

# TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

TN RANGE-43

Davis, California  
July 1979

## ABSTRACTED STATEMENTS ABOUT CALIFORNIA ANNUAL GRASSLANDS

The attached material was prepared by Warren Peden, Area Range Conservationist, USDA, Soil Conservation Service, Red Bluff, California.

These statements are the results of research studies and are pertinent to our work in the annual grasslands.

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Enclosure

# TECHNICAL REPORT

NO. 100

BY

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ABSTRACTS ABOUT CALIFORNIA ANNUAL GRASSLANDS

1. Prescribed burning to control medusahead has been abandoned. 1/
2. Practical grazing intensities and fire do not significantly alter the current seed crop in the annual grassland. 1/
3. Clipping effect on annuals reduced yield when in early stage of culm development. 2/  

Clipping stimulated annuals when clipping was done near plant maturity.

Clipping at short intervals always resulted in decreased yields.
4. Eliminating domestic livestock and reduction in wildfires have contributed to the increase in area of Baccharis stands. 3/
5. Period of most rapid growth--March 28 to April 24 4/
  1. Redstem filaree and burclover - early
  2. Followed by wild oats and riggut brome

Total loss in weight if largely filaree, more rapid, earlier and more complete than for a grass community.
6. Sheep and deer have contributed to the spread of plants introduced onto California ranges. 5/  

Sheep carry seeds of noxious plants and other undesirable species to cultivated fields.
7. The average number of seeds which will germinate from one square inch of soil collected in August varies from about 20 to 100. 6/  

Seeding into the annual range is not done because of the competition from the resident annuals.

To manage annual range to favor filaree and the annual clovers usually means a sacrifice in total production.
8. Nitrogen application at different times of the year showed that the earlier the N was applied, the greater the winter forage growth. 7/  

Pastures closely grazed during winter may become extremely N deficient in the spring even though N was applied the previous fall.

8. (Continued) Winter temperatures averaging much below 50°F. severely limited response to N fertilization.

It is important to apply N before the first fall rains when average temperatures are above 50°F.

Nitrogen fertilized grass often is less damaged by frost and appears to recover faster than N deficient grass.

Fall fertilization generally increases % protein in annual grasses and broad-leaved forbs early in the growing season, but protein is adequate for animals in unfertilized pastures. The primary benefit from N in the early part of the season is the increase in dry matter production.

As the season advances the protein level often decreases more rapidly in plants fertilized at moderate rates of N than those not fertilized. Fertilized plants are often lower in protein at the end of the growing season than those left unfertilized.

It was also found that the protein levels remained adequate for sheep on the subclover pastures during the summer dry season, whereas N fertilized pastures were well below minimum levels. Low forage quality is a severe problem on N fertilized pastures during summer and fall.

9. Range cages result in a small but significant increase in plant growth in the California annual type during the cool part of the growing season, but any differences due to cages soon disappear as spring temperatures become warm enough for fast growth. 8/

10. See page 3.

11. Mulch of 700 lbs. or more - favored soft chess and ripgut brome. 10/

No mulch - favored undesirable small weeds, quakinggrass and silver hairgrass.

Intermediate mulch favored annual fescues and nitgrass.

Filaree did well regardless of mulch.

Twice as much herbage was produced with all the mulch left in place.

Changes in plant composition are temporary, can be set back by weather the next year.

10. Plants usually found in High, Middle, and Low Successional stages. 9/

HIGH IN SUCCESSION

Slender oats  
Wild oats  
Soft chess  
Ripgut brome  
Redstem filaree  
Medusahead

MIDDLE IN SUCCESSION

Rattlesnake weed (N)  
Broadleaf filaree  
Brome fescue  
Foxtail fescue  
Rattail fescue  
Common nitgrass  
Burclover

LOW IN SUCCESSION

Silver hairgrass  
Little quakinggrass  
Common turkey mullein (N)  
Mouse barley  
Madia tarweed  
Annual lupine (N)  
Clover spp. (N)

(N) = Native species

12. Sheep were more selective than cattle when grazing California annual 11/  
range.

With decreased available herbage, sheep were less selective in their grazing which suggests that sheep were more affected by herbage shortage than were cattle.

Cattle and sheep rejected Medusahead, Festuca species, and several forbs.

In general, perennial grasses were more often selected by both cattle and sheep than were annual grasses or forbs.

Selectivity of forb leaves by sheep was three times as great as by cattle.

Less abundant species generally were either highly selected or rejected, while abundant ones furnished the bulk of the diets and were neither significantly selected nor rejected.

13. An early fall rain followed by a long dry period results in large 9/  
amounts of Erodium botrys. Grasses require continuous rainfall,  
or at least dry periods no longer than 2-3 weeks.
14. Mulch has little influence on pH and phosphorus and nitrogen contents 9/  
in the California annual grassland system.

References

- 1/ Burning and the Grasslands in California. Harold F. Heady, 1972.
- 2/ Proceedings of the XI International Grassland Congress, 1970. Glenn D. Savelle and Harold F. Heady.
- 3/ Invasion of Grassland by *Baccharis pilularis*. Joe McBride and Harold F. Heady. JRM Vol. 21, No. 2, 1968, pp 106-108.
- 4/ Seasonal Changes in Herbage Weight in an Annual Grass Community. Roy D. Ratliff and Harold F. Heady. JRM Vol. 15, No. 3, May 1962.
- 5/ Viable Seed Recovered From Fecal Pellets of Sheep and Deer. Harold F. Heady. JRM Vol. 7, No. 6 November 1954.
- 6/ Evaluation and Measurement of the California Annual Type. Harold F. Heady. JRM Vol. 9, No. 1, January 1956.
- 7/ California Agriculture. Vol. 30, No. 7, 1976. Fertility Studies Reveal Plant & Soil Needs. M. B. Jones.
- 8/ Effect of Cages on Yield and Composition in the California Annual Type. Harold F. Heady. JRM Vol. 10, No. 4, July 1957.
- 9/ Terrestrial Vegetation of California. Chapter 14. Valley Grassland by Harold F. Heady. p 509.
- 10/ Journal of Range Management Vol. 14, July 1961. p 182. Harold F. Heady.
- 11/ Botanical Composition of Sheep and Cattle Diets on a Mature Annual Range. Hilgardia. Vol. 36, No. 13, Sept. 1965. G. M. Van Dyne and H. F. Heady. p 485.

