CALIFORNIA SECTION NEWS LETTER

American Society of Range Management

To Foster Advancement in the Science and Art of Grazing Land Management

The Trail Boss

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RANGE AND WATERSHED IMPROVEMENT IN SOUTHERN CALIFORNIA

CHARLES FORWARD, Rancher

The first form of range improvement began in Southern California in the year 1769 when the Franciscan missionaries imported cattle and horses for the first mission in California, located in what is now known as Mission Valley near the city of San Diego.

As these Spanish settlers arrived they began to introduce annual grasses such as filaree, bur clover and wild oats. As additional missions were built in southern California these early settlers encountered large brush fields when they drove cattle herds from one mission to another. This brought about the use of fire to clear these dense thickets which in turn produced excellent browse for the mission herds.

From 1769 until the early 1900's fire was the only means for early settlers to keep brush fields under control. Reseeding the burned areas was nearly impossible due to lack of commercial seed production as we know it today.

Introduced Perennial Grasses in San Diego County

R. Merton Love, Past Chairman, California Section, American Society of Range Management

Perennial grasses are not new to Southern California. Smilo was tried by the California Experiment Station in 1879. P. B. Kennedy, Professor of Agronomy had trials of it in 1914 and 1917, and was corresponding with G. D. Stead, Oakdale Ranch, Spring Valley, San Diego County about calling this grass "smilo."

P. B. Kennedy first tried Hardinggrass in 1914. There is a 45-year old planting of it near Warner Hot Springs, San Diego County.

He also tried veldtgrass in 1929. B. J. Jones, Extension Agronomist, had successful trials with farm advisors from 1937 on. John Dahl and Charles Forward, Ramona, have been very helpful to the Agronomy Department in it's veldt breeding program.

On the Massey lease, Cleveland National Forest, San Diego County, the Range Demonstration Project of the University has successfully established 300 acres of these three species since 1953.

These trial plantings for the first time in the history of California gave cattlemen new grasses and legumes to improve their brush covered areas and annual grasslands. Soon commercial seed was produced of several varieties that proved to do well under range use. In addition importations of grass and legume seeds from foreign countries assisted in making large scale range seedings possible.

In 1945 the state legislature made it possible for cattlemen of California to conduct control burning under the direction of the State Division of Forestry.

For the first time, in 1946, 1,800 acres of brush was removed by means of control burning. 150 acres were seeded with annual rye grass and alfalfa. By 1959 the cattlemen of San Diego county had cleared 20,899 acres of brush and seeded over 8,400 acres. Some of the varieties seeded were rye, soft chess (blando brome) harding, veldt, smilo, tall fescue and wheatgrass. Also seeded were orchard and bur clover, rose, crimson and subterranean clovers. Lana wollypod vetch has also been successfully grown on large scale seedings.

Controlling the regrowth of brush presents a major problem in range improvement. In 1958, cattlemen of San Diego County treated mechanically and with chemical brush killers, 730 acres of regrowth brush. Chemical treatment of certain varieties of brush is found to be effective but the cost per acre is high. However, the loss of dry feed that is necessary to carry a fire for reburning brush sprouts and seedlings must be taken under

consideration. In years of low rainfall the loss of dry feed from reburning can be very expensive.

Nearly three quarters of a million acres of brushland in San Diego County still remains to be made to produce more livestock forage, more water for general use, and better wild-life cover, as well as a reduced fire hazard to the general public.

The Forward Ranch is located in San Diego County nine miles S. W. of the town of Ramona and 38 miles N. E. of San Diego. The terrain is rough and steep, covered with large boulders and broken by open valleys and fields. The soil is fertile enough to support a good growth of annual and perennials grasses in the bottom land and north slope areas. On the south slopes perennials such as harding and smilo produce the most forage. On the unimproved brushland many types of brush grow to a height of more than twenty feet. Scrub oak, lilac, manzanita, coffeeberry, sugarbush, sumac and sage are the most prevalent types of brush found on the ranch. The rainfall since 1957 has reached an annual total of forty inches and a record low this season of 9.70 inches. The average for the past twenty two years is twenty inches per season. Winter temperatures seldom drop below 25 degrees and reach above 100 degrees at times during the summer months. The fall months of the year always bring drying easterly winds from the desert. For this reason, all control burning must be completed by September. Very satisfactory control burns have been carried out from the months of March through August.

In April of 1949 I conducted my first control burn over fifty acres of heavy brushland. Previous efforts had been made to clear brush by bulldozer, but it was soon found that this was not practical. Roughness of terrain made it an extremely slow process and the soil was left completely stripped and open for erosion. I soon learned the areas that suffered from erosion were the firebreaks and not the controlled burn areas.

In December following the control burn 10 pounds per acre of a mix containing rye grass, soft chess, harding, smilo and bur clover was broadcast over deep white ash. The following spring after 20.75 inches of rain the annual grasses averaged a height of three feet. The harding and smilo reached a height of about six inches. The area was grazed during the early summer months.

In the summer of 1951 the same 50 acre pasture was reburned to control regrowth of the brush. In addition 400 acres of heavy brush land averaging a height of twenty feet in many places, was control burned with excellent results. The brush was not crushed before burning. This 400 acre pasture was seeded the following November by plane. The mixture consisted of wimmera rye, soft chess, tall fescue, harding, smilo, bur clover, alfalfa, rose clover at the rate of 15 lbs per acre. About 100 acres was treated with a sheepsfoot roller for seed coverage. It proved most satisfactory in helping to establish the grass. The wimmera rye grass grew to a height of five feet in some of the deeper soils. However the growth of the rye grass provided severe competition for the perennial grasses.

It became evident by 1954 that a change in the seeding program was necessary if long term results were to be obtained. By 1954 most of the rye grass had disappeared in all but the best of soils. The alfalfa was a failure. Harding and smilo were doing well on the south slopes with the exception of areas where the growth of the ryegrass had been the greatest. The ryegrass set the perennials back badly in these areas. It also became evident that harding and smilo grass required a much less fertile soil in which to grow.

Other broadcast seedings were made following control burns in 1954 and 1956 using only harding, veldt and smilo with a small amount of blando brome. This along with bur clover and lana woolypod vetch proved to make an excellent mixture and the soft chess did not slow the growth of the perennial grasses.

In November of 1958 a demonstration seeding was made on about 30 acres of burned brushland using the University of California's Range Drill which band seeds the fertilizer below the grass seed. Ten pounds per acre of perennial grasses with ten pounds per acre of legumes including rose, crimson, subterranean clovers and lana wollypod vetch was seeded. From February 22 to May 22 only .20 of an inch of rain fell. Many of the young plants have died due to this record drought in southern California. However a considerable number of veldt, harding and smilo plants are still alive and

are setting seed. This is also true of some of the legumes. Enough plants have survived to insure a good stand of perennial grasses in years to come.

An equally important benefit that has been realized in addition to increased forage is the additional runoff from the 1000 acre watershed. In years of low rainfall the increase is most noticeable, due to the deep rooted brush being removed. A smaller amount of rain is now needed to support the grass cover which in turn increases the runoff into the four irrigation dams. The increased runoff has allowed the development of irrigated pasture which is utilized by steers raised from the Hereford cow herd. Without the irrigated pasture the steers would be sold as calves when they reach a weight of 400 lbs. With the pasture these animals can be held until they average 1000 lbs and sold as "choice" grade steers.

Since large scale brush removal has taken place an additional number of deer, quail, dove and racoons have been observed. In years past these animals and birds were seldom seen. It is not unusual to see a herd of 10 to 12 deer. They help considerably to keep some of the brush from growing back as fast as it normally would by utilizing the browse.

After converting over 1000 acres of brushland to grassland the need for improving the natural open grassland became most apparent. In April of 1957, forty two acres of worn grain land was disced and seeded to Sudan grass. The cow herd grazed the Sudan field until September.

In November of 1957 harding and smilo at the rate of four pounds to the acre each, along with one half pound of veldt were drilled with a band seed drill using 100 lbs per acre of 11-48 ammonium phosphate. The seed was drilled into the sudan stubble without prior discing. Rainfall for the season was over 31 inches and an excellent stand resulted. Severe competition was experienced from annual grasses and weeds. The field was moved twice during the growing season and was sprayed with 2-4-D weed killer once. Cattle were turned into the field late in the summer.

This season the stand looks excellent with the harding and veldt averaging two feet in height. The veldt has thickened up considerably. This field was a high producer this year with only 9.70 inches of rainfall. Annual grasses did well to obtain six inches in height before setting seed. By the step point system a total ground cover of 18% was measured. Harding grass averaged 5.89%, veldt 1.21% and smilo .13%. Native annual grasses averaged 5.76% and miscellaneous weeds accounted for 4.91%.

The outstanding feature of this field, as well as the former brush land areas seeded into perennials, is that they not only produce earlier feed in the fall of the year and into the late spring but they out produce the total amount of feed per acre as compared with annual grasses, especially in shallow soils and in low rain fall.

There is little purpose in removing brush and seeding improved varieties of grasses and legumes if emphasis is not placed upon care in establishing the stand and good management practices in years following.

In the brushlands of southern California there lies a great potential wealth in forage, water and game IF it is properly utilized. Under the present policies of the Federal and State forestry agencies slow progress is being made in this direction.

Proper development of southern California's watersheds by removing brush where grass will thrive is a must from a water development standpoint. The people of the state cannot expect the north to supply them with an unlimited amount of water in the future. Southern California must help develop its own water resources.

It has been proven through joint efforts of ranchers, the University of California at Davis, U. S. Forest Service Region 5, and the California State Division of Forestry that brushlands can successfully be converted to grasslands.

RANGE IMPROVEMENT TRIALS IN SAN DIEGO COUNTY

VICTOR BROWN, Farm Advisor

Improving San Diego's rangelands has been under observation by technicians and ranchers for many years. The U. S. Naval Air Station made one of the early requests for trials in 1923 in an attempt to find improved dryland grasses for late fall and early winter. They called Farm Advisor, James France, for help in finding a grass that would make a strong turf for the landing field for

airplanes to reduce the hazard to aviators in landing on a rough field and to reduce dust nuisance. The first written project was signed Sept. 1, 1923 and stated "The animal as well as the human population of San Diego County has been increasing and the range acreage decreasing. The decrease in range is due to the breaking up of ranges for more intensive crops and methods of farming, and the stimulus to the dairy industry from increased urban population." Little did agronomists realize what was ahead of them, and now, some 36 years later, that same statement summarizes to-day's problem to cattlemen. Neil Galloway was one of the first ranchers who not only had the interest but made trial plantings as long as forty years ago. Neil has planted grass trials each year since and takes notes on each planting. The trials established by Farm Advisor, James France, included hardinggrass, San Diego or smilo grass, kikuyu grass and rhodes grass. In 1922 he states that 10 pounds of hardinggrass was planted at Bonsall, Ramona, San Pasqual, and Bonita. The planting was a failure.

From that time on the Agricultural Extension Service has been working with ranchers and agencies in testing and demonstrating all facets of range improvement. Primarily this work has been in the study of (1) adaptability of grasses and legumes, (2) Methods of brush removal and control, (3) Methods of stand establishment and (4) Range management including fertilization.

Adaptability Trials

Since the very beginning of range improvement, adaptability trials have been planted each year. The seed has been furnished by the Agronomy Department of the University of California at Davis. Area trial plantings are usually less than 3 acres and rod row nursery plantings usually accompany these area seeding trials. In the last five years such plantings have been made in 16 different locations over the county. Observation notes are taken on surviving species.

Seeded Species	Range Elevations to 2000'	2000' to 4000'	over 4000'
Perennials			
*Hardinggrass	Good	Good	Fair
*Smilo	Good	Good	Fair
*Veldt	Good	Good	Poor
*Tall Wheatgrass	Poor	Fair	Good
Intermediate Wheatgrass	Poor	Fair	Good
Pubescent Wheatgrass	Poor	Fair	Good
Perennial Ryegrass	Fair	Good	Fair
Orchard Grass	Poor	Good	Good
Alfalfa	Poor	Fair	Fair
Annuals			
Ryegrass	Fair	Good	Fair
*Soft Chess (Blando Brome)	Good	Good	
*Rose Clover	Fair	Fair	
Crimson Clover	Fair	Fair	
Subterranean Clover	Fair	Fair	
Bur Clover	Good	Good	Fair
Vetch (Lana Woolypod)	Fair	Good	Fair

*Varieties that have proven most successful in San Diego test plots.

Brush Removal Methods

Combination of fire, chemicals, and mechanical means have been attempted in removing brush with varying degrees of success. With fire being the least expensive method of removal, a project was started to study various methods of brush manipulation in connection with fire. The project was known as the "Bressi Ranch Range Study." This was a cooperative project with the land owner, Mrs. Vincent Bressi; the rancher, Alwin Wiegand and Sons: Agricultural Extension Service, University of California; and the California Division of Forestry. The total area of 122 acres was divided into 5 plots, each receiving different treatment before burning.

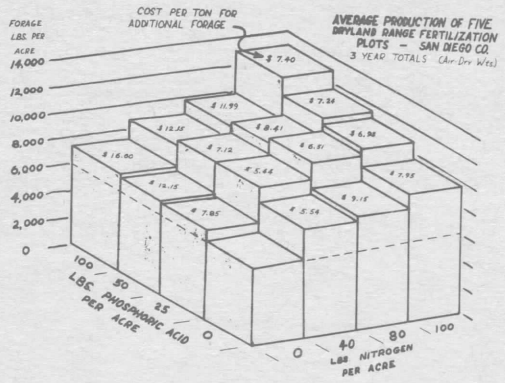
Plot	Treatment	Cost per Acre	Effectiveness of Burn
1	Anchor Chained	$4.17	Gd to Excel.
2	Simultaneous Ignition	1.97	Good
3	Anchor Chained one year before burning	4.17	Gd to Excel.
4	No Treatment before burning	-	Fair
5	Sprayed with herbicide before burning	6.90	Fair

Results of this work indicate an advantage in brush manipulation prior to burning. Control of the regrowth by chemical spraying has been successful particularly on chamise.

Range Fertilization

Unpredictable rainfall patterns in San Diego has raised serious doubts among cattlemen as to whether or not fertilization has a practical application on our ranges. Over 15 trials were put out over the County in the

last four years in an attempt to determine the most effective responses and the most practical rates of application. On 5 of these plots clipping yields were obtainable for 3 consecutive years.



It was found that most of our ranges are deficient in phosphorus as well as nitrogen. Carryover responses for two years were detected in all plots with both nitrogen and phosphorus. A large scale trial where cattle were weighed in and out were carried out on the Tule Springs Experimental Range.

Extracted From Information Supplied by Irvin L. Sealander, Range Conservationist, S.C.S, Escondido

Since 1944, 140 range improvement trials have been conducted in San Diego Soil Conservation Districts. Hardinggrass, blando brome, wimmera ryegrass, and lana vetch are being used for range seeding. Charles Gerhart, Murrieta, reports that 13 acres of weeping lovegrass, planted on deep loamy soil in the spring of 1957 produced more summer feed with 60% less water compared with alfalfa. This is near Aguanga.

The Temecula Field Evaluation Planting in Riverside County was initiated by the Plant Materials Center, Pleasanton, in 1955. Commonly used range grasses and legumes, such as blando brome, wimmera ryegrass, hardinggrass, veldt, lana vetch, and rose clover are compared with newer plants. Records are taken of yield, persistence, response to competition and fertilization.

Clark Moore, Conservationist, Arroyo Grande Soil Conservation District, notes that R. W. Andrews, who started working with Dr. Love and Russ Helphenstine (Agr. Ext. Service) in 1959, has now about 800 acres in veldt grass. R. W. Mors, Conservationist, Santa Maria, reports that Dante Acquistapace is pleased with veldt. At least 6 other ranchers in the area use it.

CALL FOR PAPERS FOR ANNUAL MEETING, NOVEMBER 9, 1959

LISLE R. GREEN

Your program committee, consisting of Dr. R. B. Bahme, Marvin Dodge and Lisle Green, are soliciting volunteer papers for the annual meeting to be held in Berkeley, November 9 and 10, 1959. Any subject related to range management is acceptable. The deadline is September 1. After that your committee will request papers as necessary to complete the program, so get your title in early. Send notification of intent to give a paper, and the title, to Lisle R. Green, Soil Science Department, Cal Poly College, San Luis Obispo by September 1. Abstracts will be due on October 1, 1959.

NOTICE OF NATIONAL SUMMER FIELD MEETING

R. J. GREFFENIUS, Chairman, Colorado Section, A.S.R.M.

You and your families and friends are invited to attend the national summer meeting of the Society at Gunnison, Colorado, July 30-August 1, 1959.

Reservations for motel or hotel should be sent to Mr. Ed Stein, Forest Supervisor, Gunnison National Forest, Gunnison, Colorado. Requests for reservations should specify:

1. Number in party
2. Hotel or motel
3. Arriving time

Colorado is celebrating the Rush to the Rockies Centennial year and this will increase the demand for accommodations. Beards are very much in order men, so it will be O.K. to leave your razor at home. And ladies your gay nineties outfits would fit in well with the centennial festivities.

The National Board of Directors will meet in Gunnison, Colorado on July 30, 1959.

Several range society members took part in the recent field tour of the Range Advisory Committee to the State Board of Forestry held in San Diego County on June 11.

Chairman Hall Miller called a council meeting on the Davis Campus on April 18, 1959. Council members present were B. L. Kay, L. N. Green, C. Carlson, A. Schultz, R. M. Love and L. J. Berry, Committee chairmen present were C. F. Walker, J. I. Mallory and Joe Woolfolk.

The University of California at Davis has established a policy of rotation of departmental chairmen. Dr. R. M. Love has now been appointed Chairman of the Agronomy Department. He will succeed Dr. M. L. Peterson who has been Chairman since 1952.

John R. Stechman is a new graduate student in Range Management on the Davis Campus. John received his B. S. in Range Management at Davis in 1957 and has just completed a 2 year tour of duty in the service.

Lester Berry, former Extension Range Improvement Specialist, has been appointed Assistant State Director of Extension.

From Arizona Section Newsletter –

Horace S. Haskell of Flagstaff, one of our "Life" members, died February 5, 1959 (Horace was a member of the California Section from about 1950-54. His many friends in the California Section will miss his periodic visits. BLK)

If you have news that you would like to share with your fellow society members send it to: C. F. Walker, Chairman Newsletter Committee, Agronomy Department, University of California, Davis. Deadline for next newsletter is September 1. We are presently depending on the Section Chairman, Secty-Treasurer and the Chapter Chairman for news. They can use your help. It would also be appreciated for members knowing of interested individuals or organizations who would sponsor a newsletter to come forward with this information. Each newsletter can be sponsored for $50.00. Contact either C. F. Walker or B. L. Kay, University of California at Davis.

THIS NEWSLETTER SPONSORED BY CHARLES FORWARD, RAMONA, CALIFORNIA

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