High Yielding and Yellow Dwarf Tolerant

Mesa, New Oat For Southern Arizona

By R. K. Thompson

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REX THOMPSON COMPARES standing ability of Kanota x Wild Oat selections ← (on right) with early maturing Palestine (center) and Markton (extreme left).

A new combination forage or grain oat variety has been developed and released for use in the low altitude, irrigated areas of Southern Arizona. It has performed well in the production of grain, pasture forage, and hay. This high yielding oat has some tolerance to the yellow dwarf virus. The variety was named "Mesa" after the area in which it was developed. It is a joint release of the Department of Agronomy of The University of Arizona, and the Crops Research Division, Agricultural Research Service, U. S. Department of Agriculture.

Mesa is an oat selection from a Kanota (*A. byzantina*) X Wild Oat (*A. fatua*) cross. The original cross was made by C. A. Suneson at Davis, Calif. The bulk F_7 seed of this cross was brought to Arizona by R. T. Ramage in 1959. Selection and evaluation was done at the Mesa Branch Experiment Station.

In addition to furnishing a natural adaptation for Arizona growing conditions, the wild parent contributed many undesirable characters such as hairy lemmas, seed dormancy, shattering and maturity extremes. These were discarded by growing the early generations of the bulk under field conditions of planting, harvesting and selection. The bulk F_7 remained quite variable. Mesa is the result of a five-year evaluation program starting in 1960 with 1,000 random head selections from the bulk.

Stands Up Well

Compared to recommended Arizona oat varieties, Markton and Palestine, Mesa has good standing ability and is intermediate in height and maturity. A striking feature is its very dark green, luxurious vegetative growth.

While yellow dwarf virus resistance is not complete, Mesa has considerable tolerance to this disease. This is a character contributed to the species cross by the tame oat parent, Kanota.

Seeds are light colored, yellowish-red, large, long, plump, and are produced on a relatively compact panicle. Seed weight is almost always greater than that for Markton or Palestine, and often may be in excess of 35 pounds per bushel. Limited grain sample analyses indicate that the Mesa oat is somewhat lower in fat content and higher in nitrogen-free extract, while crude protein and crude fiber content is at about the same levels as Markton and Palestine.

Outyields Others

Mesa oats have produced five percent higher grain yields than Palestine and 45 percent more than Markton in three years of replicated yield tests at Mesa, Tempe, Yuma, and Safford (Table 1). One border size seed in-

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Table 1. Grain Production of Mesa Oats Compared with Palestine and Markton Varieties.

Variety	Average Grain Yield in Percent of Palestine Oats			
	1963 2 tests	*1964 3 tests*	*1965 7 tests*	*three-year average*
Palestine	100	100	100	100
Mesa	105	112	99	105
Markton	47	81[1]	53[2]	60

[1] average is for 2 tests
[2] average is for 3 tests

Table 2. Pasture Production of Mesa Oats Compared with Markton and Palestine Varieties at the Mesa Branch Experiment Station. Grazing was Simulated by Clipping Seven Times Each Season at the Onset of Jointing.

Variety	Average Green Pasture Forage Yield in Percent of Markton				
	1964		*1965*		*Two-year*
	Test 1	*Test 2*	*Test 1*	*Test 2*	*Average*
Markton	100	100	100	100	100
Mesa	103	89	118	115	106
Palestine	91	—	112	—	101
Yield of Markton in tons per acre	10.9	16.8	13.7	14.1	13.9

Table 3. Hay Production of Mesa Oats Compared with Markton and Palestine Varieties at the Mesa Branch Experiment Station. Harvest was Made in the Early Head Stage of Plant Development.

Variety	Average Oven-dry Hay Yields in Percent of Markton				
	1963[1]	*1964*	*1965*		*Three-year*
			Test 1	*Test 2*	*Avergae*
Markton	100	100	100	100	100
Mesa	96	82	90	106	92
Palestine	131	58	74	82	89
Yield of Markton in tons per acre	2.7	5.3	5.9	6.6	

[1] Vegetative growth froze back to ground level in mid-January. Consequently two harvests were made, one in late January and one when the oats were headed. Neither produced normal yields.

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crease block at Mesa in 1964, with a seeding rate of 20 pounds per acre and harvested with a combine, produced a calculated yield of 4700 pounds per acre.

The performance of Mesa oats, when pasture conditions were simulated by clipping near the onset of jointing, has been very good (Table 2). Average green pasture forage yields of four replicated tests at Mesa in 1964-65 were six percent more than that of Markton, the oat most commonly used for pasture forage in Arizona. Mesa outyielded Markton by 13 percent dry matter in a similar test at Yuma in 1965.

Mesa hay yields, when harvested at the early head stage of growth, have generally been intermediate between Palestine and Markton (Table 3). Production which will approach or compete with Markton can be expected when Mesa oats are seeded early under optimum growth conditions, or when harvest is delayed until seed formation.

Both Forage and Grain

Whereas the Markton oat is primarily a forage type, and Palestine is a grain oat, Mesa will be useful for either forage or grain. The area of adaption and limits of frost tolerance beyond the irrigated areas of Southern Arizona haven't been determined.

A limited supply of foundation and certified seed will be available this fall.

"Head Start" Grant To Home Economics

A federal grant of $21,254 from the Office of Economic Opportunity has been awarded to the Division of Child Development and Family Relations in the School of Home Economics.

Dr. Victor A. Christopherson, head of the division, said the grant will assist in financing a regional training and consulting program under Title II-A of the Economic Opportunity Act. The program, he said, is to enable preschool children in subcultures to become acquainted with the middle-class culture.

The grant also permits the division to employ a regional consultant for the entire state. This consultant is Mrs. Joyce Huggins, who has had extensive experience with preschool children and was previously child care consultant with the state Child Welfare Division. Mrs. Huggins will travel throughout Arizona as a consultant to "Head Start" programs, and will participate in training programs for Head Start teachers.

People interested in developing training programs for local Operation Head Start programs should contact their local community action organization or may write directly to Mrs. Huggins at the School of Home Economics, University of Arizona.

MAY

5—Cattle Feeders Day, U of A Casa Grande Highway Farm, Tucson

6—Poultry Industry Day, U of A Poultry Research Center, Tucson

JUNE

6-10—Town and Country Life Conference, U of A Campus

6-10—State 4-H Junior Leader Laboratory — Shadow Valley Ranch, Prescott

JULY

11—Hereford Field Day, Prescott

25-29—State 4-H Roundup, U of A Campus, Tucson