

Salt Concentrate Mixtures

**consumption of self-fed supplemental feed mixtures
can maintain range animals on good nutrient level**

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Range ewes can be kept on the desired plane of nutrition—while consumption of supplemental feed is regulated—according to results obtained in tests with self-fed salt concentrate mixtures.

The provision of supplemental feed to range livestock is desirable during those periods of the year when the forage is lacking in the nutrients needed by the animals.

In most of the range areas of California, the dry summer feed is lacking in protein, phosphorus and carotene. Rain on this dry feed will reduce its value markedly because the rain water leaches out the more readily available nutrients. Green feed which starts after the fall rains is usually high in moisture and low in feed value until warm weather stimulates a good growth.

The provision of supplemental feed to adequately fortify the native range feed is a problem that constantly confronts the range livestock man. After a small-test under dry-lot conditions at Davis, a series of trials to study the use of self-fed salt concentrate mixtures as a supplement for range sheep was conducted at the Hopland Field Station in Mendocino County.

A trial initiated in the fall of 1951 indicated that it is possible—without adverse effects—to limit consumption of self-fed supplements by the use of granulated salt in the mixture. In this test, conducted during the five-month period of October 1, 1951, to March 2, 1952, a

constant mix consisting of 25% granulated salt and 75% cottonseed meal was self-fed to 48 Merino-Romeldale type ewes on the range. From November 19 until March 1, one pound of alfalfa hay per head per day was fed also.

Consumption varied from .16 pound of the mixture per head per day the first two weeks in October to .46 pound during the middle of January, and then dropped off sharply to .13 pound during the middle of February. The highest consumption rate occurred shortly after lambing when the weather was wet and cold. Immediately following that period, green grass in quantity began to appear, but it was washy and did not contain sufficient nutrients. The ewes actually needed more of the supplement mix—to make up for the nutrient deficiency in the grass—but consumption decreased, and the animals fell off in condition.

The wide variation in consumption suggested that perhaps a more uniform intake could be obtained by varying the salt percentage in the self-fed mixture. Consequently a self-feeding program involving 500 Merino-Romeldale-Corriedale type ewes was inaugurated during the winter of 1952-53 in which the percentage of salt was varied. Ground barley was included with the salt and cottonseed meal to supply additional carbohydrates. From November 22, 1952, to February 9, 1953 the ewes were also fed one pound of alfalfa hay per head per day.

During the period from September 17 to November 13, 1952, consumption of a mixture—30% granulated salt, 35% cottonseed meal, and 35% barley—averaged 0.64 pound per head per day.

An inch of rain had fallen on June 28 and 29 after the grass had become dry and all of the feed had been leached. On October 18 there was a rain of .2" which was followed by a period without rainfall until November 13. During the period from November 14 to December 4 with rainfall of 6.59" and grass seedlings beginning to appear, consumption of the mix decreased to 0.30 pound.

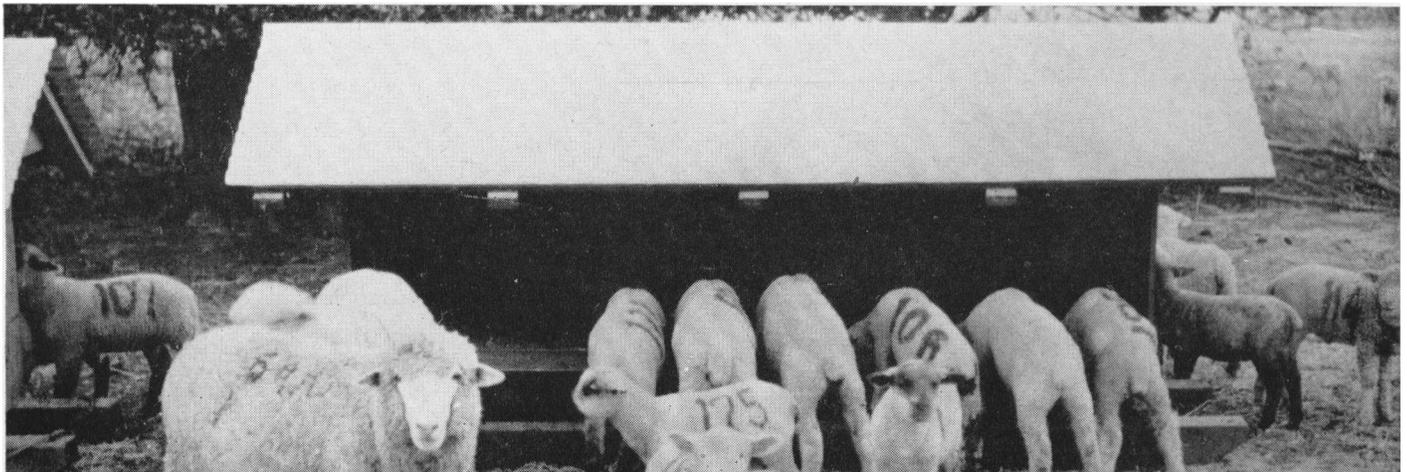
From December 5, 1952, to January 11, 1953—at lambing time—0.33 pound per head per day of cottonseed pellets was hand fed; therefore, no data on self-feeding were available for that period.

Between January 12 to January 26, 1953, the green grass started to become available and the ewes showed some preference for it. Therefore, to maintain consumption of the meal at the hand-fed level of the previous period, the percentage of salt was decreased and a mixture consisting of 20% salt, 40% cottonseed meal, and 40% barley was self-fed with a daily rate of 0.27 pound per head.

From January 27 to February 6 an increase of cottonseed meal and a decrease of barley—a mixture of 20% salt, 60% cottonseed meal, and 20% barley—resulted in an increase in consumption to 0.52 pound.

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The salt-concentrate mixtures were fed in covered self-feeders as shown below.



SALT

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During the period from February 10 to March 13—because consumption had increased so greatly in the preceding period and the grass was gaining strength—the percentage of salt was increased to 25% with 37½% cottonseed meal and 37½% barley. These dates included a warm, dry period when the grass grew rapidly. Consumption of the supplement under these conditions decreased to 0.12 pound.

As a check on such a mixture as a supplement for lambs on the range, a group of 50 ewe lambs was started on a salt-cottonseed meal-barley mix immediately after weaning in June, 1952, and continued on such a mix until April 2, 1953. The lambs received no supplement other than this mix. During this time the ratio of equal parts of barley and cottonseed meal was maintained with the percentage salt varying.

With the decrease of nutrient content in dry range feed, the consumption of a 24% salt mix increased. By increasing the salt in the mix to 30%, consumption declined. When the green feed started to appear, the lambs preferred it to the high salt mix even though the grass was low in nutritive value. Therefore, the percentage of salt was decreased to 20% and consumption immediately rose. After a month's time, when the range feed had become more nutritious, consumption again declined and on February 24 a mixture of 10% salt was fed after which consumption rose and remained fairly constant. By the first of April the grass had developed sufficient strength so as to make further supplemental feed impractical, and it was discontinued.

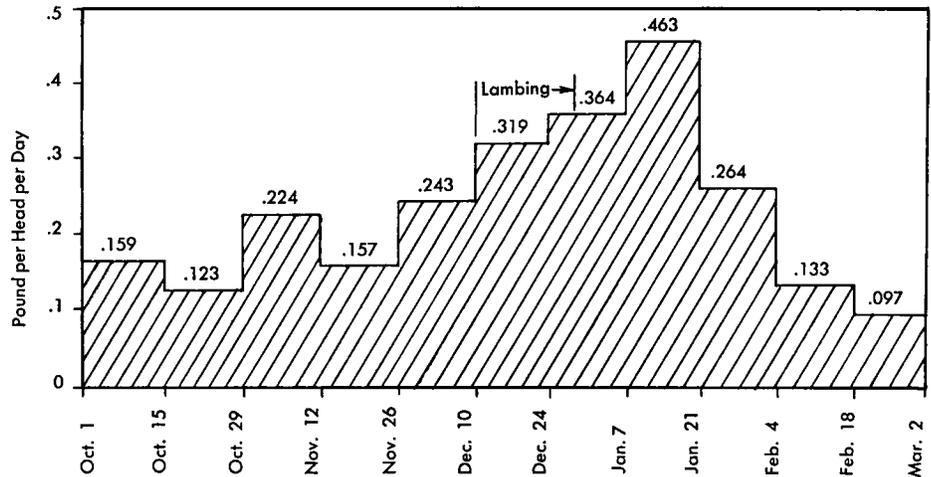
From these observations, it appears that the consumption rate of supplemental feeds is probably affected by a number of factors such as climatic conditions, the ewes' preference for feeds, the nutrient content of natural range feeds, and the lambing status of the ewes. However, consumption may be limited by the use of granulated salt in the supplement and—if not completely controlled—at least influenced by increasing or decreasing the percentage of salt in accordance with existing conditions and desired level of supplementation.

Self-feeding of salt concentrate mixtures, undoubtedly, may be used to maintain range animals on the desired plane of nutrition with considerably less labor than if daily hand feeding were practiced.

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Consumption of self-fed mix consisting of 25% salt and 75% cottonseed meal by pregnant and lactating range ewes, 1951-52.



Consumption of self-fed supplement by range ewes when regulated by the use of salt in a mixture of cottonseed meal and barley, 1952-53.

Period	Rainfall Inches	Condition of Range Feed	Mixture Content			
			Salt Per cent	Cotton- seed Meal Per cent	Barley Per cent	Total Mix Consumed Lb/Head Day
Sept. 17—Nov. 1322	Leached,* dry grass	30	35	35	.64
Nov. 14—Dec. 4 . . .	6.59	Grass seedlings appear- ing	30	35	35	.30
Dec. 5—Jan. 11 ¹ . . .	17.89					
Jan. 12—Jan. 26 . . .	4.46	Green grass with a high moisture content	20	40	40	.27
Jan. 27—Feb. 631	Grass gaining strength but short in supply	20	60	20	.52
Feb. 10—Mar. 13 . . .	1.33	Grass growing rapidly	25	37½	37½	.12

* 0.98 inch of rain June 28 and 29.

¹ Due to lack of mix, hand fed .33 pound cottonseed pellets per head per day during this period.

Salt-cottonseed meal-barley mix consumed by replacement ewe lambs, 1952-53.

