Lana Vetch for Medusahead Control[1]

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Highlight

Medusahead is invading California and western Oregon rangeland at an alarming rate. Overseeding with Lana vetch, a self-perpetuating annual legume, appears to be one of the most practical controls. Because Lana vetch can be successfully established without seedbed preparation it offers a practical method of controlling medusahead on rough terrain. Increased production and improved quality of forage from infested annual grass range are the result.

Lana vetch, an improved variety of woollypod vetch (*Vicia dasycarpa* Ten.) offers considerable promise for controlling one of California's and southwestern Oregon's worst range weeds—medusahead (*Taeniatherum asperum* (Sink.) Nevski) (formerly known as *Elymus caput-medusae* L) (Fig. 1).

Lana, a reliable self-seeding, winter-active annual legume was developed by the Soil Conservation Service and the University of California Agricultural Experiment Station. It is one of conservation's most versatile plants. Miller et al. (1964) reported on its use to improve forage quality and quantity and to extend the season of use of annual range forage in the Mediterranean-like climatic area of California and southwestern Oregon. He reported that forage production of resident annuals at Sunol, California was increased from an average of 1280 lb/acre to 3646 lb/acre when Lana vetch was added. Average annual production was increased to 5370 lb/acre when the Lana was fertilized annually with superphosphate at the rate of 400 lb/acre.

Medusahead is invading California and western Oregon rangeland at an alarming rate. As reported by Turner et al. (1963), medusahead occurs throughout an area of over 1,500,000 acres in southwestern Oregon. The periphery of known infestations in California is even greater. Major et al. (1960) reported that grazing capacity on some ranches had been reduced by as much as 75 percent by this grass.

The Pleasanton Plant Materials Center since 1960 has been retesting Lana vetch to determine its value for medusahead control. Results have been variable, depending on soils, fertilization, and grazing management. These tests show, however, that when Lana vetch is fertilized with phosphate and sulfur and grazing is deferred for late use the medusahead is suppressed. The results of one field trial are shown in Table 1.

For rangeland on which conventional equipment can be safely used for seedbed preparation and seeding, controlling medusahead is relatively easy. Work conducted by the Soil Conservation Service on Non-Pareil silt loam in southwestern Oregon showed that medusahead was completely controlled by: (1) starting mechanical seedbed preparation before the medusahead had set seed; (2) summerfallowing; and (3) establishing, fertilizing, and properly managing any one of several adapted grasses and/or legumes, including Lana vetch.

Although tillage was beneficial in initial stand establishment, Luebs and Laag (1963) confirmed that Lana vetch could be successfully established without cultivation. Drilling was superior to broadcasting. Drilling Lana at 15 pounds per acre resulted in an average seedling emergence of 3.9 plants/ft^2, while only 1.4 plants/ft^2 were obtained from broadcasting. Other studies (Table 2) show that an initial stand averaging 1.5 plants/ft^2 developed into a maximum stand by the end of the third year. Maximum stands were consistently obtained by drilling 10 lb of Lana vetch seed per acre directly into undisturbed residue. For broadcasting seeding 20 lb/acre of Lana seed is recommended.

Lana vetch should always be inoculated. Kay (1967)[2] found that good inoculation can be consistently obtained by seeding lime pellet-inoculated seed.

Vast areas of medusahead-infested rangeland are too steep or stony to permit conventional seedbed preparation. On these areas, several methods of medusahead control, including burning, herbicides, soil sterilants, and overseeding plus fertilization, show promise. One of the most practical controls appears to be suppression of medusahead by overseeding with a self-perpetuating annual legume.

Several annual legumes, including subclover, have been evaluated. All but Lana require early season grazing to reduce the grass competition. Lana does best when completely deferred for late use. This deferment results in rapid growth and the formation of a dense canopy during the late spring, which competes seriously with the late-developing medusahead (Fig. 2).

Lana is adapted to a wide variety of soil and rainfall conditions. It performs well on coarse to fine-textured soils where rainfall is 16 inches or more.

[1] Received September 4, 1969; accepted for publication February 13, 1970.

[2] Letter from Mr. Burgess L. Kay, University of California, Davis.

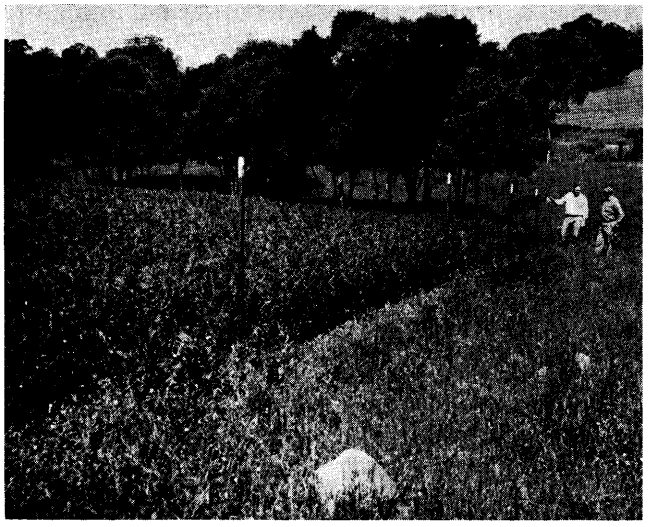

FIG. 1. This excellent stand of Lana vetch, in contrast to the ungrazed resident annuals outside the exclosure, demonstrates how the competitive growth and dense canopy of Lana can suppress late-developing medusahead.

It is adapted to soils ranging from moderately acid to moderately alkali. It is not suited to areas in which winter temperatures drop below 15 F.

Lana maintains its nutritive quality and high palatability after maturity when the quality of the resident annuals is at its lowest.

The crude protein percentage of Lana vetch samples collected in July from six field plantings in western Oregon are shown in Table 3. The percentage of crude protein varied from a low of 9.10 to a high of 14.73. The average was 11.54. This is several times the crude protein of the resident annual grasses at this time of the year, as reported by Gordon and Sampson (1939).

Mature Lana is relished by livestock and good gains have been reported (Fig. 3). A 45-acre Lana pasture plus a small amount of silage supplement produced 185 lb/acre of beef in 1964 on the Sam Noble ranch in Livermore, California. Mr. George Churchill, Yoncalla, Oregon, reported 181 cow days/acre of grazing of Lana vetch in 1965. He reported, based on actual weights, that calves gained 1.6 lb/day without supplements.

Table 1. Effects of superphosphate on Lana vetch seeded on a medusahead infested range on the John Black farm, Santa Rosa, harvested June 1966.[1]

Treatment	Dry forage (lb/acre)		
	Lana	Other[2]	Total
No treatment	0	4,160	4,160
200 lb/acre 0-20-0[3]	2,560	2,560	5,120
400 lb/acre 0-20-0	10,080	1,120	11,200

[1] Spreckles loam—Class VIe3.
[2] Medusahead and other annual grasses.
[3] Applied in the fall as single superphosphate.

Table 2. The average number (per ft²) of Lana vetch plants obtained by drilling on undisturbed rangeland at Sunol as influenced by seeding rates (lb/acre).[1]

Counts	Seeding rate[2]		
	10	20	30
End of 1st year (4 plantings)	1.5	2.7	3.8
End of 2nd year (3 plantings)	4.5	5.7	6.7
End of 3rd year (2 plantings)	8.6	9.4	9.5
End of 4th year (1 planting)	11.9	11.7	11.5

[1] Positas gravelly clay loam Class VIe3.
[2] Seedings made fall of 1955, 1956, 1957, and 1958. Counts made spring of 1956, 1957, 1958, and 1959.

Many medusahead-infested soils are so infertile that annual fertilization with superphosphate is required to maintain an adequate percentage of Lana. Nitrogen bearing fertilizers defeat the purpose, resulting in vigorous grass growth which suppresses the Lana vetch. Table 4 shows the effects of superphosphate, treble phosphate, and ammonium–phosphate–sulfate on both Lana and volunteer grasses on a low fertility medusahead-infested site in Amador County, California. Similar results were obtained when nitrogen was applied to Lana vetch seeded in resident grasses at Sunol, California, as shown in Table 5.

Fertilization and management that increase the percentage of Lana usually decrease the percentage of annual grasses. Field observations show, however, that even when Lana contributes 30 to 40 percent of the total herbage, forage yields are increased, the percentage of desirable grasses is greater, and medusahead is suppressed. The earlier fall starting grasses such as soft chess *Bromus mollis* L., wild oats *Avena fatua* L., and ryegrass *Lolium multiflorum* Lam., are more compatible with Lana and

FIG. 2. Lana vetch makes rapid growth and forms a dense canopy during the late spring causing severe competition to annual grasses, particularly the late-developing medusahead.

Table 3. Crude protein (%) of Lana vetch samples from field plantings in western Oregon.[1]

Cooperator	Soil conservation districts	Date collected	Crude protein
Lester Perrin	N. Douglas	7/ 1/65	9.10
George Churchill	N. Douglas	7/ 8/66	9.54
Arthur Kopp	N. Douglas	7/28/64	10.48
Stanley Curyea	Yamhill	7/12/67	12.27
Pullman Farm	E. Multnomah	7/10/67	13.10
Jake Powell	N. Douglas	7/ 8/65	14.73

[1] Crude protein determined by Department of Agricultural Chemistry, Oregon State University.

consequently the percentage of these grasses in the herbage may be increased.

Summary

Lana vetch, an improved variety of woollypod vetch, offers much promise for controlling one of California and western Oregon's most serious range weeds—medusahead. Studies on the use of Lana vetch for medusahead control show that, where Lana is adapted, overseeding, annual fertilization with phosphate and sulfur, and deferred grazing are the keys to the suppression of medusahead by this self-perpetuating annual legume. Much of the medusahead-infested range is on land too rough or steep to permit mechanical seedbed preparation.

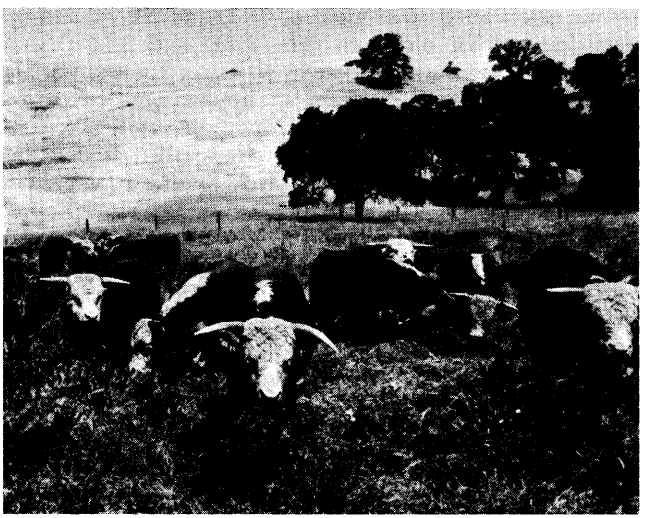

FIG. 3. Lana vetch is relished by livestock and good gains are obtained. It maintains its nutritive quality, averaging 11.54 percent crude protein after maturity.

Table 4. Two-year average production (lbs/acre, dry forage) of Lana vetch and volunteer grass as influenced by fertilizer treatment on the Henry Muller Ranch, Amador County, California.[1]

Treatment	Two-Year Average		
	Lana	Other	Total[2]
Non-Fertilized	60	1,044	1,104
200 lb/acre 0-45-0	882	1,287	2,169
400 lb/acre 0-20-0	1,001	1,455	2,456
450 lb/acre 16-20-0	144	3,656	3,800

[1] Auburn silt loam VIe4.
[2] 1961 and 1962 yield data.

Because Lana can be successfully established from direct seeding without seedbed preparation it offers a very practical method of controlling medusahead on rough terrain. Increased production and improved quality of forage from infested annual grass range are the result.

Table 5. Three-year average production (lbs/acre, dry forage) of Lana vetch and volunteer grass as influenced by fertilizer treatment at Sunol, California.[1]

Treatment	Three-Year Average		
	Lana	Other	Total[2]
Lana only	1,319	2,327	3,646
Lana + 0-90-0	2,482	2,058	4,540
Lana + 32-40-0	1,875	3,495	5,370
Lana + 64-80-0	959	5,123	6,082

[1] Positas gravelly clay loam VIe3.
[2] 1961, 1962, and 1963 yield data.

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