

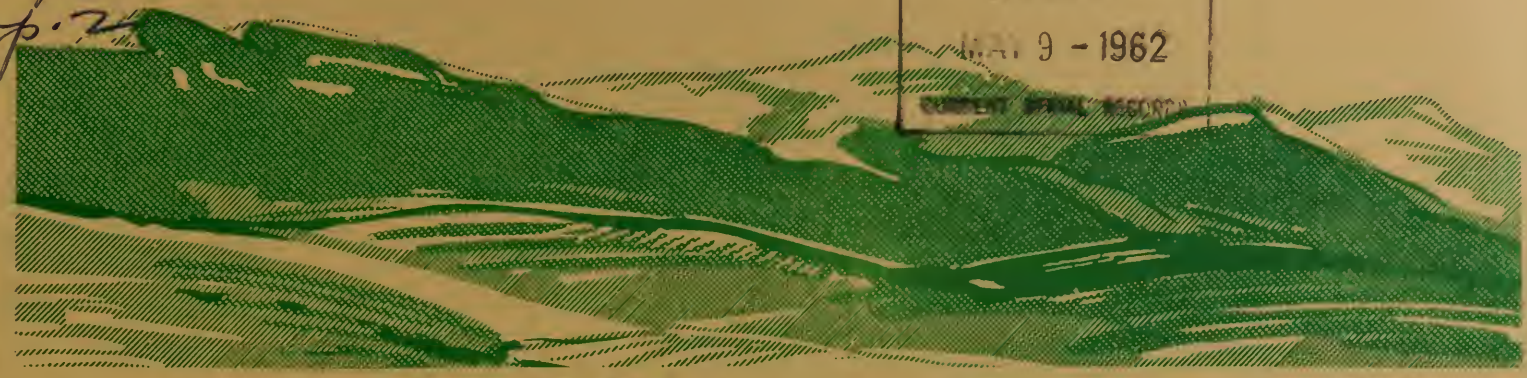
## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.

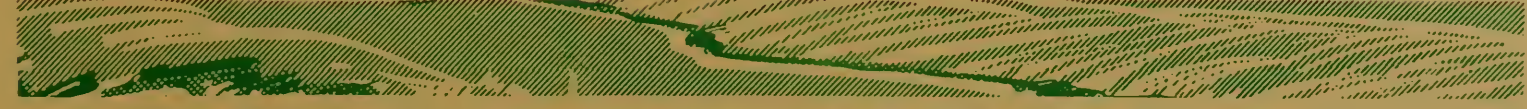


AG 0119  
F762  
cop. 2

U.S. DEPT. OF AGRICULTURE  
LIBRARY  
MAY 9 - 1962  
CURRENT SERIAL RECORDS



# RANGE IMPROVEMENT



VOL. 6, NO. 2

# NOTES

APR. 1961

## INDEX

Range-Watersheds of the Inter- mountain Region .....	1
The International Age in Grass- land Management .....	4
Chemical Films for Evaporation Retardation Under Field Condi- tions .....	6
Pocket Gopher Food Habits on Western Colorado Rangelands	9
Cattle Dyeing Study of the Sal- ina, Utah FFA Chapter .....	11
Steel Posts and Let-Down Fences	12

(AGRI - OGDEN)



## STATEMENT OF PURPOSE

- - - -

This publication is printed primarily to inform professional range administrators of important range improvement and management developments and findings. These "Notes" may include extracts of published papers, unpublished preliminary reports of research work, unpublished reports on administrative studies, and personal observations or suggestions of other range administrators. No claim is made as to the accuracy or completeness of studies or conclusions drawn.

All who read these RANGE IMPROVEMENT NOTES are encouraged to submit material for publication, or suggestions for improving its usefulness. Full credit will be given for any material used.

-o0o-



RANGE-WATERSHEDS OF THE INTERMOUNTAIN REGION  
(Abstract of Paper Given at 14th Annual Meeting of  
the American Society of Range Management)

By A. R. Croft\*

- - -

Range-watersheds in the Intermountain region consist of several vast blocks of mountain land comprising most of the states of Utah, Nevada, Idaho south of the Salmon River, and western Wyoming. If the term "watershed" is applied only to those areas that yield perennial streams, "range-watersheds" of the region would be limited roughly to lands above about 6,500 feet elevation south of the Snake River and in the range of 3,000 to 4,000 feet elevation north of the Snake River. This qualification limits the area of range-watersheds in the region to about 15 percent of the land area. These mountain lands are commonly called "humid islands" because precipitation varies from 35 to 50 inches annually here compared to 5 to 15 inches in the adjacent arid valleys.

These range-watershed lands perform several important functions, four of which should be noted particularly. First, the rains and snows they receive are the source of streamflow that supplies water for agriculture, industry, and culinary needs within the region, and also to vast industrial and agricultural centers outside this immediate region. These streams also maintain an extensive fishery

---

\*Forester, Watershed Management, U. S. F. S., Region 4, Ogden, Utah.





including, in the Salmon River drainage, some of our important salmon spawning beds.

Second, these lands supply part-time feed--mostly during summer months--for millions of sheep and cattle; they also support the deer and elk common to the area for a somewhat longer period. Third, the streams, lakes, and woodlands provide places of recreation for about 10,000,000 people annually (1960 figures). This use is increasing at a phenomenally rapid rate, about 10 percent per year. Fourth, some so-called range lands produce some timber.

These valuable range-watershed lands are administered by several agencies. Approximately 80 percent is in national forests. Most of the remainder is administered by the Bureau of Land Management and the states; only a very small part is privately owned.

Because of the multitude of products and services these mountain range-watersheds provide to millions of people, the national forest lands are managed under the "multiple-use" principle, the objective of which is to make them serve the permanent good of the whole people. On national forests this principle has recently been given statutory authority by Public Law 86-517, approved June 12, 1960, commonly called the Multiple Use Law. The extent to which lands in other ownerships are managed in a like manner is not known, but the author understands that the Bureau of Land Management adheres to this principle.



The soil mantle that covers most of these mountain lands influences their productive and hydrologic functions more than any other physical characteristic. In judging the condition of range-watershed lands many persons emphasize characteristics that can be examined at or near the surface; too often they hardly consider the subsurface soil and other conditions beneath the surface. Accordingly, this paper deals mostly with watershed soil-- its protective covering, depth, age, and other properties that influence the functions and services that range-watershed lands perform.

-o0o-

The surest way not to fail is to determine  
to succeed. --Sheridan.

-o0o-

S A F E T Y   M E S S A G E

BE PATIENT TODAY - NOT A PATIENT TOMORROW

- - - -



THE INTERNATIONAL AGE IN GRASSLAND MANAGEMENT  
(Abstract of Paper Given at the 14th Annual Meeting of  
the American Society of Range Management)

By Marion Clawson\*

- - -

In the dynamic uncertain modern world, technical assistance programs by the economically developed nations to help the less developed ones are basic. The vast populations of the poor countries are unwilling to accept their poverty as inevitable. They demand more; we can help them. Our own self-interest combines with our humanitarian instincts to lead us into world-wide economic development programs.

The undeveloped world is primarily agricultural; much of it depends heavily upon a grazing type of agriculture. Scientific range management methods can help such countries increase their livestock output, as they have helped in this country. Their range management problems are primarily human and only secondarily technical. The technical problems will yield to the scientific approach, the same as our technical problems have yielded to this approach. But the owner of the livestock must be encouraged to use new methods. His methods of living, of thinking, of doing are different from ours. He can change, but slowly; and he must be convinced of the wisdom of what we propose to him.

---

\*Director of Land Use and Management Resources for the Future  
1775 Massachusetts Avenue, N. W., Washington, D. C.



If the United States is to carry out its technical assistance programs effectively, we must find ways to enlist the participation of the very ablest professional workers in every field. The job in a strange country is always more difficult than the one at home, in a more familiar environment. Men who go there must be technically competent; they must also be adaptable, imaginative, sympathetic, stable. To attract such men to foreign assignments, we must make such work attractive, not only in terms of salary and living conditions, but also in terms of professional recognition. The time will come when a tour of duty abroad will rank as high in the professional scale as graduate study; both are necessary to the well-rounded man.

-o0o-

Looking ahead is a good way  
to keep from falling behind.

-o0o-





CHEMICAL FILMS FOR EVAPORATION  
RETARDATION UNDER FIELD CONDITIONS

(Abstract of Paper Given at the 14th Annual Meeting  
of the American Society of Range Management)

By Wm. J. Waldrip\*

- - - - -

Much has been written in recent years about the increasingly apparent water problem in the U. S. Ground water sources are no longer adequate. More and more surface water is used each year to meet the needs of a growing population. Between 1947 and 1954, there was a 71 percent increase in reservoir capacity. It has been estimated that the total reservoir capacity will be doubled during the next 25 years.

By far the biggest thief of the surface water is evaporation. As much water is lost each year to this culprit as is consumed by all water users. On farm and ranch ponds in the southwest evaporation losses may be as much as 10 times the amount consumed by livestock.

Evaporation retardation by chemical means offers a promising method of conserving surface-stored water. In recent years research has been increased on the use of monomolecular films for this purpose. Recent research on the Texas Experimental Ranch in Throckmorton County has been aimed specifically at evaluating the effectiveness of chemical films for evaporation retardation on small stock ponds under field conditions.

---

\*Range Specialist, Texas Experimental Ranch, Seymour



The most commonly used material for providing a monomolecular film for evaporation retardation is cetyl alcohol (Hexadecanol). Hexadecanol and octadecanol are long chain, fatty alcohols produced from animal, vegetable and marine oils. They are mostly odorless, tasteless, and non-toxic to plant life. Unlike oils, these long chain alcohols spread rapidly forming an invisible film one molecule thick. Laboratory tests by the Texas Engineering Experiment Station indicated that a compound of about 50 percent hexadecanol and 50 percent octadecanol gave results equal to or better than other materials tested. The chemical must be applied in a quantity sufficient to produce a compressed film one molecule thick.

Twin ponds, each with a water surface 75' x 100' when filled to a depth of 5 feet, were constructed on the Texas Experimental Ranch. A single large sheet of polyethylene was placed on the floor and sides of each pond to prevent seepage, and dikes were built around the ponds to reduce runoff intake to a minimum. One of the twins was treated with anti-evaporant and the other served as a check.

Rods of solid hexadecanol stretched on lines across the tank during July and August, 1959 did not release material sufficient to maintain a film under the high wind velocities and temperatures present in this area. No difference in evaporation was discernible on the treated and untreated ponds.



In September, 1959, capillary drippers were substituted for the rods. Although variable winds and low temperatures which caused solidification of the hexadecanol reduced the efficiency of the drippers, evaporation was reduced almost 25 percent during a 50-day test period.

An improved system of dispersal and a solution of hexadecanol which remains a liquid even at extremely low temperatures were introduced for tests during 1960. Individual drippers made of ordinary 5 gallon oil cans were placed on wooden frames on the upwind sides of the ponds to be treated. These systems were relatively trouble free, and even on ponds to which livestock had access, the drippers were not damaged. An average reduction in evaporation of 17 percent was obtained during 73 days of treatment. During periods of low wind velocity, daily savings of more than 25 percent were obtained.

-o0o-

There are two doors to opportunity:

Push and pull.



POCKET GOPHER FOOD HABITS  
ON WESTERN COLORADO RANGELANDS

(Abstract of Paper Given at the 14th Annual Meeting  
of the American Society of Range Management)

By  
A. Lorin Ward\*  
and  
James O. Keith\*\*

- - - -

Pocket gophers inhabit millions of acres of rangeland in the western United States. Their influence on range condition and trend thus becomes increasingly important as management of these lands becomes more intensive. This study of pocket gopher food habits on Black Mesa in western Colorado was conducted to disclose information useful in determining the part feeding activity by gophers plays in influencing changes in vegetation and to what extent these rodents compete with livestock for forage.

Black Mesa is typical of the high plateaus of the western slope of the Central Rocky Mountains. Study areas were located at about 9,800 feet elevation. The topography is primarily gently rolling slopes between the shallow drainages that flow southwest into the Gunnison River.

Herbage production on Black Mesa averages about 1,400 pounds per acre, of which about 50 percent is grasses, 42 percent is forbs,

---

\* Biologist, Wildlife Research Center, Bureau of Sport Fisheries and Wildlife, Denver 25, Colorado

\*\* Range Conservationist, Rocky Mountain Forest and Range Experiment Station, Grand Junction, Colorado





and 8 percent is shrubs. Common species in the order of their abundance include: Idaho fescue (Festuca idahoensis), Fremont's geranium (Geranium fremontii), hairy-golden aster (Chrysopsis villosa), Letterman's needle grass (Stipa lettermani), Thurber fescue (Festuca thurberi), aspen fleabane (Erigeron macranthus), and aspen peavine (Lathyrus leucanthus). In 1957, gopher numbers in areas similar to those used in this study averaged about 22 animals per acre.

Stomach contents of 397 mountain pocket gophers (Thomomys talpoides) collected from experimental pastures on Black Mesa, Colorado, in the summers of 1957 and 1958, were analyzed. The examinations disclosed the chief foods of the gophers to be perennial forbs. Nine of the most important plants taken in order of importance were: aspen fleabane, lupine (Lupinus spp.), hairy-golden aster, aspen peavine, common dandelion (Taraxacum officinale), Fremont's geranium, potentilla (Potentilla pulcherrima), western yarrow, (Achillea lanulosa), and mountain dandelion (Agoseris spp.). Although grass made up about half of the herbage produced on this area, it amounted to only 6 percent of the total volume of contents of the gopher stomachs. Above-ground vegetation made up 3/4 of the feed consumed.



# CATTLE DYEING STUDY OF THE SALINA, UTAH FFA CHAPTER

Conducted Under the Direction of  
E. Smith Peterson and William C. Hill\*

- - - -

## Purpose

To test several dye materials for dyeing qualities, visibility, and retention period. To also test application by stencil and spray.

## Procedure

Cattle were dyed on face, shoulder, ribs and hips. The animals were placed into a chute for dye application.

Two applicators were tried, a stencil brush (Marsh FB-26) with 1-1/2-inch bristles, a Fry Fire Extinguisher spray.

Dye visibility observations were made every 19 days.

## Results

Dyeing by stencil brush resulted in a concentrated dye area which was readily seen, while the spray gun application resulted in a less distinct mottled marking.

Penetration of the dye from the sprayer was not good and dye retention was poor. The dye applied with a spray was faded or completely gone 37 days after application.

A better retention of the dye was obtained when the stencil brush was used. Dye markings were visible for a maximum period of 73 days when the brush was used.

The addition of a detergent to the dye did not materially increase its longevity. Black was the most durable dye color used.

---

\*Instructor Vocational Agriculture, North Sevier High School  
Forest Ranger, Salina, Utah





MEMBER OF SALINA, UTAH FFA CHAPTER APPLIES  
MARKING DYE ON ANIMALS AT GOOSEBERRY PAS-  
TURE EXPERIMENTAL RANGE



## STEEL POSTS AND LET-DOWN FENCES

Adapted from a suggestion by Owen M. Despain\*

--- --

Let-down fences are now standard in many mountainous areas where deep snow is a problem. The use of steel line posts is common practice.

One of the time-consuming factors in putting up fences where steel line posts have been used has been picking up the wire loop from the ground and placing it over the fence stay. To overcome this difficulty, steel posts are now available with holes drilled at intervals the length of the post or with a hole near the top of the post and one near the lower end.

It has been found that a wire loop spliced with a micro-press sleeve does an excellent job. Either No. 12 or 9 galvanized wire is satisfactory. Splice made with a micro-press sleeve is neater and requires less time than does a "Western Union" splice, or a splice made by simply twisting the wire ends together.

The use of No. 9 wire is recommended for these wire loops as it is more rigid and thus holds its shape. No. 12 wire can be used to reduce costs but the wire is more pliable and the loops tend to flatten, making the placement and removal of the wire from the stay more difficult.

On wooden posts the loop is secured at the proper position near the top of the post with a staple.

---

\*District Forest Ranger, Logan, Utah







STAY HELD IN PLACE WITH A LOOP WIRE THROUGH HOLE IN METAL POST



CLOSEUP OF NO. 9 WIRE THROUGH METAL POST AND AROUND STAY. SHOWN IS A NICROPRESS SLEEVE SPLICE





