Western Ranges Loom as Biggest Potential for Fertilizer Industry

Mountain meadows likewise show promise for improvement through proper fertilization and management

KLAMATH FALLS, ORE.—Net gains for cattle ranging up to 295 pounds more per acre; net profits ranging up to $40 more per acre—these are the striking results Balfour, Guthrie & Co. got on its range fertilization demonstration program during the winter of 1953–54 on California's range lands.

A. G. Parks emphasized to those attending the Fifth Annual Pacific Northwest Fertilizer Conference here July 20 to 22 that these are not the result of field experiments but rather are of full-scale field demonstrations which show potentialities of proper range fertilization and management.

Actually, said Parks, the idea of range fertilization is not new, and there had been several such experiments during past years. While indicating that range fertilization had economic merit, these experiments were rather isolated and sporadic, however, and did not serve to capture the imagination of western ranchers. As a result of a suggestion by Ray Neidig, Balfour, Guthrie vice president and general manager, that benefits be demonstrated by measuring actual animal weight increases, a few preliminary demonstrations were carried out during the winter of 1952–53. Results were sufficiently striking to warrant expanded demonstrations during the past grazing season, Parks said.

It might be noted that California range lands in question number from 12 to 13 million acres. These lands are normally grazed from late winter—February—until midspring when the end of the rainy season brings their usefulness to a close. Cattle are then moved to higher ranges in the Sierra and in the Coast Range.

Since many California range areas are low in phosphate as well as nitrogen, 16-20-0 was selected as the major formulation used, Parks said. On several plots 11-48-0 was used. Ammonium nitrate and ammonium sulfate were used on two plots to check effectiveness of the N-P combination.

The fertilizer was applied broadcast in the fall just prior to the first effective rain. When the forage reached proper growth in both fertilized and check plots, steers were weighed in, weight again being checked at the end of the grazing season (lambs and ewes were used in one demonstration, gain in lamb weight being used as the measurement.)

Gains varied from ranch to ranch (13 demonstrations throughout the State covering the eastern slopes of the Sacramento Valley as well as Coast Range ranches south to Riverside). Net gains per acre above check demonstrations ranged up to nearly 300 pounds per acre and net profits (including fertilizer cost, excluding application cost) were as high as slightly over $40 per acre.

Parks noted that aircraft will undoubtedly be used to apply fertilizer because of the nature of much of the terrain, should range fertilization become accepted practice. As to amounts of fertilizer to be used, he said they do not yet know the economical rates of application, but he believes eventual practice will be to use more than the 400 to 500 pounds per acre used in many of the present demonstrations.

Mountain Meadow Fertilization. While California range lands are getting a sharp look for their fertilization potential grazing lands farther to the north, the so-called mountain flood meadows, are not being over-looked. For the past three years, C. S. Cooper and coworkers at Squaw Butte-Harney Range and Livestock Experiment Station, Burns, Ore., have been attempting to improve these lands by a variety of practices, prominent among which is fertilization.

(A mountain flood meadow is one from which there is no natural drainage and which, therefore, is under water for as much as three months in the late spring and early summer. These lands furnish the major part of hay fed to range cattle summering on sagebrush-bunchgrass range and account for about 3.5 million acres in western United States—about 1 million of which are in the four-state region of eastern Oregon, northern California, northwestern Nevada, and southeastern Idaho. Cooper noted these lands will remain as hay sources for the indefinite future since they can neither be drained economically nor converted to other crops because of the short growing season at the altitudes at which they lie.)

Cooper has investigated effects of nitrogen, potassium, phosphorus, boron, copper, manganese, and zinc on these mountain meadows and finds that only the major nutrients, nitrogen and phosphorus, give responses.

Nitrogen applications return about 35 additional pounds of hay for every pound applied. Phosphorus responses, however, are more complex, Cooper finds. While phosphorus increases total hay production, its most important effect is to change the type of vegetation, increasing the percentage of clover on the fields. This change in vegetation is accomplished by a combination of fertilization and delayed cutting (cutting after the clover goes to seed, thus establishing increased clover growth the following year) over a three year period.

This change in vegetation, Cooper points out, can result in marked change in protein content of the hay—some fields have been changed from below 1% clover by weight to about 80%. Cooper notes this change permits cattle to stay longer on the meadows in the spring, relieving other range areas which now suffer from overgrazing in the spring. In addition, this increase in "natural" protein could reduce the amount of protein supplement presently needed to be purchased in the area should the method find wide acceptance. Cooper points out, however, that ranchers have so far shown an amazing reluctance to embark on any extensive program.