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SMALL GRAINS VARIETY TESTS

This report summarizes the 1958 small grains acreages and yields for Arizona. It also gives small grains variety recommendations. A brief summary of the results from the 1958 small grains variety tests is included. The recommendations given in this report are based primarily upon yield data. In using this report one should remember that local production costs and marketing conditions may change the small grains suggestions for specific areas in Arizona.

Arizona Agricultural Experiment Station

University of Arizona

Tucson

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SMALL GRAINS VARIETY TESTS 1/

By A. D. Day 2/

Barley is the most important small grain crop grown in Arizona. In the 1957-58 crop season, Arizona farmers planted 203,000 acres of barley, a 12% decrease below the 231,000 acres planted in 1957. About 80% of the 1958 barley crop was harvested for grain, and 20% was used for winter pasture, green chopped feed, and hay. The total 1958 production of barley grain in Arizona was 427,680,000 pounds, down from 509,706,000 pounds in 1957. The state average yield was 2,640 pounds per acre, compared to the 1957 average yield of 2,832 pounds per acre. The principal varieties of barley grown in Arizona in 1958 were Arivat and California Mariout for grain production, and Vaughn for winter pasture, green chopped feed, and hay.

Wheat is grown by many farmers in Arizona. In 1958, 130,000 acres of wheat were grown in the state. This is an 88% increase over the 69,000 acres grown in 1957. One of the reasons for the interest in wheat is that many farmers are attempting to grow wheat as an alternative crop on some of their land that has been taken out of cultivation by cotton-acreage controls. A second reason for the interest in wheat is that a number of farmers are interested in establishing a wheat-acreage history, which will enable them to obtain a wheat-acreage allotment if controls go into effect in Arizona. Ninety-five percent of the 1958 wheat crop was harvested for grain. The remaining 5% was used for winter pasture, green chopped feed, and hay. The total 1958 production of wheat grain in Arizona was 236,160,000 pounds, and the state average yield was 1,920 pounds per acre, a decrease below 2,040 pounds per acre in 1957. The principal varieties of wheat grown in Arizona in 1958 were Ramona 50 for milling purposes and Onas 53 for livestock feed.

1/ The author gratefully acknowledges the valuable assistance of the following personnel in conducting the 1958 Small Grains Variety Tests: D. C. Aepli and R. K. Thompson, Mesa Experiment Station, Mesa, Arizona; Frank Pritchard and H. J. Czajkowski, Yuma Experiment Station, Yuma, Arizona; L. C. Chapman and J. N. Davis, Safford Experiment Station, Safford, Arizona; and E. H. Hussman, T. J. Donovan and G. D. Massey, Tucson Experiment Station, Tucson, Arizona.

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Oats are grown on a smaller acreage in Arizona than either barley or wheat. They are a very popular winter pasture crop throughout the state because of their ability to continue vegetative growth longer in the spring than either barley or wheat. In 1958, Arizona farmers grew 23,000 acres of oats, an 8% decrease below the 25,000 acres grown in 1957. Thirty-nine percent of the 1958 oat crop was harvested for grain and 61% was used for winter pasture, green chopped feed, and hay. The 1958 production of oat grain in Arizona was 15,840,000 pounds, and the state average yield was 1,760 pounds per acre. The 1957 average yield was 1,920 pounds per acre. The principal varieties of oats grown in Arizona in 1958 were Palestine, California Red, and Markton for grain production, and Markton for winter pasture, green chopped feed, and hay.

#### SMALL GRAINS VARIETY RECOMMENDATIONS

General small grains variety recommendations for Arizona, by counties, for different planting dates are given in the table on page 4. The recommendations for Cochise, Yavapai, Coconino, Navajo, and Apache counties should be regarded as only suggestions based on limited information. Additional information on Arizona small grains variety recommendations may be obtained from the following publication: Day, Arden D. "1955 Small Grain Variety Tests". Arizona Agricultural Experiment Station, Report Number 121. September, 1955.

#### SMALL GRAINS VARIETIES COMPARED

The tables on pages 5 through 18 give a summary of the yields obtained from the small grains variety tests grown on the Arizona Agricultural Experiment Stations in 1958 together with the last 3 or 5-year average yield for a few varieties commonly grown in Arizona.

In each test the yields of established varieties from other states are compared to the yield of an Arizona check variety. The analysis of variance was computed on the yield data from each test to determine whether any of the varieties differed significantly from the Arizona check variety in yield.

When comparing the yields of different varieties in any test, the L. S. D. (least significant difference) value should be used in the following manner: First determine the difference in yield between the variety in question and the Arizona check variety. If this difference is greater than the L. S. D. value, the variety in question differs significantly from the Arizona check variety in yield. However, if this difference is less than the L. S. D. value, there is probably no significant difference between the variety in question and the Arizona check.

Although a given variety may yield high in a particular year, variety recommendations should be based only on the average yields of at least 3 to 5 years. It is very risky to use only one year's data as a basis for small grains variety recommendations. Small yearly fluctuations in the environment of a given area often cause many varieties of grain crops to respond quite differently in that area from year to year. An accurate estimate of the true yielding ability of a particular variety, in a given geographical area, can be obtained only by averaging the yields of that variety in that area for several years. It is the policy of the Arizona Agricultural Experiment Station to yield test all new small grains varieties for a period of at least 3 years and preferably 5 years before making variety recommendations.

SMALL GRAIN VARIETY RECOMMENDATIONS BY COUNTIES FOR DIFFERENT PLANTING DATES

The recommendations for Cochise, Yavapai, Coconino, Navajo and Apache counties should be regarded as suggestions based on limited information

COUNTY	Planting Date						
	Aug. & Sept.	October	November	December	Jan. & Feb.	Mar. & April	May
PIMA & SANTA CRUZ	Barley-1-3-6 Wheat-none Oats-2	Barley-1-3-6 Wheat-none Oats-2	Barley-1-6 Wheat-1-2-9 Oats-4-5-6	Barley-1-6 Wheat-1-2-9 Oats-4-5-6			
COCHISE	Barley-1-6 Wheat-1-2-9 Oats-2-4-5-6	Barley-1-6 Wheat-1-2-9 Oats-2-4-5-6					
YUMA		Barley-none Wheat-none Oats-2	Barley-1-6 Wheat-1-9 Oats-1-2	Barley-2 Wheat-1-9 Oats-1-2	Barley-2 Wheat-none Oats-none		
MARICOPA & PINAL	Barley-3-6 Wheat-none Oats-2	Barley-3-6 Wheat-none Oats-2	Barley-1-3-6 Wheat-1-2-9 Oats-1-4	Barley-1-6 Wheat-1-2-9 Oats-1-4	Barley-2 Wheat-1-2-9 Oats-none		
GRAHAM & GREENLEE	Barley-3 Wheat-none Oats-none	Barley-3 Wheat-none Oats-none	Barley-1-6 Wheat-1-2-9 Oats-1-4-5	Barley-1-6 Wheat-1-2-9 Oats-1-4-5			
YAVAPAI	Barley-1-4-5 Wheat-3-4 Oats-2-5				Barley-1-4-5 Wheat-1-2-3 Oats-1-5		
COCONINO	Barley-none Wheat-3-4-5 Oats-none					Barley-none Wheat-2-6-7-8 Oats-none	Barley-4 Wheat-2-6-7-8 Oats-2-3-4
NAVAJO & APACHE	Barley-none Wheat-3-4-5 Oats-none						Barley-4 Wheat-1-2 Oats-2-3-4

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BARLEY VARIETIES

1. Arivat
2. California Mariout
3. Vaughn
4. Trebi
5. Atlas 46
6. Harlan

CAT VARIETIES

1. Palestine
2. Markton
3. Colorado 37
4. California Red
5. Ventura
6. Texas Red

WHEAT VARIETIES

- |               |              |
|---------------|--------------|
| 1. Ramona     | 6. Reliance  |
| 2. Baart 46   | 7. Definance |
| 3. Turkey Red | 8. Kubanka   |
| 4. Wichita    | 9. Onas 53   |
| 5. Comanche   |              |

1958

BARLEY VARIETY TEST

MESA EXPERIMENT STATION, MESA, ARIZONA

Planted 12-10-57 Variety	Harvested 5-25-58	
	Average yield in % of Arivat	
	1958	5-year average
Harlan	83	97
California 1362	85	97
Atlas 46	87	96
Rojo	96	96
California 1309	89	95
California Mariout	92	94
Vaughn	72	94
Winter Tennessee	89	89
Atlas 54	95	
Wyoming Sel. 471	77	
Hooded Atlas	44	
Arivat	100	100
L. S. D. for varieties at .05	17	
Yield of Arivat calculated in pounds per acre	5958	5885

CONCLUSIONS: \*

I. Recommended varieties of barley for the Mesa area:

1. Arivat
2. Harlan

II. "Foundation Seed" of Harlan barley will be produced on the Arizona Agricultural Experiment Stations in 1959.

\*Arivat was the check variety.

1958

ROCKY MOUNTAIN BARLEY TEST

MESA EXPERIMENT STATION, MESA, ARIZONA

Variety	Average yield in % of Arivat	
	1958	4-year average
Atlas 46	93	94
Atlas 54	103	93
Harlan	84	93
Winter Tennessee	86	87
Hooded Atlas	92	82
Lico III	68	77
Velvon 11	70	76
Trebi	54	63
Vaughn	131	
California Mariout	124	
51 Ab 5348	115	
Rojo	100	
Hiland	98	
51 Ab 5396	98	
Atlas 57	92	
B 855-13	84	
Traill	83	
C. I. 6619	83	
C. I. 6620	81	
Montcalm	78	
Hannchen	76	
Parkland	74	
Forrest	69	
Glacier x Titan	60	
B-855-14-2	56	
B-571-5	43	
B-570-8	35	
Arivat	100	100
L. S. D. for varieties at .05	37	
Yield of Arivat calculated in pounds per acre	5300	5970

CONCLUSIONS: \*

I. The following varieties looked good in the 1958 test:

1. Vaughn
2. California Mariout
3. 51 Ab 5348

\*Arivat was the check variety.

1958

## UNIFORM 2-ROW BARLEY TEST

MESA EXPERIMENT STATION, MESA, ARIZONA

Planted 12-11-57

Harvested 5-25-58

Variety	Average yield in % of Arivat	
	1958	2-year average
Heimdal	86	88
Piroline	96	87
Carlsberg II	84	86
Domen	93	86
Ingrid	78	84
C. I. 10088	90	83
Bonus	83	82
Bruens Wisa	78	80
Freja	84	79
Betzes	88	77
Danish Malting	82	77
C. I. 10091	79	73
Hannchen (C. I. 531)	70	72
Heines Hanna	76	71
New Moravian	78	68
Weibulls 5573	95	
Svalof 50-109	90	
Weibulls 5411	87	
Haisa II	86	
Svalof 50-102	76	
Donaria	75	
Arivat	100	100
L. S. D. for varieties at .05	23	
Yield of Arivat calculated in pounds per acre	5612	6142

Note: Arivat was the check variety.



1958

BARLEY VARIETY TEST

SAFFORD EXPERIMENT STATION, SAFFORD, ARIZONA

Planted 11-22-57

Harvested 6-10-58

Variety	Average yield in % of Arivat	
	1958	3-year average
Vaughn	106	117
Winter Tennessee	100	111
Glacier	103	110
California Mariout	97	109
Rojo	96	107
Atlas 54	99	104
Harlan	84	103
California 1309	101	100
Atlas 46	86	96
California 1362	100	94
Wyoming Sel. 471	97	92
Arivat	100	100
L. S. D. for varieties at .05	14	
Yield of Arivat calculated in pounds per acre	3249	3185

CONCLUSIONS: \*

I. Recommended varieties of barley for the Safford area:

1. Vaughn
2. Harlan
3. Arivat

II. Seed of Winter Tennessee, Glacier, and Rojo is not available in Arizona.

III. California Mariout is very susceptible to severe lodging in the Safford area.

\*Arivat was the check variety.

1958

BARLEY VARIETY TEST

YUMA EXPERIMENT STATION, YUMA, ARIZONA

Variety	Average yield in % of Arivat	
	1958	5-year average
California Mariout	96	102
Harlan	127	97
Vaughn	95	93
California 1362	87	85
Atlas 46	78	84
Glacier	131	
Wyoming Sel. 471	104	
Rojo	82	
Winter Tennessee	76	
California 1309	75	
Atlas 54	72	
Arivat	100	100
L. S. D. for varieties at .05	33	
Yield of Arivat calculated in pounds per acre.	3515	2813

CONCLUSIONS: \*

I. Recommended varieties of barley for the Yuma area:

1. California Mariout
2. Arivat
3. Harlan

II. Glacier and Harlan looked good in the 1958 test.

\*Arivat was the check variety.

1958

OAT VARIETY TEST

MESA EXPERIMENT STATION, MESA, ARIZONA

Planted 12-11-57 Variety	Harvested 6-10-58 Average yield in % of Palestine	
	1958	5-year average
Ventura	74	92
California Red	62	81
Kanota	84	75
Markton	48	69
Indio	90	
Osage	83	
Craig	67	
Cody	66	
Neosho	65	
Park	64	
Colorado 37	56	
Palestine	100	100
L. S. D. for varieties at .05	9	
Yield of Palestine calculated in pounds per acre	5678	5369

CONCLUSIONS: \*

I. Recommended variety of oats for the Mesa area:

1. Palestine

II. Indio oats looked good in the 1958 test.

\*Palestine was the check variety.

1958

NORTHWEST UNIFORM OAT NURSERY

MESA EXPERIMENT STATION, MESA, ARIZONA

Planted 12-11-57

Harvested 6-5-58

Variety	Average yield in % of Palestine	
	1958	2-year average
48 Ab 6909	76	69
Overland	58	61
Clinton x Overland	70	59
Victory	62	56
Clinton 59	49	56
Palomino	55	56
Marne	50	53
Park	42	53
Cody	53	51
Improved Garry	42	51
C. I. 4189 x Overland	54	50
Exeter	61	49
Eagle	40	49
Andrew x Clinton	45	48
Rodney	49	47
Simcoe	45	46
Centore	42	44
Ajax	35	40
Markton	34	40
Bannock	28	36
Libertas	38	35
Weibulls 16004	24	35
Kanota	102	
Indio	97	
Ventura	82	
Burnett	73	
Craig	68	
R. L. 1273 x Spooner	63	
Colorado 37	62	
California Red	58	
Sauk	55	
Sun II	45	
Palestine	100	100
L. S. D. for varieties at .05	21	
Yield of Palestine calculated in pounds per acre	5270	5668

Note: Palestine was the check variety.

1958

OAT VARIETY TEST

SAFFORD EXPERIMENT STATION, SAFFORD, ARIZONA

Planted 11-22-57

Harvested 6-10-58

Variety	Average yield in % of Palestine	
	1958	5-year average
Ventura	99	102
Osage	102	95
Colorado 37	62	88
California Red	69	88
Kanota	90	81
Neosho	81	75
Markton	61	63
Cody	97	
C. I. 6612	86	
Park	72	
Craig	72	
Palestine	100	100
L. S. D. for varieties at .05	22	
Yield of Palestine calculated in pounds per acre	1829	2420

CONCLUSIONS: \*

I. Recommended variety of oats for the Safford area:

1. Palestine

II. Seed of Ventura is not available in Arizona.

\*Palestine was the check variety.

1958

OAT VARIETY TEST

YUMA EXPERIMENT STATION, YUMA, ARIZONA

Planted 12-17-57

Harvested 5-28-58

Variety	Average yield in % of Palestine	
	1958	5-year average
Ventura	42	70
Kanota	51	53
California Red	19	48
Markton	15	51
Cody	44	
Osage	43	
C. I. 6612	34	
Neosho	29	
Park	19	
Colorado 37	19	
Craig	14	
Palestine	100	100
L. S. D. for varieties at .05	16	
Yield of Palestine calculated in pounds per acre	3371	2330

CONCLUSION: \*

I. Recommended variety of oats for the Yuma area:

1. Palestine

\*Palestine was the check variety.

1958

WHEAT VARIETY TEST

MESA EXPERIMENT STATION, MESA, ARIZONA

Variety	Average yield in % of Ramona 50	
	1958	5-year average
Onas 53	117	128
Awned Onas	121	126
H-16	108	121
Fedawa	70	113
Baart 46	105	103
White Federation 38	76	102
Lemhi	33	93
Norin 10/Brevor-17	86	
Federation	84	
Lemhi x Hope/Fed. W5-67	54	
Kenya/Lemhi-4	45	
Ramona 50	100	100
L. S. D. for varieties at .05	23	
Yield of Ramona 50 calculated in pounds per acre	3570	3619

CONCLUSION: \*

I. Recommended varieties of wheat for the Mesa area:

1. Ramona 50 (for milling)
2. Onas 53 (for feed)

II. Onas 53 has replaced Awned Onas in Arizona

\*Ramona 50 was the check variety.

1958

WESTERN REGIONAL COOPERATIVE SPRING WHEAT NURSERY

MESA EXPERIMENT STATION, MESA, ARIZONA

Planted 12-11-57

Harvested 6-5-58

Variety	Average yield in % of Ramona 50	
	1958	5-year average
Federation	98	122
Awned Onas	101	121
Onas 53	91	119
Lemhi x Hope/Fed. W5-67	79	110
Kenya/Lemhi-4	75	107
Baart 46	92	104
Baart	88	104
Kenya/Lemhi-5	80	104
Baart 38	87	103
Lemhi	69	102
Idaed/Merit-5	83	101
White Federation 38	80	100
Idaed	87	100
Marfed	52	96
Henry	44	92
Ramona 50	100	100
L. S. D. for varieties at .05	15	
Yield of Ramona 50 calculated in pounds per acre	4491	3736

CONCLUSIONS: \*

I. The following varieties looked good in the 1958 nursery:

1. Awned Onas
2. Ramona 50
3. Federation

\*Ramona 50 was the check variety.



1958

MEXICO WHEAT VARIETY TEST

MESA EXPERIMENT STATION, MESA, ARIZONA

Planted 12-11-57

Harvested 6-5-58

Variety	Average yield in % of Ramona 50 1958
Yaktana 54A	142
Yaqui 50	128
Gabo	126
Yaqui 54	126
Lerma Rojo	122
Onas 53	113
Baart 46	111
Cajeme 54	109
Gabo 55	108
Chapingo 53	105
Gabo 56	103
Ramona 50	100
L. S. D. for varieties at .05	11
Yield of Ramona calculated in pounds per acre	3615

CONCLUSIONS: \*

I. The following varieties looked good in the 1958 test:

1. Yaktana 54A
2. Yaqui 50
3. Gabo
4. Yaqui 54

\*Ramona 50 was the check variety.

1958

WHEAT VARIETY TEST

SAFFORD EXPERIMENT STATION, SAFFORD, ARIZONA

Variety	Average yield in % of Ramona 50	
	1958	5-year average
Awned Onas	114	104
Lemhi	94	96
Baart 46	108	92
White Federation 38	135	
H-16	133	
Onas 53	133	
Lemhi x Hope/Fed. W5-67	130	
Federation	123	
Fedawa	105	
Norin 10/Brevor 17	92	
Kenya/Lemhi 4	91	
Ramona 50	100	100
L. S. D. for varieties at .05	34	
Yield of Ramona 50 calculated in pounds per acre	1565	2062

CONCLUSIONS: \*

I. Recommended varieties of wheat for the Safford area:

1. Ramona 50 (for milling)
2. Onas 53 (for feed)

II. Onas 53 has replaced Awned Onas in Arizona

\*Ramona 50 was the check variety.

1958

WHEAT VARIETY TEST

YUMA EXPERIMENT STATION, YUMA, ARIZONA

Planted 12-12-57 Variety	Harvested 5-28-58	
	Average yield in 1958	% of Ramona 50 5-year average
Awned Onas	122	123
Onas 53	118	119
Fedawa	50	97
Baart 46	47	85
Lemhi x Hope/Fed. W5-67	80	
White Federation 38	70	
H-16	66	
Federation	62	
Lemhi	52	
Norin 10/Brevor-17	49	
Kenya/Lemhi-4	48	
Ramona 50	100	100
L. S. D. for varieties at .05	24	
Yield of Ramona 50 calculated in pounds per acre	2094	2084

CONCLUSIONS: \*

I. Recommended varieties of wheat for the Yuma area:

1. Ramona 50 (for milling)
2. Onas 53 (for feed)

II. Onas 53 has replaced Awned Onas in Arizona.

\*Ramona 50 was the check variety.