	S	S	R	MS	Midseason	M/Tall	Good	Fair	Excellent	White	Awned
Concho	S	S	R	VS	Midseason	Tall	Fair	Good	Good	Brown	Awned
Crockett	MS ²	MR	MS	MR	M/Early	Tall	Poor	Excellent	Good	White/Black Strp	Awned
Improved Triumph	VS	S	S	S	Early	Short	Good	Good	Fair	White	Awned
Milam ²	MR	R		S	Early	Short	Good	Fair	Fair	White	Awned
Seabreeze ²	MR	MR		R	V/Early	M/Tall	Fair	Fair	SRW	White	Awnless
Knox	MR ²	S	S	MS	V/Early	Short	Good	Good	SRW	White	Awnless
Frisco	MR	S	S	S	Early	Short	Good	Fair	SRW	Brown	Awnless
OATS	Leaf rust ¹	Stem rust ¹	Helminthosporium v. blight	Helminthosporium crown rot	Maturity	Height	Straw strength	Test weight	Seed color	Winter hardiness	
Mustang	S	S	MS	R	M/Early	Short	Good	Fair	Gray	Good	
Wintok	VS	S	R	R	Midseason	Short	Poor	Fair	L/Gray	Excellent	
Cimarron	VS	S	R	R	Early	Short	Poor	Fair	White	Excellent	
Bronco	S	S	R	VS	Late	Tall	Good	Fair	L/Red	Excellent	
Moregrain	MR	S	R	R	Early	Short	Good	Excellent	L/Red	Fair	
Suregrain	R	S	R	R	Early	Short	Fair	Excellent	L/Red	Poor	
Alamo	S	R	S	R	M/Early	M/Tall	Good	Excellent	Red	Poor	
Alamo-X	MR	R	R	R	M/Early	M/Tall	Good	Fair	Red	Fair	
New Nortex	S	S	R	R	Late	M/Tall	Poor	Fair	Red	Fair	
Midsouth	VS	S	R	R	Midseason	Tall	Fair	Good	Red	Fair	
Radar I	MR	R	R	R	M/Early	Short	Good	Good	Red/L	Poor	
Alber	MR	S	R	R	Late	Tall	Fair	Fair	Red	Fair	
Camellia	S	S	R	R	Late	Tall	Good	Good	V/Red	Poor	
BARLEY	Leaf rust ¹	Stem rust ¹	Mildew	Loose smut	Maturity	Height	Straw strength	Test weight	Barbed or smooth awns	Winter hardiness	
Kearney	S	S	VS	S	Midseason	Tall	Fair	Fair	B	Excellent	
Rogers	MS	S	MR	R	Late	Tall	Good	Excellent	B	Good	
Cordova	S	S	MR	R	M/Early	M/Tall	Fair	Good	S	Good	
Harbine	MR	S	R	R	Midseason	Short	Good	Excellent	B	Good	
Wintex	S	S	VS	R	Late	Short	Weak	Fair	B	Fair	
Ward	S	S	VS	S	Late	Tall	Weak	Fair	B	Excellent	
Texan	S	S	MR	R	M/Early	M/Tall	Weak	Fair	S	Fair	
Goliad	MR	R	MR	R	Early	Tall	Fair	Fair	B	Poor	
Arivat	VS	S	VS	S	V/Early	M/Tall	Fair	Fair	B	V/Poor	

R = resistant
 MR = moderately resistant
 MS = moderately susceptible
 S = susceptible
 VS = very susceptible

¹No commercial variety adapted to Texas is resistant to all races.
²Intermediate winter type, less winter hardy than other varieties.
³Susceptible in the seedling stage.