Grasses for Pastures in Natal.

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The present decade can be looked upon as being the one in which grass has approached its correct position with regard to the farming systems practised in different parts of the world. In the words of John Ingle’s poem, “Grass is nature’s forgiveness, her constant benediction,” and grass tends to grow everywhere. Instead of rooting out grass which wants to grow, the farming community is being advised to study the grass and to see whether it cannot be utilized in our farming systems.

A Necessary Division.

In studying the position of our pastures, there is one great division of our area which must be made: that is, sour veld and sweet veld. These two areas demand separate consideration, as the effect of the climate on the soil has brought about marked differences, resulting in different vegetation suited to the two types of country. Grasses occurring in sour veld areas are not suited to sweet-veld areas, and vice versa. Rhodes grass, for example, is a sweet-veld grass, hence its establishment and persistence in sour-veld areas is not likely to prove successful. The same can be said of the guinea grass or buffelgrass, known also as U’babe. It is a sweet-veld grass. Many species of Digitaria or Finger grasses are sweet-veld grasses, too, though there are some species which would probably be valuable in the sour-veld areas once they had been sorted out and established there. On the other hand, the dry atmosphere of the sweet veld is not so suited for kikuyu and the more temperate grasses like the rye grasses, cocksfoot, the fescues and paspalum, though the last-named will grow well enough in swampy parts of the sweet veld. The establishment of pastures, therefore, depends upon this main division being kept clear. Failure to differentiate in this regard will spell failure later on.

The Sour-Veld Areas.

In the sour-veld areas the indigenous grasses have been sorted out until to-day those which persist are those which can live under the acid conditions obtaining there, and where the food supply is not over-abundant. They seem to have become rigid, and are not very plastic; they respond but little to manurial treatment; they have a low carrying capacity and unless they are handled with care they suffer further retrogression and become almost worthless. Such a combination of circumstances has forced investigations to be undertaken to determine whether planted pastures will not be feasible, and a greater success than the natural veld. Already, as a result of the past few years’ investigations, this question can be answered in the affirmative. There are grasses which can replace the sour veld, to the farmers’ definite advantage. This replacement, however, can only be successful under certain conditions. Just as the indigenous veld grasses are now balanced with their environment, so must the planted grasses be fitted to their environment. It would not be a practical proposition to plant pastures in lieu of the veld unless the pastures were to be superior to them. Failure to secure this, attention must be directed to the requirements of the grasses which are to be used. Just as there are plants capable of snatching a bare patch from a poor shaley or unfavourable soil, whilst others would fail entirely to gain a livelihood there, so there are grasses which demand a high standard in their environment. They require a plentiful supply of food material, and are unable to extract it from the poor soil. Good soils are essential to them, so we must keep them in the planted pastures. If we are not prepared to do this, why worry about changing the veld into pastures? From a careful study of pasture formation and persistence over a period of many years, the writer is definitely convinced that the main factor in pasture failure has been the neglect on the part of the farmer to maintain the fertility of the soil at the standard required by the planted grass. This aspect cannot be over-emphasized. It needs to be stressed again and again, so that farmers will not make the mistakes in the future that they have done in the past. Again, since the farmer is accustomed to cultivating his arable crops, he often thinks that his pastures require the same kind of fertilizer. Such is not the case. There is a great difference between the requirement of pasture grasses and that of arable crops. Briefly it can be stated that whilst the need is for phosphates in arable soils, in pastures the primary need is for nitrogen. The best form of nitrogen to use has not yet been worked out, so that at the present time the advice offered is to use the cheapest per unit.

In view of the foregoing, that fertility must be maintained and that nitrogen is demanded by the pastures, it becomes obvious that shallow, thin, shaley soils, or those subjected to continuous cropping, or those that have been subject to sheet erosion for many years, are not the soils where pastures should be established, if they are to be a success.

Pastures will pay. They will pay better than most crops. They pay best when properly established on the most suitable soils, fertilized aright, managed correctly, and are grazed by the right class of stock. The economic test must be the final one, not the cost of the pasture each year; that is only a part. The whole is return minus cost.

Growth Characteristics.

Grasses for pastures should have certain definite growth characteristics. They should cover the ground well. Creeping or rhizomatic grasses are superior to grasses with a tufted habit of growth. The former make a better cover. They cover up any bare patch, they generally withstand trampling better, they lessen evaporation and they ensure full retention of all the rain which falls. Rhodes grass, kikuyu and many Finger grasses are creeping grasses, whereas the fescues, cocksfoot and the rye grasses are tufted ones.

They should supply grazing over a long period. This is obviously a very important practical one. Grasses which make a very high peak growth in summer become rather difficult to control. The use of the mower must be constant at this time. Paspalum dilatatum has a peak growth in January and February; kikuyu, on the other hand, does not make the same peak growth, hence it is easier to control. It has a longer growing season and, being a stoloniferous grass, becomes a very suitable pasture grass.

They should have a high percentage of leaf to total growth. Since leaf is more valuable food than stem, what is required is high leaf percentage and low stem percentage. In kikuyu we find this desideratum; in paspalum there tends to be a rapid production of flowering stems, which make poor grazing, and they are produced at the expense of the leafage.

The improved strains of most grasses, improved from a pasturage viewpoint, give a far greater percentage of leaf to stem than the unimproved grasses do. Certified perennial rye grass is much more leafy, and has fewer stalks than the Italian rye grass; the same applies to cocksfoot, the fescues, etc., so that the whole of the pasture problem should be studied, and endeavours made to obtain the highest leafy strains that it is possible to get. Observant farmers can do much in this direction, and their aid is solicited in securing leafy strains of all grasses suitable for pastures.

They should possess high feeding value. This again is an obvious fact to the practical farmer. Kikuyu and rye grass, when grown in their correct environment, have a high feeding value. When grown on poor soils, where growth stagnates, they lose feeding value. Feeding value depends largely upon the...
fertility of the soil where the grasses are grown. High soil fertility tends to improve the composition of the grasses, their palatability to the stock and the digestibility. High feeding value depends partly upon fertility, so that the last-named point is one of importance. It is, however, a matter of degree. Should the farmer endeavour to lift the fertility of all his pastures to the standard demanded by the high-quality grass, or should he be content to do so gradually? It is obviously out of the question to do this at one stride, and it is certainly better to have a vigorous and rapid growth of a somewhat lower-quality grass than a weak, puny growth of a higher-quality one. The farmer should balance the quality of the grasses with that of the pasture soil.

**Should Grasses be Mixed?**

Then, in a discussion of pastures, there must always be faced the problem of should grasses be mixed or will they be better if grown in pure culture? This question is one which is not easily answered, but a solution will be found if the following ideas are studied.

If the fertility of the soil is high, then species demanding low fertility will not make the greatest possible possible use of the soil. If the fertility of the soil is low, then to put in species demanding high fertility will meet with failure. Early-growing grasses will be grazed more severely by stock than the later-growing ones. The more palatable species will be grazed too closely to the ground. The coarser types will flourish and seed, and become dominant at the expense of the better ones. Deep rooters will tend to survive where more shallow-rooting kinds will die out. Thus there are many practical disadvantages to be encountered by the farmer who would mix the various types of grasses in a pasture.

The recommendation is, therefore, made that the farmer should consider a sequence of grasses for pasturing purposes, rather than a mixture. Instead of mixing together rye grass, cocksfoot and tall fescue for winter pasturage in sourveld areas, these should be sown so that the perennial rye grass can be grazed first, then the cocksfoot and finally the tall fescue. In this way, the grasses can be looked upon as grass crops, produced for a very definite period of the year for grazing purposes. This is their main use. If they supply a summer crop of hay and then grazing from May to August, they will fill the requirements admirably. Mixed, they will fail.

**Suitable Grasses.**

Though mention has been made of a few grasses, there is quite a number of other grasses that should be noted. Of paspalum there are at least two other species worthy of mention, viz., paspalum virgatum, the tall, erect-growing species, and paspalum notatum, a dense low-growing pasture type, suited to the warmer regions, as it readily suffers from frost. Yorkshire fog (Holcus lanatus) is a grass, with many forms, which is generally suited to sourish vlei conditions where the fertility is not too high. Phalaris tuberosa is a hardy winter grass, requiring high fertility, when it yields a large quantity of very valuable food, and then there are also napier fodder, rookweik, various Finger grasses, and so on.

While there is no intention in this article to deal with fertilizers for grasses, nor with the composition of all these grasses under divergent conditions, it should be stated broadly that the older the grass the poorer is its feeding value. In the sour veld there appears to be a very definite leaching of valuable materials from the old grass, and this, coupled with the withdrawal of the minerals into the root systems of the plants, renders such grass of low feeding value, supplying only a starvation ration. Management of pastures cannot be taught from a book; there is a practical control of grass growth which can only be learned from experience. The growth may be controlled by (a) varying the degree of stocking with cattle, sheep, or horses; (b) grazing with mixed stock; (c) the use of the new weather, or (d) varying the above treatment for grasses which have fluctuating rates of growth at different parts of the season. Let the general guiding principle be that the grass must not approach the seeding stage before stock are pastured thereon, nor must the grazing be too close. If all the sections are getting ahead, then one or more should be closed for a time, mown and brought back into normal rotation.

The size of the areas to be grazed will depend on the density of the pasture and the size of the herd. Roughly, the acreage of each section should be estimated as one-tenth the number of animals in a herd, i.e. a herd of 30 head would graze 3-acre sections. The number of sections will be determined by the fertility of the pasture, i.e. vigour of growth, temperature, rainfall, etc., and no hard and fast rule can be laid down for this.

Finally, it should be remarked that if the pasture is eaten down completely in autumn, growth will be late and slow in the spring. If spring grass is more valuable than autumn grass, then the pastures should be spared in autumn, so that they will accumulate vigour for early spring growth. The higher the fertility of the pasture, the longer will be the grazing season, the earlier will the grass grow in the spring, the longer will its growth continue into the autumn, the less will the grass be influenced by frost, and the greater will be the producing ability of the pasture, either through dairy cows or mutton sheep. Intensive pastures demand that they shall be pastured by intensive stock if the economic plan is to work smoothly.

### Termites, and Veld Destruction.

An interesting bulletin, entitled "Termites in Relation to Veld Destruction and Erosion", by Dr. T. J. Naudé, Chief Entomologist, Division of Plant Industry, has recently appeared as Bulletin No. 134 of the Department of Agriculture and Forestry. The three main groups of termites, the harvesters (Hodotermes spp.), the common mound-builders (Tinervitermes spp.) and the dung-grovers are discussed in their relation to the reduction of grazing and soil erosion under conditions of normal rainfall, during drought, and where over-stocking has taken place, and the various methods of control applicable to these termites are also dealt with. The bulletin is obtainable from the Editor, Department of Agriculture and Forestry, Union Buildings, Pretoria, at 3d. per copy, prepaid.

### Farming Opportunities in the Union—[Continued from page 95.]

farms. If the farmer were to make it his first duty to provide for his home, and the marketing of the surplus a secondary interest, there would be fewer complaints against the agricultural policy of the Government.

Finally, the prospective farmer should remember that he must be morally and psychologically fit to take up farming. The farmer must be able to stand the strain of waiting for things to develop, of watching animals growing up and crops ripening and then perhaps being destroyed, resulting in his having to start all over again. He must be keen, eager to work himself, and also be able to lead and direct his labour forces firmly and fairly. And he must mind more for the wide open spaces, with occasional social gatherings, than for a continual round of the attractions a city offers. In other words, he must have the temperament, the mentality, the fitness, to be a farmer.

If, therefore, our new farmers are attracted along the lines of the foregoing, if they are warned against gambling, and advised to make farming a way of living, then they should know what to expect from their calling. The capable man with the personal qualities, who is able to adjust his business to changing economic conditions and with sufficient capital to make a start, should find farming opportunities in South Africa as good as, if not better than, in most other countries, and, moreover, this type of man would be a welcome addition to the ranks of our farmers.