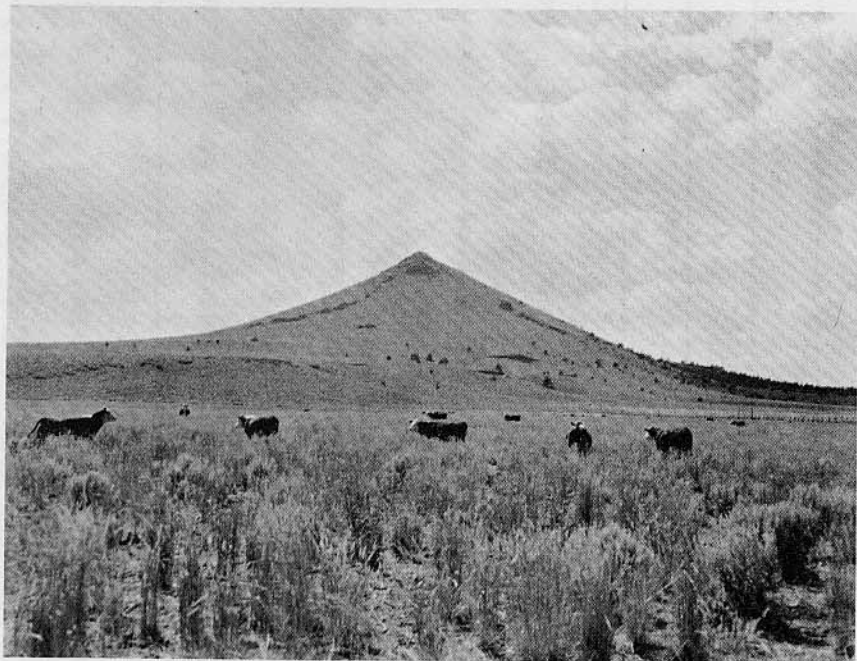

Grass to Beef



Squaw Butte-Harney Experiment Station, Burns, Oregon

Jointly operated and financed by Crops Research Division, Agricultural Research Service, USDA, and Oregon Agricultural Experiment Station, Corvallis, Oregon

Circular of Information 602

June 1960

Grass to Beef at Squaw Butte

More and better beef—the goal of every rancher—is also the goal of research and management at Squaw Butte. The management of Squaw Butte land and cattle operations is directed toward increased beef production. Practices used and results obtained may be duplicated by many ranchers.

Grass to Beef

Foreword

Figure 1 shows the average weight of cows, calves, and yearlings leaving the range in September or October from 1946 to 1959. The trend is toward larger cattle, cow numbers have been increased steadily since 1955—150 head bred in 1955 to 220 head in 1959.

This is a sequel to Circular of Information 590, Sagebrush or Grass. For this 11th annual Field Day report, emphasis is again being placed upon the application of research--this time in production of beef.

What is happening on Squaw Butte in the way of increased beef production can be accomplished on every livestock ranch in the big sagebrush country.

Nowhere in the West can so much be accomplished by ranchers as can be done by (1) spraying sagebrush (produces three times more forage) (2) seeding range (produces 10 to 20 times more forage) and (3) fertilizing meadows (produces twice more hay).

Spraying, seeding, and fertilizing can produce more range forage and hay, and at less cost, than an investment in additional land.

More feed economically produced and wisely used (livestock and grazing management) means more beef and hence more profit.

The research staff at the Squaw Butte station includes:

Donald N. Hyder)	Range Research
Forrest A. Sneva)	
C. B. Rumburg)	Meadow Research
Robert J. Raleigh)	Livestock Research
Joe D. Wallace)	
W. A. Sawyer)	Superintendent

Grass to Beef at Squaw Butte

More and better beef--the goal of every rancher--is also the goal of research and management at Squaw Butte. Application of research results in the management of Squaw Butte land and cattle over the past 10 years has increased beef production. Practices used and results obtained may be duplicated by many ranchers.

Figure 1 shows the average weight of cows, calves, and yearlings leaving the range in September or October from 1946 to 1959. In addition to larger cattle, cow numbers have been increased steadily since 1955--150 head bred in 1955 to 220 head in 1960.

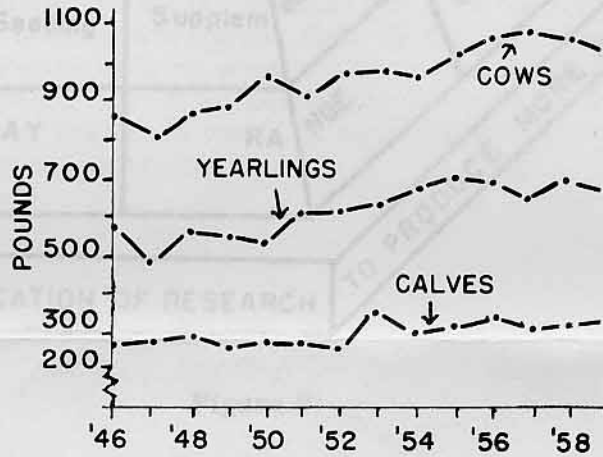


Figure 1.

Range -- Improve by: Seeding; spraying; grazing; later turnout; and uniform use by livestock, water hauling, salting, and riding.

Hay -- Improve by: Fertilizing; early cutting; seeding; and water control or management.

What is occurring at the station may be illustrated by a pyramid of blocks built upon a foundation of research (Figure 2). The cornerstone of this pyramid is more and better grass and hay. Without this cornerstone no rancher can accomplish much toward increased beef production. From 1946 to 1950 grass was overgrazed and cows were underfed on the station range. Not enough hay was produced on the station to winter the cattle. The 1959-60 winter is now over, and there is still more than one full year's supply of hay in the stack. The grazing season of 1959 (a poor grass year) was finished with more AUM's of feed taken off range than ever before. The cattle came off the range with more grass left than was produced during the entire season in the earlier years.

using fertility tested bulls; riding to keep the bulls distributed; disease and insect control.

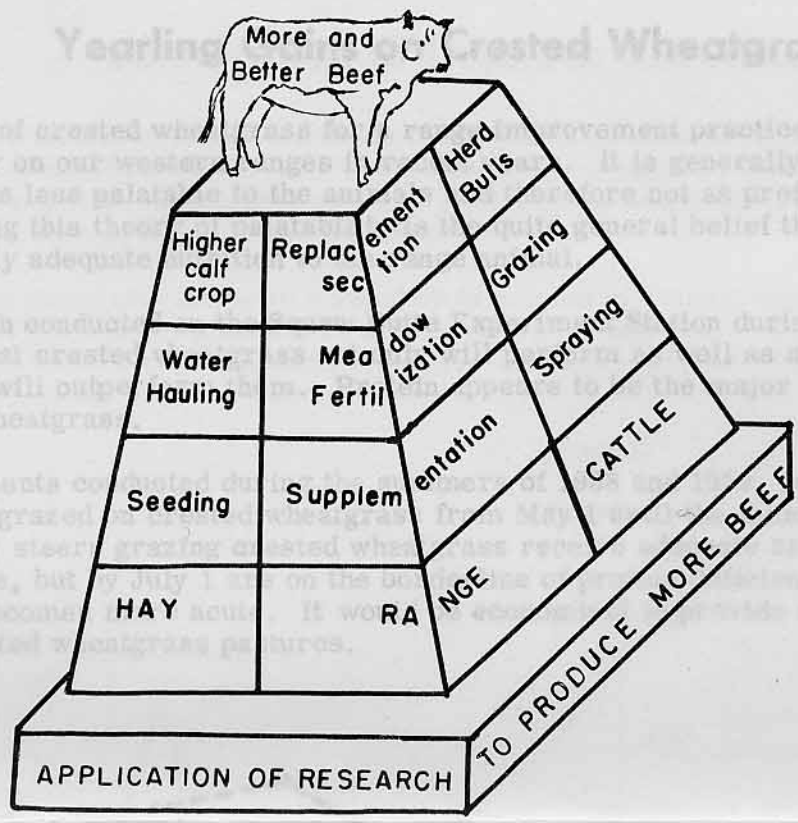


Figure 2.

Range -- Improve by: Seeding; spraying; rotation; later turnout; and uniform use by fencing, water hauling, salting, and riding.

Hay -- Improve by: Fertilizing; early cutting; seeding; and water control or management.

Cattle Quality -- Improve by: Using performance tested bulls; using performance of dams and calves in selecting replacement heifers; and culling poor quality and low producing cows.

Cattle Production -- Improve by: Supplementing on hay with protein; use of bunched hay in fall; supplementing yearlings on late summer range with protein; feeding loose salt, bonemeal and salt mix; giving replacement heifers more feed and care to increase size; wintering weaners better; shortening the breeding season to 60 days; using fertility tested bulls; riding to keep the bulls distributed; disease and insect control.

Yearling Gains on Crested Wheatgrass

Seeding of crested wheatgrass for a range improvement practice has become increasingly popular on our western ranges in recent years. It is generally believed that crested wheatgrass is less palatable to the animals and therefore not as preferable as native grasses. Accompanying this theory of palatability is the quite general belief that crested wheatgrass fails to supply adequate nutrition to the range animal.

Research conducted on the Squaw Butte Experiment Station during the last two years has shown that crested wheatgrass not only will perform as well as native grasses, but in some cases will outperform them. Protein appears to be the major factor in the quality of crested wheatgrass.

Experiments conducted during the summers of 1958 and 1959, in which yearling steers were grazed on crested wheatgrass from May 1 until the middle of August, indicate that yearling steers grazing crested wheatgrass receive adequate crude protein through May and June, but by July 1 are on the borderline of protein deficiency. After July 1 this deficiency becomes more acute. It would be economical to provide a supplement at this time on crested wheatgrass pastures.

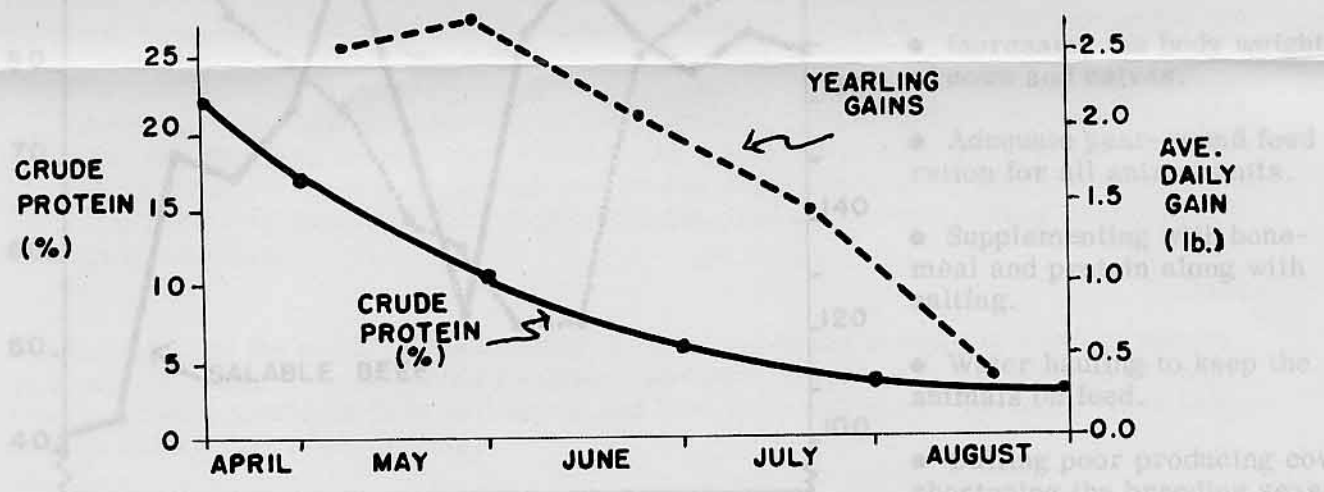


Figure 3. Crude protein content of crested wheatgrass and yearling gains.

How do our native grasses stack up nutritionally over this period when crested wheatgrass is nutritionally inadequate? Grazing data collected at this station during August of 1956 and 1957, using yearlings on both native and crested ranges, indicates that animals do better on the crested wheatgrass range. The 2-year average shows that yearlings gained an average of 0.78 lb. per day on crested wheatgrass as compared to 0.49 lb. on native forage.

- Water hauling to get the cows to the forage.
- Seeding the better soil areas to crested wheatgrass for spring grazing.
- Spraying for brush control.
- Fertilizing the meadows.

Alternatives to Livestock Reduction

There are no important alternatives to good management of land and cattle, but there can be alternatives to livestock reductions on rangeland. The problem, however, must first be considered in terms of cattle management and secondly in terms of improvement in range production and management.

The most important factor to a rancher is amount of salable beef, not number of cows. Figure 4 shows a reduction in cow numbers during 1948 to 1955, but it also shows an increase in salable yearling beef. (The low amount of salable beef in 1953 was caused by loss of 16 animals from mucosol disease.)

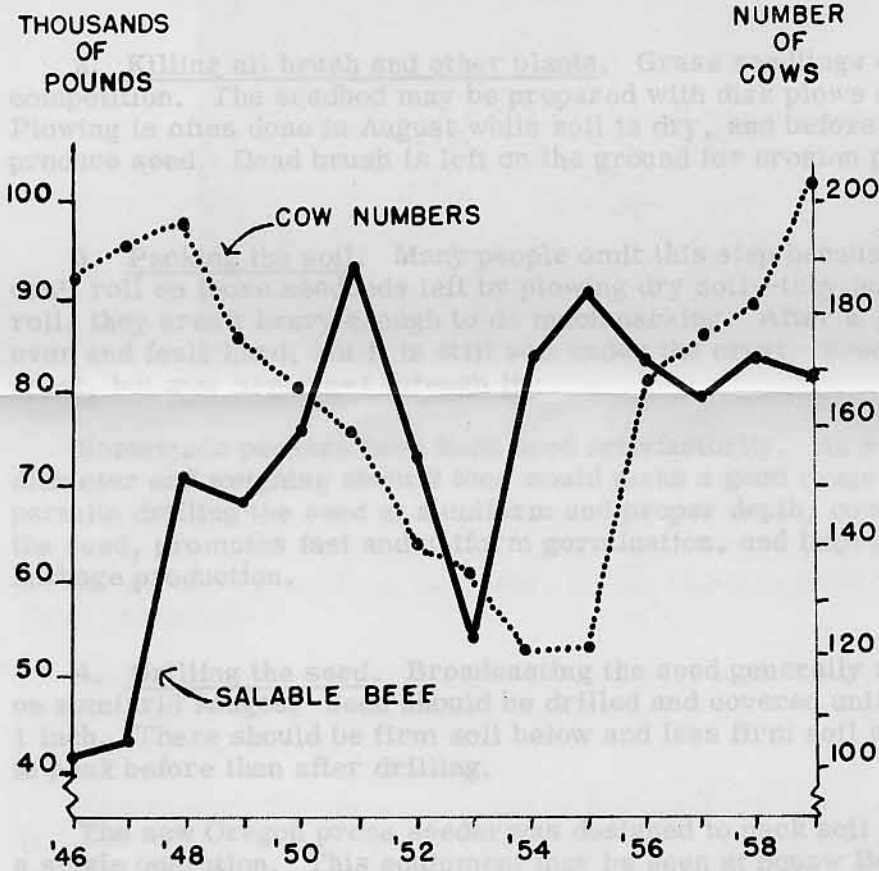


Figure 4

Figure 4 poses two questions:

1. How was salable beef increased while cow numbers decreased?

MORE BODY WEIGHT PER YEARLING is the simple answer. This was accomplished by:

- Increasing the body weights of cows and calves.
- Adequate year-round feed ration for all animal units.
- Supplementing with bone-meal and protein along with salting.
- Water hauling to keep the animals on feed.
- Culling poor producing cows, shortening the breeding season, high replacement selection standards, breeding pastures, and tested herd bulls.

2. How were cow numbers increased from 1955 to 1960?

Cow numbers increased because FORAGE AND HAY PRODUCTION WERE INCREASED. This was accomplished by:

- Delayed turnout date in the spring.
- Water hauling to get the cows to the forage.
- Seeding the better soil areas to crested wheatgrass for spring grazing.
- Spraying for brush control.
- Fertilizing the meadows.

Seeding Practices on Soft Seedbeds

Pack the soil
and drill the seed,

To grow the grass
your cows will need.

Successful range seeding has certain important steps:

1. Selecting a site. Seed grasses on the better, deeper soils in areas where forage can be readily used and properly managed.

2. Killing all brush and other plants. Grass seedlings die quickly with too much competition. The seedbed may be prepared with disk plows such as the brushland plow. Plowing is often done in August while soil is dry, and before sagebrush and rabbitbrush produce seed. Dead brush is left on the ground for erosion protection.

3. Packing the soil. Many people omit this step because ordinary cultipackers don't roll on loose seedbeds left by plowing dry soil--they just drag. Even when they roll, they aren't heavy enough to do much packing. After a good rain the soil crusts over and feels hard, but it is still soft under the crust. Seed may germinate under the crust, but may never get through it.

Homemade packers have been used satisfactorily. An 8-foot roller with a 30-inch diameter and weighing about 2 tons would make a good range packer. Packing soil permits drilling the seed at a uniform and proper depth, conserves soil moisture around the seed, promotes fast and uniform germination, and improves seedling survival and herbage production.

4. Drilling the seed. Broadcasting the seed generally results in seeding failure on semiarid ranges. Seed should be drilled and covered uniformly to a depth of about 1 inch. There should be firm soil below and less firm soil above the seed. It is better to pack before than after drilling.

The new Oregon press seeder was designed to pack soil and plant seed correctly in a single operation. This equipment may be seen at Squaw Butte.

5. Protecting seeding from grazing in the first two years. Cows, sheep, deer, or jackrabbits can ruin a new range seeding in the first year.

We hope that new materials and carriers will be developed which will give good sagebrush control when flying at higher levels. Until then--fly low to kill big sagebrush.

Better Sagebrush Control When Flying Low



Figure 5. Spraying sagebrush.

Chemical sagebrush control has become a most popular and profitable way to increase grass and beef production. Where native bunchgrasses are still thick enough that a man can step from clump to clump, killing sagebrush has increased forage production about threefold.

Aerial spraying is easy, fast, and efficient when done correctly. However, 2,4-D left floating in the air doesn't kill sagebrush--it may even move with the air and kill good plants elsewhere.

One thousand two hundred acres of big sagebrush were sprayed on Squaw Butte range in 1958. About half of the area was sprayed by a plane more than 50 feet above the ground, and half was sprayed by a plane flying lower than 25 feet. The spray applied was a water emulsion of 5 gallons per acre containing 1.5 lb./A. acid equivalent of 2,4-D ester.

Spraying higher than 50 feet killed 55% of the sagebrush, and left strips of unkilld sagebrush across the field. Spraying lower than 25 feet killed 90% of the sagebrush and did not leave swath patterns across the field. An average of 3.5 sagebrush per 100 square feet remains alive on the area sprayed at the 50-foot level. In other words, the area needs spraying again NOW.

We hope that new materials and carriers will be developed which will give good sagebrush control when flying at higher levels. Until then--fly low to kill big sagebrush.

Address

City

State

The following publications have been issued since June 1958. (Circular of Information 590, Sagebrush or Grass, contains a list of many publications issued prior to June 1958.)

1. Sagebrush or Grass.
2. The effects of low supplementary phosphorus intakes on range cows in the sagebrush-bunchgrass region.
3. Response of beef cattle to phosphorus fertilized and unfertilized flood meadow hay with in vitro observations on factors influencing rumen micro-organism activity.
4. Adaptability and yield of eleven grasses grown on the Oregon High Desert.
5. Range robbers--undesirable range plants.
6. A legume for native flood meadows: Phosphorus fertilizer requirements for maintaining stands of white-tip clover (Trifolium variegatum).
7. Oxytetracycline and high levels of phosphorus in the wintering ration of beef cattle.
8. The effect of injectable iron and oral oxytetracycline on hemoglobin, packed cell volume, and rate of gain of baby range calves.
9. The response of beef cattle to pelleted and coarsely chopped mountain meadow hay with digestibility comparisons.
10. Growth and carbohydrate trends in crested wheatgrass.
11. Bitterlich's plotless method for sampling basal ground cover of bunchgrass.

List the Paper Number(s) and your name and address below and mail to:

W. A. Sawyer, Superintendent

Squaw Butte-Harney Experiment Station

P. O. Box 833, Burns, Oregon

Please send one copy each of the following publications:

TO: _____

Name

Address

City

State