Mating the Flock.

As mating time approaches, the shepherd will do well to go through his flock and pick out such ewes as in his opinion are no longer eligible as breeding stock. Ewes affected with any disease should not be kept. Barren ewes and those with broken mouths and imperfect udders had better be sent to the feed-lot. It would be a mistake to reject those which look lean and poor, but which are otherwise in good condition, as the thin ewes are usually the best mothers. The throw-outs should be replaced by young, healthy ewes, and the total number increased where conditions warrant it, and for this purpose some of the most perfect specimens of the ewe lamb crop should be reserved each year by the flock owner.

The ewe lambs reserved for replenishing the flock should not, however, be bred the first year. This practice prevails in some localities, but it proves very unwise in the end. The lambs do not reach their full development the first year. While in the comparatively undeveloped state, if they are compelled to perform the functions of reproduction, it is evident that further development will be arrested, as the nourishment that should be used in building up bone and muscle will go to the formation of the fœtus and the support of the young animal. Under these conditions not only will the animal remain undeveloped, but it will prove unsatisfactory as a breeder. Encouraging fecundity before the animal is fully developed leaves it with a weakened constitution and more subject to diseases than if allowed to reach its full development before being required to undertake the duties of a mother.—[Shepherd's Bulletin.

THE FARM.

Economical Fertilizing of Lucerne.

We have lately had the pleasure of perusing an instructive leaflet presenting the results of some Australasian experiments in manuring plots of lucerne. For some time we have been expressing through these columns our opinion that the most economical way to fertilize land under lucerne is to apply only the mineral elements of soil fertility, viz., potash, lime and phosphoric acid. Perhaps it will be well to repeat the reason. Lucerne is a legume, and, as such, is enabled to draw from the air its supplies of nitrogen through the agency of the bacteria which live in symbiosis with it, inhabiting principally, it is believed, the nodules on its roots. To apply nitrogen to such a crop is wasteful, for two reasons. In the first place, it is unnecessary; and in the second place, investigations point to the inference that the more nitrogen we apply artificially to legumes, the less do they depend upon their power of drawing it from the air; the faculty of doing so atrophies, so to speak.

Barnyard manure contains nitrogen in considerable quantities, as well as potash and phosphoric acid. When supplied to land growing lucerne, the effect is beneficial, because the potash and phosphoric acid are elements of which the lucerne is more or less severely in need. In addition, the manure tends to correct a possibly acid condition of the soil, and has also an ameliorating influence on its physical properties. But, while the barnyard manure has all these good effects, the nitrogen in it, which would be a great boon to other crops, is rather worse than useless on lucerne fields, as explained above. Now, nitrogen, as a fertilizer for ordinary crops, may be valued at something like 10 cents a pound; in fact, when purchased in commercial fertilizers, it comes considerably higher. Available potash and phosphoric acid are worth, commercially, not over 6 cents a pound. Thus, when a man applies to lucerne ten tons of ordinary manure, he is worse than wasting 100 pounds of nitrogen, worth $10, in order to apply 160 pounds of potash and phosphoric acid that could be readily purchased for about $9.60. The estimated valuations, of course, can be only roughly approximate, but are probably relative, and hence carry the lesson. The question must present itself to any enquiring mind: Is there not some way of applying the necessary quantity of 6-cents-per-pound mineral elements without involving a waste of precious nitrogen? The question may be answered in the affirmative. Potash may be applied in the form of wood ashes, and, failing this supply, in the form of the commercial potash salts, such as sulphate of potash, muriate of potash, and kainite. Phosphoric acid may be applied in the form of bone meal, basic slag, or ground-rock phosphate, either treated with sulphuric acid to make it soluble, or untreated, and hence more slowly available. By furnishing these mineral constituents—together with lime, which is generally beneficial to lucerne-growing soils, by correcting soil acidity, and also by providing a quota of readily-available calcium, an element appropriated in especially large quantities by lucerne—by furnishing these three comparatively inexpensive mineral elements, we are giving the lucerne, at small expense, all that we need give it to ensure a vigorous growth, and consequently the appropriation from the air of a great quantity of gaseous nitrogen, to be built up in the plant tissues. The above theory is being borne out by intelligent experience. Only lately we noticed that Joe Wing, the noted alfalfa enthusiast, of Ohio, was citing some marked results from manuring some of his alfalfa fields with phosphoric acid in one form and another. From a dollar invested in acid phosphate, he got an extra $6 worth of hay the first season. Now comes these Australian experiments, which point strongly to the great economy of manuring lucerne with phosphoric acid and potash combined, which is what we should have expected Mr. Wing to try.

We quote the following particulars regarding one of the most significant of these Antipodean experiments, which was conducted with half-acre plots on the land of a farmer named D. Clark, Mount Noorat, Terang, Victoria, under the direction of a representative of the Potash Syndicate:

"The paddock under experiment was sown down to lucerne in April, 1903, the two previous crops having been maize and oats. Each year the lucerne has been cut twice in summer, grazed for about three months after the second cutting, spelled for a time, and then grazed again for some weeks in the early spring, before shutting out the stock, to let it grow for the first cutting, which, it may be mentioned in passing, is usually made into ensilage.

"The plots were treated as follows: Plot 1, no manure; plot 2, 1½ cwts. superphosphate per acre; plot 3, ¾ cwt. sulphate of potash and 1½ cwt. superphosphate per acre. Previous to the commencement of the experiments the land had not been manured. This season the lucerne was cut for the first time in the second week of December, and, unfortunately, the weight of produce upon the various plots at the first cutting was not determined. The second cutting for the season was, however, taken off on the 8th of February, and the produce carefully weighed (green), with the following results: Plot 1 yielded 2 tons 2¾ cwts. per acre; plot 2 yielded, 3 tons 4 cwts. per acre; plot 3 yielded 3 tons 15½ cwts per acre.

"This shows an increase on 1 ton 1¼ cwts. from the application of superphosphate alone, and of 1 ton 12¾ cwts. from the combination of sulphate of potash and superphosphate.

"A specimen of the produce from plot 3 has been left at this office (the Terang Express), and when one considers that practically no rain has fallen since the last cutting, about six weeks ago, the growth is really marvellous. It averages over three feet in length, and individual shoots measure up to 3 feet 11 inches—a truly wonderful result in six rainless weeks."

The above results will bear analysis. Valuing green lucerne at $2 per ton, which is an extremely low estimate, we find that the increase on the half-acre plot from the use of superphosplate alone was worth $2.12½, and the increase on the plot receiving both superphosphate and sulphate of potash would be worth $3.27½. The superphosphate would probably be worth, in this country, something like 65c., and the cost of the ¾ cwt. of sulphate of potash and ¾ cwt. phosphoric acid would likely be about $1.75. The profit from the use of fertilizers would therefore be $1.47½ in the first case, and $1.52½ in the second case, showing an extraordinary profit from the use of the superphosphate (acid phosphate), and a slightly greater profit from the use of sulphate of potash, along with superphosphate.

Now, this result was obtained on a soil of volcanic origin, one presumably rich in potash. On average Canadian soil, where potash is frequently lacking, there would be a far more marked benefit from the potash, and probably less from the superphosphate. However, the principle is clear. A big profit was shown in the produce of a single cutting, and as the effect of these fertilizers is more or less lasting, it is certain that, in the course of a couple of years, the price of the fertilizers will be returned several times over in the increase of crop.

Some will say, "Would it not have been better to double the quantity of superphosphate and leave out the potash?" No, the first 1½ cwt. per acre of superphosphate gave better results, proportionately, than a dressing twice as heavy would have done. Phosphoric acid was lacking in this soil, the lack had to be supplied, and great was the advantage in doing so. Beyond this point, greater gains were to be obtained by supplying a combination of potash and phosphoric acid than by furnishing the latter only.

It is not claimed that the one experiment is conclusive, nor would "The Farmer's Advocate" draw positive inference from experience on the other side of the globe, but the results are right in line with what might be expected from a

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First-prize cow three years and over; first-prize two-year-old heifer and grand champion female, and third-prize two-year-old bull, Canadian National Exhibition, Toronto, Ont. Owned and exhibited by Sir George Drummond, Beaconsfield, Quebec.