Supplemental Feed Supplies Leached Nutrient Values

H. R. Guilbert

An inch, or even less, of rain on dried range feed can leach out the soluable sugars, 10% to 20% of the protein, and as much as 60% of the mineral.

The remaining 80% to 90% of the original tonnage is higher in fiber content, lower in digestibility, and is less palatable to livestock.

A feed capable of producing one-half to one pound gain a day before leaching may be reduced in nutrient values that it is not adequate for more than maintenance.

Feed that was only maintenance feed before leaching may become so deficient in nutritional value that livestock feeding on it will lose weight.

Loss of Weight

Usually weight shrinkage begins in cattle on foothill ranges in August or September. Frequently it begins earlier where there is little or no legume forage, such as bur clover.

The increased use and acreage of irrigated pastures have helped some stockman meet the problem of shrinking stock weights. Such acreage is not yet adequate, generally, to make a balanced operation—with native feed—to form a year-long program of adequate nutrition and continuous growth and development of the cattle.

When weight losses begin, the cattle literally are supplementing the range feed with their stored weight.

Body fat is used to make up the difference when energy derived from the feed is insufficient to meet the needs of the animal for maintenance of body processes, the regulation of body temperature and for the necessary traveling.

As soon as feed dries—unless it contains ample legumes—the supply of protein is inadequate. The supporting muscles of the animal and the muscles of locomotion are drawn on for the protein necessary to the vital organs. As the fat reserves are exhausted, the muscles are drawn on at a more rapid rate to supply the energy deficit.

Supplemental Feeding

Not many years ago the cost limit for carrying a cow one year was considered to be about $10.00 to $12.00. To spend an equal amount for supplemental feed was thought to be a quick road to bankruptcy.

Supplemental feeding has been shown to return from $1.50 to $2.00 for every $1.00 spent.

That is the experience record on the San Joaquin Experimental Range where an average of 365 pounds of supplemental feed per cow per year were required to maintain the breeding herd in condition uniformly to produce over 80% calf crops, and 450 to 500 pound weaner calves.

These records do not include the extra value per pound of the calves—the greatest salvage value of the cows—or the lower death losses, nor the opportunity to improve the herd faster by breeding and selection.

For the last eight years the production per breeding cow averaged 108 pounds more in calf weight at weaning.

At current feed prices, 365 pounds of supplemental feed would cost $12.00 to $14.00 to produce 100 pounds more calf, worth over $20.00.

At a conservative estimate at least half of the beef cattle in California will lose 100 pounds or more apiece before next January or February—the loss of 70 million pounds of beef steak.

Supplemental feeding should be cheaper than beef steak even when protein and other feeds are high in price.

Preventing weight losses by beginning supplemental feeding early with small daily quantities is cheaper and more effective than trying to recover weight after it has been lost.

Insuring the next calf crop begins now with breeding herds. A hundred pounds more of weight per animal at the end of the next grass season should pay for a lot of feed.

H. R. Guilbert is Professor of Animal Husbandry and Animal Husbandman in the Experiment Station, Davis.

The Division of Pomology is making a study of the problems of the fig industry in California.

New Heat-expanded Minerals Of High Water-holding Capacity — Good Aids In Plant Propagation

V. T. Stoutemyer

Recently two relatively inert mineral substances have been tested which appear to have numerous uses in plant growing, especially in operations connected with plant propagation. These are heat-expanded vermiculite and perlite.

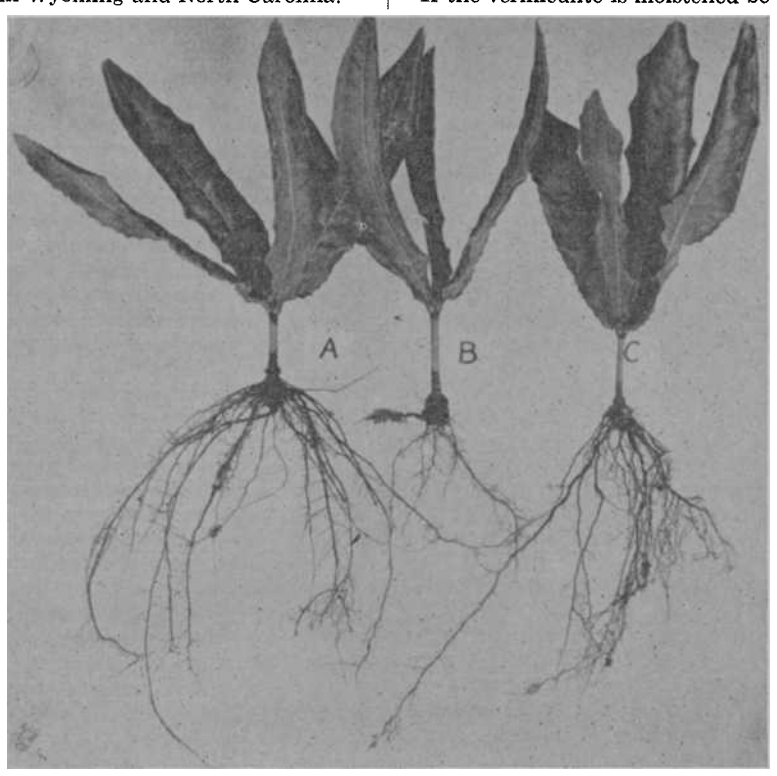
Vermiculite is obtained by heating a miscaceous mineral and perlite is prepared from a volcanic material.

These two substances are quite different in appearance and physical characteristics, but are similar in having remarkable porosity and water-holding capacity. Both are useful in that they assist in the development of completely or partly automatic methods of propagation which reduce the attention needed and increase the certainty of success.

Rooting Medium For Cuttings

Expanded vermiculite is probably the finest material yet introduced as a medium for the rooting of cuttings.

Large natural supplies of vermiculite are available. At the present time most of the material comes from Montana, although some is produced in Wyoming and North Carolina.



Cuttings of Queensland Nut—Macadamia ternifolia—made from the ends of terminal shoots. (A) Rooted in vermiculite. (B) Rooted in sand. (C) Rooted in expanded perlite.

Heavy demands for use in house insulation and for the preparation of certain types of concrete and plaster have restricted the horticultural uses of this material to some extent.

Expanded vermiculite has enormous areas of interfaces between the laminations which give an unusual water - and - air - holding capacity. Much less watering is needed with vermiculite than is necessary with sand as a rooting medium. Often no additional watering is needed after the cuttings are set until they are rooted.

Varying Grades

A number of commercial grades of vermiculite are now available. The coarsest is commonly sold as a poultry litter. This can be used for cuttings and apparently has some possibilities for use in soilless plant cultures.

The house insulation grade appears to be particularly good for cuttings and can also be used for germination of seed, although for the finer seeds there is an advantage in reducing the size of the material by screening.

Care should be taken to avoid the use of vermiculite which has been treated with waterproofing materials, and for this reason the use of the concrete or plaster aggregate sizes is not recommended, but grades especially prepared for horticultural use may be obtained under proprietary name.

Advantages

Among the advantages which can be enumerated for vermiculite is the sterile nature of the material because of the high temperatures which are used in preparing it. It is clean, light in weight and reasonable in cost, and is normally obtainable anywhere.

In addition to its uses in propagation it is useful as a component of potting mixtures and as a packing material for the storage of bulbs, corms and roots such as dahlias.

When used for cuttings, vermiculite should be watered repeatedly before using, since the absorptive capacity is great.

Whether used for cuttings or seedlings, care should be taken not to pack vermiculite, since it then loses its porous structure and becomes reduced in volume, which in turn causes a poor aeration.

Cuttings may be pushed in the loose material and then watered thoroughly to settle the material around them. Cuttings are normally rooted without the application of mineral nutrient solutions. Unusually heavy root systems are formed which are well adapted to potting.

Watering by capillarity is ideal for the germination of seeds in vermiculite and produces the finest possible results, since the surface is uniformly moist at all times. This may be accomplished very easily by placing the pots or pans containing the seeds in a shallow tank of water.

If the vermiculite is moistened before sewing the seeds, the moisture is maintained continuously by capillary action and surface watering is not needed.

Fine seeds may be sown on the surface of the material without covering, if sub-irrigation is used.

Nutrient Solutions

Applications of mineral nutrient solutions are needed occasionally if seedlings of any but the smallest size are desired.

One of the commercially available solutions may be applied to the material before the seeds are planted and at occasional intervals after germination in order to maintain growth.

If desired, a satisfactory substitute may be prepared by mixing about four teaspoonfuls of the average mixed complete garden fertilizer having an analysis of approximately 4-12-4 or 5-8-6 in a gallon of water. A portion of the fertilizer may not dissolve, but sufficient will be available to produce satisfactory seedlings.

Another useful solution is made by adding one teaspoonful each of potassium nitrate and superphosphate to a gallon of water.

Both seedlings and cuttings are easy to remove from vermiculite and much of the material remains attached to the root systems. Often the roots are exceptionally heavy and well adapted to potting or transplanting.

If as much of the material as possible is left attached to the roots, the plants are often remarkably resistant to adverse conditions at the time of transplanting.

Possibilities of Perlite

Expanded perlite has interesting horticultural possibilities, although less experimentation has been conducted with it.

The materal has great absorptive powers, but the capillary movement of water is somewhat less than in vermiculite. The structure is apparently more resistant to breakdown from handling than is the case with vermiculite.

Tests conducted in the Division of Ornamental Horticulture on the Los Angeles campus have shown it to be an outstanding medium for the rooting of cuttings.

If the coarser grades are used, the heaviness and speed of rooting produced are very similar to that obtained with vermiculite. This material has other horticultural uses similar to those of vermiculite.

V. T. Stoutemyer is Professor of Ornamental Horticulture and Plant Physiologist in the Experiment Station, Los Angeles.

Suggestions For Grazing Lambs On Irrigated Pastures

(Continued from page 1)

weeks. Reject all angular—hat rack—types and all that have not filled. Dispose of these.

(6) A long haul is hard on feeder lambs. Never turn half-starved lambs on rich clover. Turn on poor barley stubble—feed some hay—rest two or three days, then turn in.

(7) Ailments—scours indicate feed reaction, intestinal parasites or coccidiosis. Call a State Veterinarian. Segregate affected animals and keep on dry feed such as volunteer grain hay. Mix one pound of phenothizine with each ten pounds of salt; and keep mixture before the lambs at all times.

(8) When a break occurs and lambs scour badly, take them off clover. Feed dry hay in small amounts for the first few days. In 10 days the lambs may be turned back on pasture. Cull out the sick ones and segregate any lambs showing signs of foot rot.

(9) Access to dry hay during the summer is good practice. It is essential after September first. If grain is fed, whole milo is preferred to barley, especially at the beginning.

(10) Good management and daily attention are very important.

Clover Pasture for Lambs

It has been found that straight clover fields produce the highest gains in lambs.

When straight clover is planted there is usually an infiltration of native grasses and weeds which furnish some variety of forage.

When several of the common grasses are planted along with the clover, the grasses usually become rank and coarse due to the fact that the lambs prefer the clover. In this case, the field should be clipped with a mower to keep grasses from crowding out the clover, and to eliminate the coarse forages.

Birdsfoot Trefoil

The latest arrival in the pasture group is Birdsfoot Trefoil — **Lotus Corniculatus**—a legume similar to alfalfa and especially well adapted to the heavy alkali type of soils. While it probably does not make quite the profuse growth and abundant forage as the ladino clover, it does have the advantage of requiring less frequent irrigations.

Lambs very seldom bloat when grazing on birdsfoot trefoil.

It is a particularly hardy plant, withstanding flooding and even grazing in the winter time.

Birdsfoot trefoil has become quite popular as an irrigated crop in California.

Robert F. Miller is Professor of Animal Husbandry and Animal Husbandman in the Experiment Station, Davis.

ABSTRACTS OF NEW PUBLICATIONS

OLIVES

CALIFORNIA OLIVES: SITUATION AND OUTLOOK, 1947, by Arthur Shultis. Cir. 307, July, 1947. (23 pages).

What prices and earnings can be expected from olives over the next ten years? Will it pay to plant additional orchards? These and similar questions are important now to those who are interested in growing and handling olives.

Practically all the olives produced in the United States are grown in California. Canned ripe olives have been the principal outlet in recent years, usually returning two or three times as much as oil. Only since 1940, with lower imports of olive oil and high prices, have olives for oil been a profitable outlet to growers.

The size of the fruit and the oil content determine the use which is made of the different oil varieties. The two leading ones, Manzanillo and Mission, are medium—to small-fruited. Mission is a good oil olive, while Manzanillo is the best general-purpose variety. The Sevillano and Ascolano are large-fruited varieties used almost entirely for canning. Large olives, being in more limited supply and selling for higher prices when canned, bring a higher price per ton than the smaller ones.

The price a grower receives depends on the kind, size, and quality of olives he has to sell, the use the buyer thinks he can make of them, and the price the buyer expects to receive for the processed olives and the oil. The price outlook for canning olives is much better than for those to be used only for oil. However, the canning outlet is limited, and in years of high production a number of olives suitable for canning may have to go for oil.

Present acreage and recent trends in yield and total production of olives indicate an upward trend in total production. Definite answers to questions on the outlook for California olives are not available, but it is possible to project into the future some of the factors of changes in supply and demand in the past. The circular listed below has been prepared to present some of these facts with a little interpretation. It is now available at the College of Agriculture.

FIELD RODENTS

CONTROL OF FIELD RODENTS IN CALIFORNIA, by Tracy I. Storer. Ext. Cir. 138, August, 1947. (51 pages).

Damage done by field rodents to agricultural crops amounts to several millions of dollars every year. Some rodents carry bubonic plague, tularemia, and other serious diseases that may be transmitted to man directly or by fleas, ticks, or mites.

Effective control is not easy; it involves more than merely setting a trap or scattering some poisoned bait. Good results can be expected only by understanding the habits of the rodent to be controlled, and by controlling throughout the year so that the number of rodents never becomes large.

Methods include the use of poison baits and poisonous gases, trapping, shooting, exclusion, and the encouragement of natural enemies. Community cooperation will prevent a cleaned area from becoming repopulated by rodents migrating from neighboring infested land.

Injurious rodents in California include squirrels, gophers, moles, and rabbits. The habits of these animals, methods of control, and precautions, are covered in the above circular, now available at the College of Agriculture.

DONATIONS FOR AGRICULTURE RESEARCH

Gifts to the University of California for research by the College of Agriculture, accepted in August, 1947

California Committee on Relation of Electricity to Agriculture Division of Agricultural Engineering	$2,500.00
William H. Boynton Division of Veterinary Science	157.53
International Minerals & Chemical Corp. Division of Plant Nutrition for research on the growth of sugar beets.	2,500.00
U. S. Public Health Service Division of Plant Nutrition for research on the utilization of carbon dioxide and synthesis of fatty acids by bacteria.	4,903.00
U. S. Public Health Service Division of Zoology for research in rodent control.	1,836.00
Winthrop Chemical Co. Division of Food Technology for research in frozen foods.	1,800.00