



New Mission veldtgrass, left photo, shows contracted panicles and non-shedding agronomic type bred at Davis—as compared with typical



open panicle or seed-shedding characteristics of the old California certified veldtgrass seen in photo to right.

Mission Veldtgrass

A new high-seed-yielding, non-shattering perennial veldtgrass named for and adapted to California's Mission Trail rangelands and beaches.

R. MERTON LOVE

MISSION VELDTGRASS *Ehrharta calycina* Sm., a new high-seed-yielding, non-shattering strain of perennial veldtgrass, with a general area of adaptation following the Mission Trail from San Diego to San Francisco, is now approved for certification in California. Foundation seed will be available next year through the Department of Agronomy, University of California, Davis, or the Soil Conservation Service District Seed Increase Program. Seed will not be available through commercial channels until 1965.

Veldtgrass is a fine-stemmed, densely tufted perennial bunchgrass varying in height from 12 to 24 inches. The collar is usually dark red or purple. The variety Mission is readily distinguished from other strains by its contracted or compact panicle with shorter branches. The seeds of the new Mission veldtgrass are larger, heavier, darker brown in color than the

older variety and do not readily shatter at maturity.

Adaptability

Mission veldtgrass is adapted to the Central and South Coast regions of California where the annual rainfall is 10 inches or more, particularly on light sandy soils. Although the grass is primarily useful for grazing by cattle and big game in the wildlands and dryland pastures of these areas, it is also useful for soil erosion control there as well as to stabilize light soils in sandy beach park areas and adjacent to airport runways. It grows well when sown on brush burns in this region. It spreads well by reseeding in subsequent years and gradually becomes part of the landscape.

The primary concern in developing the new strain was to take advantage of a non-shedding mutation so that seed can be harvested economically. Except for

weeding out obviously weak plants, no attempt was made to develop a uniform line. On the contrary, it was felt that variability in germ plasm was to be desired in a rangegrass that, within its area of adaptation, will find itself in many diverse ecological niches.

Seed yields

The old California certified veldtgrass rarely yields over 100 pounds per acre of clean seed, whereas Mission has consistently yielded about four times this amount. The harvest at Davis in 1957 offers a typical comparison:

	California Certified	Polycross Mutant
Pounds of seed/acre.....	103.00	450.00
Purity	37.78	99.72
Other crop	0.00	0.00
Inert	62.13	0.28
Weeds	0.09	0.00
Germination per cent.....	17.00	49.00
Pure live seed per cent...	6.42	48.86
Pure live seed pounds/acre	6.60	119.90

COMPOSITION OF VELDT AND ALFALFA HAY ON A DRY MATTER BASIS

Feed	Crude protein %	Ether extract %	Crude fiber %	Ash %	NFE %	Calcium %	Phosphorus %	Energy Kcal/lb.
Veldt hay	6.81	1.99	31.16	6.50	53.54	0.32	0.19	4.388
Alfalfa hay	19.31	1.45	29.23	9.54	40.47	1.20	0.25	4.428

DIGESTIBLE NUTRIENT CONTENT OF VELDT AND ALFALFA HAYS, DRY MATTER BASIS

	Veldt hay	Alfalfa hay
Digestible crude protein %	3.1	15.2
Total digestible nutrients, lb./100 lb.	58.8	56.7
Digestible energy, megcal./100 lb.	120	124

Digestibility

Digestibility trials comparing typical veldt hay with alfalfa were conducted by animal husbandry students at Davis during the spring semester of 1962 under the supervision of G. P. Lofgreen. Mission veldtgrass is not expected to differ significantly. Each hay was fed to two mature wethers. Total digestible nutrients, digestible energy and other factors were closely comparable, with the only

noticeable differences found in crude protein as indicated in the tables.

Establishment

Mission veldtgrass is easily established, long-lived, and reseeds well. In the central and south coast area, veldtgrass should be seeded in the fall after first rains. A seeding rate of three to four pounds per acre is adequate. As with most slow starting perennials, dryland veldt-

grass seedings may need to be mowed or grazed early in the spring following seeding to help remove competition of more rapidly growing annuals. Then stock should be removed until after seed maturity the first year. Following establishment, grazing should be managed to allow an annual rest period.

In the central coast area perennial veldtgrass always responds well to applications of nitrogen. In some locations, sulfur with nitrogen appears to produce an added response. With normal 15 to 20 inches of rainfall, 40 to 60 pounds of nitrogen applied in the fall will provide an economic forage return.

R. Merton Love is Professor of Agronomy and Chairman of the Department of Agronomy (Statewide) Davis-Riverside.

This research was done under Agricultural Experiment Station Project H-1194 and was supported in part by a grant from the Water Resources Center, Division of Agricultural Sciences, U.C., Davis.

VELDTGRASS RESPONDS TO NITROGEN

VELDTGRASS IS VERY RESPONSIVE to nitrogen fertilization. A nitrogen source experiment was set up in the fall of 1962 on an established stand of veldtgrass on the Nipomo Mesa near Arroyo Grande, San Luis Obispo County. Veldtgrass appears well adapted to these light sandy soils.

The stand selected for fertilization was approximately ten years old. Many young and old plants were present but the stand

was producing little forage. Fertilizer treatments were made November 17 by broadcasting four different nitrogen fertilizers at rates to provide approximately 100 lbs N/acre in strips 5 feet wide and 174 feet long with six replications. Phosphorus was applied uniformly over the entire area.

Spectacular differences in growth were observed soon after the winter rains began. Veldtgrass in the nitrogen fertilized strips looked almost like a different species with lush green growth and much increased tillering. The plots were harvested in May 1963 with a forage harvester cutting out a portion of each strip. There were slight but not significant differences between sources of nitrogen (ammonium nitrate, ammonium sulfate, urea and calcium nitrate). There were, however, very great increases where any commercial nitrogen fertilizers were used. Average yields from the four nitrogen sources and of the strips without nitrogen were:

Yields of green fresh veldtgrass were increased from 1,855 to 14,485 pounds by applying 95.6 pounds of nitrogen per acre. Total dry material was increased from 527 up to 3,958 pounds per acre. Calculated as hay at 10% moisture, the no-nitrogen treatments produced about 600 pounds per acre compared with over two tons where nitrogen was applied.

The low nitrogen supplying power of the sandy soil made possible removal of only 6 pounds per acre with no nitrogen as compared with approximately 40 pounds where nitrogen was applied. This would represent an apparent recovery of approximately 33% of applied nitrogen with considerable additional amounts in the enlarged crowns and root systems of the fertilized plants.

The use of nitrogen seems to be a highly feasible operation economically. With nitrogen at a cost of 10 to 12 cents per pound, the cost of the 3,431 extra pounds dry matter would be only \$9.50 to \$11.47 or from \$5.50 to \$6.68 per ton.

—Cecil Pierce, Farm Advisor, Modoc County, formerly San Luis Obispo County; and W. E. Martin, Extension Soils Specialist, University of California, Davis.

Treatment Lbs N/acre	Yield (lbs/acre)		Nitrogen in crop Lbs/acre	Apparent N recovery by Veldtgrass
	Fresh wt.	Dry wt.		
None	1,855	527	5.90	...
95.6 N	14,485	3,958	39.32	33.4%

CALIFORNIA AGRICULTURE
 Progress Reports of Agricultural Research, published monthly by the University of California Division of Agricultural Sciences.
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 Agricultural Publications
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