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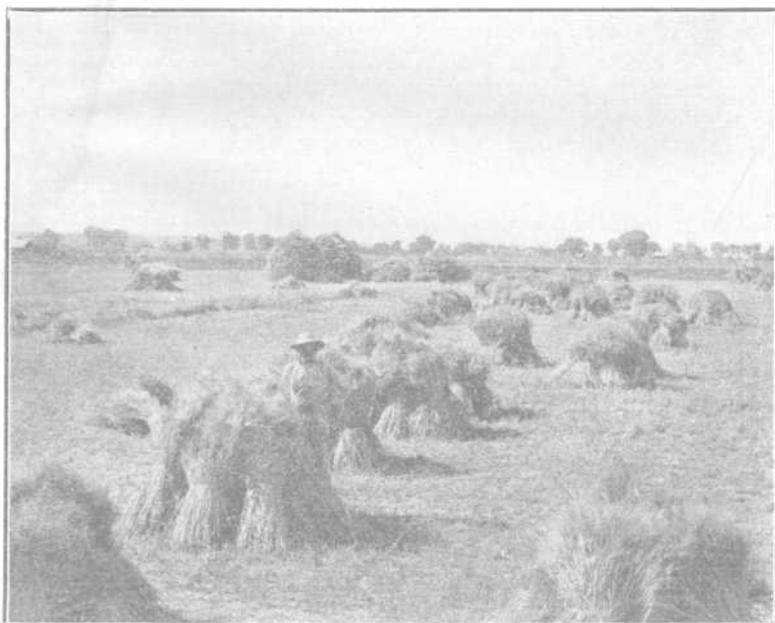
University of Arizona, College of Agriculture

WHEAT PLANTING AND THE SEED SUPPLY

By E. P. TAYLOR

"Let us sow liberally for a big harvest in 1919. It has been called the Liberty Wheat Harvest. We all hope it will be. But let us undertake the task with the determination that we will sweat our blood for many more if need be before we yield one measure of our freedom to a Prussian domination. Let us fight in the furrows."

D. F. HOUSTON,
Secretary of Agriculture.



Plats of pedigreed Early Baart wheat at Arizona Agricultural Experiment Station at Yuma. Plant Breeding Department

Extension Service, E. P. Taylor, Director, Tucson, Arizona.
Cooperative Extension Work in Agriculture and Home Economics, University of Arizona College of Agriculture and U. S. Department of Agriculture, Cooperating.

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WHEAT PLANTING AND THE SEED SUPPLY

BY E. P. TAYLOR

Liberty Wheat Harvest Planned.

A program has been planned and made public by the United States Department of Agriculture for a great Liberty Wheat Harvest in 1919. American farmers are asked to sow to winter wheat this fall not less than 45,000,000 acres, which is an increase of 7 per cent over last year's planting. The Department also urges that where conditions are favorable the acreage be increased to a maximum of 47,500,000 acres or a 12 per cent increase over last year's sowing. From the minimum acreage asked the yield from winter wheat at 15.7 bushels per acre, the average of the country, and with the average abandonment of 10 per cent of the area sown due to winter killing, should reach 636,000,000 bushels whereas the maximum wheat acreage asked would return 667,000,000 bushels. With the additional spring wheat yield it is hoped that the total wheat crop can be made to mount well over the one billion bushel mark, a magnificent contribution to be offered by the farmers of America for the winning of the war.

More Wheat for Arizona.

The wheat crop planted in Arizona in 1918 was 44,000 acres, but due to adverse seasonal conditions including aphid infestation in the Gila Valley and drouth in Pinal County and other smaller irrigation districts a considerable acreage was plowed up, so that the wheat crop harvested was from only 38,000 acres with a total yield of 815,000 bushels or almost the same as the 1917 crop according to the Bureau of Crop Estimates of the Department of Agriculture.

For the 1919 Liberty Wheat Harvest, Arizona is asked to contribute as her quota 46,000 acres or an increase of 5 per cent over the acreage planted for the 1918 crop and if the maximum suggested wheat acreage is reached 48,000 acres must be planted, giving an increase of 10 per cent.

The different states are asked to bring up their quotas, and Arizona should not fail to do her share regardless of the fact that cotton and many other crops are extremely profitable.

Wheat Does Well in Arizona.

Although not a large wheat producer many parts of Arizona are well adapted to the production of this crop. Yields of 50 bushels per acre are not unusual in the irrigated valleys and the dry land areas of the higher elevations and northern Arizona counties often yield 20 bushels or more.

It is not urged by the Government that wheat be planted in locations not suitable for maximum or profitable yields nor that the balance of a well planned rotation based upon good farming methods be upset to bring about an increased wheat acreage. Where wheat has yielded well and on farms where tracts are to be planted to wheat a few additional acres over the usual area planted to wheat will bring about the increased quota of from 5 to 10 per cent asked of Arizona.

Fall wheat in the southern valleys of Arizona can be made a valuable pasture crop through the winter without reducing the yield of grain produced. Wheat requires less man and horse power than the crops requiring cultivation, more labor saving machinery may be used to plant and harvest it. Another decided advantage is that it is a winter growing crop requiring fewer irrigations than cotton and other cultivated crops and taking the water at a time in the fall or early spring when other crops of the Arizona valley rancher need the water the least.

In urging a larger wheat acreage planted this fall it is fully appreciated that barley, alfalfa and cotton are competing crops in the southern irrigated valleys of the State, but our increased wheat quota can easily be met at a profit to the grower.

The past year's experience with wheat substitutes in bread making has impressed upon us more fully than before the many superior qualities of wheat as a bread cereal.

Wheat Reserve Low.

In spite of the very satisfactory wheat crop over the country this year we must bear in mind that the wheat reserve or "carry

over" is not large in this country and for the ten importing countries of Europe was practically exhausted this year before the new harvest. It is greatly to be desired that a liberal wheat surplus be accumulated as insurance against possible emergencies or shortages in other countries.

Profitable Wheat Price Assured.

A good price for the 1919 wheat crop is assured the farmers. By proclamation issued by the President September 2, 1918, a minimum price of \$2.20 per bushel for basic wheat at terminal points has been set which equals the price paid in 1918. A Commission is also assured with power to authorize an increase above this price next spring should increase in labor and supplies justify it.



Typical heads of Early Baart wheat. Arizona Agricultural Experiment Station, Yuma, Plant Breeding Department.

Bigger Yields and More Acres.

Bigger wheat yields are needed as well as more wheat acres. To increase the yield per acre will require good farming, and good farming involves a knowledge of how to plant and handle wheat under Arizona conditions. This year growers should observe more closely than ever the principles of good soil preparation, soil fertility, early plowing, and methods and rate of seeding to insure a good stand.

Planting Dates.

The date of planting in Arizona for the southern valleys should begin not later than late September or early October though in the Salt River Valley the planting is done more commonly in November than any other month. Planted the middle of November the wheat will not begin to stool until the coolest weather of the winter is over, will give excellent winter pasturage and will begin to head out the last of April and be ready for harvest by the middle of May. In the warmer southern valleys planting may be delayed to as late as the last of February and still mature before the heat of the summer.

Most of the wheat grown in northern Arizona is spring wheat planted as soon in the spring as the weather will permit and harvested in the fall. Some very excellent yields of winter wheat have been grown in northern Arizona from plantings in September and October. In the Gila Valley where much wheat is grown planting is usually done late in October and until November 15. On account of damage by the spring grain aphid during the past two years in the Gila Valley it is now recommended that planting be delayed until after the first sharp fall frost. This will reduce fall infestation from the grain aphid and will enable the plants to get such a start as to render the damage negligible.

Treating Wheat for Smut.

All seed wheat should be treated for smut since smut is a source of serious loss in some Arizona fields.

One of the following methods should be used:

1. Dipping.—Take two half barrels or tubs with holes and plugs near the bottom. Place one tub on two saw horses and fill two-

thirds full with a solution of formaldehyde, which is made by mixing one pint or one pound of formalin (guaranteed 40 per cent solution of formaldehyde) with 40 gallons of water. Pour slowly into this solution one-half to one bushel of wheat seed, stirring thoroughly for five to ten minutes so that the smut balls and trash will reach the surface. Skim this material off, then drain the solution into the second tub. Pour the seed into a pile on the floor. Exchange position of tubs and repeat the operation until all wheat seed has been treated. Sow at once or spread the seed out to dry.

2. Sprinkling.—Remove smut balls and trash from the seed by thorough fanning. Spread the seed out on the floor or wagon bed in a layer four to six inches deep. Sprinkle the solution of formaldehyde on the seed, using a watering can. Shovel the seed over thoroughly so that all the seed is moistened, then shovel the seed into a pile and cover with sacks from two to four hours. Sow at once or spread the seed out to dry.

One gallon of solution is sufficient to treat one bushel of grain by either method. Do not put treated seed on a smutted floor or in smutted sacks, nor sow with a smutted drill. Smutted sacks should be soaked in a solution of formaldehyde. One pint to ten gallons water for thirty minutes. Bins, floors and drills may be scrubbed with this strong solution.

The Seed Supply.

The results of the investigations of the Arizona Agricultural Experiment Station have shown that for southern Arizona the Early Baart is best adapted for planting when both yield and milling quality are considered.

As early as 1899 or 1900 the Plant Breeding Department of the Arizona Agricultural Experiment Station began investigations to provide Arizona with a better wheat than the Sonora and in 1902 introduced to the farmers the Early Baart. Milling and baking tests, carried on in 1915 and 1916 reported by Dr. Freeman, showed the variety to be of splendid milling quality practically equalling the hard winter wheats of Kansas. Last fall Arizona millers gave Early Baart wheat a value rating equal to the basic hard winter varieties as established by the Federal Government in setting the price upon wheat.

Not only is the milling value of Early Baart high but the yield upon plats of the Plant Breeding Department of the Experiment Station ran as high as 56.98 bushels per acre in 1916 and in 1917 large fields of this variety upon the irrigated Experimental Farm of the Arizona Agricultural Experiment Station at Mesa gave nearly 50 bushels per acre.

This variety has become the standard of southern Arizona as a result of the efforts of the Experiment Station. Many of the fields of farmers have become mixed with other varieties and with barley.

A Plan to Produce Certified Seed

The Arizona Agricultural Extension Service has entered upon a plan which was designed to encourage further selection and improvement of farm seeds tested and found adapted to Arizona. Through the County Agricultural Agents, systematic seed selection and field inspections have been followed and a number of farms listed where superior seed wheat has been located.

During the summer of 1918 Prof. C. R. Ball, of the Cereal Division of the U. S. Bureau of Plant Industry, was able to assign to the Agricultural Extension Service a special wheat seed scout, Mr. A. L. Nelson, who during the month of June, with the County Agricultural Agents, covered most of the wheat growing sections of the State for the purpose of locating desirable wheat seed. County Agricultural Agents have since followed up these field inspections and added to the list.

The following is the seed inspection report used in making these field inspections.

SEED INSPECTION REPORT		
Kind of grain	Variety	Sample No.
Name of Grower	Address	
Location	Date of inspection	Inspector
No. of acres	Est. yield per acre	Est. amount bu.
Stage of growth when inspected		
Position of grain when inspected: standing		sheaf
shocked	sacked	bin
Condition of grain: per cent smut		moisture
cracked	shrunk	
Admixture of other varieties		%; weeds
other cereals	% ; inseparable material	
Grower's plan of disposal		

Remarks

U. S. Dept. of Agr. and University of Arizona Cooperating

As a result of these inspections some very creditable Early Baart seed wheat has been located. A few growers of other varieties have been found where the quality was commendable. The seed committeemen of the County Farm Bureaus have also helped to locate these growers of superior seed.

Next year it is hoped that a system of official seed certification can be adopted whereby a trained Field Agronomist serving with the Agricultural Extension Service and connected with the Agronomy Department of the Arizona Agricultural Experiment Station and the U. S. Department of Agriculture can follow up this first year's work toward official seed certification so that all seed can be sold under an official guarantee to be attached to each seed package.

It is thought desirable in the interest of the movement for better seed to publish the list of names of growers of desirable seed wheat in Arizona located thus far so that planters may get in touch with them and make their seed purchases direct. All seed wheat should be thoroughly cleaned and recleaned if necessary and treated for smut before planting.

Farmers wishing their wheat seed given official germination tests may secure same, free of charge, by sending a small sample, preferably 300 seed grains, by mail to Prof. G. E. Thompson, Agronomist, Agricultural Experiment Station, University of Arizona, Tucson.

The Agricultural Extension Service in publishing the following list of good seed wheat growers does not assume any official responsibility in connection with the quality of the seed listed, but publishes the list for the benefit of those wishing to get in touch with good seed wheat which has passed one or more inspections.

Upon request of the grower final inspection will be made this fall of any of this seed by the County Agricultural Agent or by an Agronomist of the College of Agriculture and a certificate of quality will be furnished by the Agricultural Extension Service if the quality of wheat will justify.

It is possible that some of the seed listed below has already been disposed of or is to be retained by the grower for planting this fall or next spring. Prices may be had upon correspondence with the grower

Arizona Wheat Seed Growers.

Variety	Name	Address	Est. No. Bushels
Early Baart	W. L. Nelson	Safford	1360
" "	Mit Simms	Solomonville	440
" "	N. W. Stevens	Solomonville	250
" "	Ed. Carpenter	Thatcher	150
" "	Seth Hoopes	Thatcher	560
" "	E. H. John	Thatcher	140
" "	J. W. John	Thatcher	192
" "	E. M. Lambson	Central	116
" "	W. M. Coombs	Central	486
" "	W. G. Marshall	Eden	330
" "	Geo. R. Shurtz	Central	500
" "	I. J. Palmer	Eden	324
" "	Elijah Clifford	Safford	480
" "	H. B. Bryce	Bryce	442
" "	Wm. Ellsworth	Safford	800
" "	Harry Layton	Central	200
" "	S. H. Sturges	Yuma	350
" "	Agr. Exp. Sta. Farm	Mesa	1000
" "	C. B. Wood	Mesa	385
" "	N. A. Brumhall	Mesa	1600
" "	W. H. Buckey	Mesa	440
" "	Calven Phelps	Mesa	800
" "	Henry Baker	Mesa	490
" "	A. E. Williams	Mesa	1925
" "	Bartlett-Heard Co.	Phoenix	6600
" "	Henry Hilbers	Phoenix	1260
" "	J. C. Hartley	Phoenix	352
" "	H. H. Taylor	Mesa	1300
" "	Turley & Hampton	Tempe	4200
" "	G. E. Thompkins	Phoenix	1815
" "	Haws & Hatch	Mesa	675
" "	C. M. Brimhall	Mesa	1600
" "	J. M. Horn	Mesa	360
" "	Ben A. Johnson	Tucson	150
" "	A. J. Stephens	Tucson, R. F. D. 2, Box 52	360

Variety	Name	Address	Est No Bushels
Early Baart	H. E. Farr	Tucson, R. F. D. 2	60
" "	J. L. McDowell	Tucson, R. F. D 1, Box 144	500
" "	J. R. Evans	Tucson	100
" "	J. R. Treat	Florence	200
" "	Earl Clemens	Florence	500
" "	C. G. Houck	Casa Grande	200
Early Baart	J. F. Brown	Casa Grande	100
Sonora	W. A. Gillespie	Solomonville	1350
"	Mitt Simms	Solomonville	1100
"	J. C. Kester	Flagstaff	..
Club	John Orme	Phoenix	1125
Marquis	F. J. Willis	Linden	180
"	N. S. Hansen	Lakeside	189
"	J. H. Hansen	Lakeside	75
"	H. Peterson	Lakeside	125
"	W. H. Larson	Lakeside	50
"	L. Johnson	Lakeside	88
"	I. R. Gardner	Linden	120
"	Warren Tenny	Alpine	35
"	J. F. Thompson	Springerville	180
"	L. W. Cureton	Williams
"	M. T. Powers	Flagstaff
Turkey Red	S. C. Rodgers	Pinedale	90
" "	J. F. Lundquist	Snowflake	225
" "	A. L. Rodgers	Snowflake	200
" "	Lewis Hunt	Linden	132
" "	R. D. Rodgers	Pinedale	228
" "	J. R. Hulet	Snowflake	245
Turkey Red	Wm. McGee	Williams
" "	King Baker	Williams
Bluestem	A. P. Larson	Lakeside	75
"	J. H. Hansen	Lakeside	80
"	Hans Hansen	Lakeside	100
"	Gus Hansen	Lakeside	100
"	A. L. Willis	Pinedale	120
"	R. A. Willis	Pinedale	160

Variety	Name	Address	Est. No Bushels	
Bluestem	Elias Smith	Landen	156	
"	Nolen Kautchner	Pinedale	100	
"	S C Rodgers	Pinedale	50	
"	Sam Hale	Eagar	300	
Lars Peterson	Lars Peterson	Pinedale	192	
"	"	Thoribald Peterson	Clay Spring	48
"	"	N A Brimhall	Taylor	135
"	"	J H Hansen	Lakeside	30
Defiance	W E Wiltbank	Eagar	210	
"	Jacob Hamblin	Eagar	300	
Taos	W F Lesueur	Eagar	280	
"	W M Tenney	Alpine	240	
Seven Head	J R Coleman	Springerville	455	
"	"	Ed Burt	Springerville	180
"	"	Rufus Hulsey	Springerville	420
"	"	Orson Wilkins	Nutriso	240

WHEAT

"The greatest single crop in the world is wheat. More bushels of oats or rice, and as many of corn are produced, but from the standpoint of human nutrition, and as a reservoir of initiative and energy, the blue ribbon must be awarded to wheat.

"Wheat adapts itself to most conditions under which any other plant can grow. At sea level or on mountain mesa, in humid countries or arid in the fierce heat of Egypt or on the cool Saskatchewan plains in loam or clay or sand, where the sun's rays slant northward or southward—the wheat grows. It imprisons sunshine and shower and whispering breeze within its glutinous cells and supplies the noblest food mankind ever ate. Corn we must have and oats and other cereals but wheat is the golden grain of all the ages past present and future. Not beef, not mutton, or fish or pork, not rice but wheat, is the builder of the brain and brawn that dominate the thought and the destinies of the world."

AGRICULTURAL REVIEW