

CHAPTER IX.

GRASSES FOR PASTURES AND MEADOWS.

It has been repeatedly shown that a judicious mixture of several varieties will produce a larger yield than can be obtained where one variety is sown by itself. This is a rule in nature as well as in farming. Many sorts will usually occupy the ground more completely than one sort and help keep out weeds. "Each species has some special niche to fill, some separate part to play in the grand harmony of nature. Each one is better adapted for some purpose or for some soil or climate or locality than any other."—(Gould.) Sinclair found that from the beginning of spring until winter set in, there was no time when one or more species of grass was not in its most perfect state. He found that dry weather favored some, moisture that of others. He always favored a mixture for producing the best pasture. A mixed pasture is earlier, gives a better yield, and holds out better than any one species of grass.

Then there is the taste of cattle to be considered. As Pleues in her *British Grasses* states: "Sheep have strong likes and dislikes. They will hasten to a kind of grass which is a favorite with them, tramping down all the other grasses as unfit to taste. Horses again have their preference and cows theirs, and we have even seen swine exercise considerable cunning to secure a feed of a favorite grass. So the agriculturist has as much to consider as a master of ceremonies; he must consult the capabilities of situation, the qualities of his provision, and the various tastes of his company."

Because a grass is thrifty it does not necessarily follow that it is the best adapted to the farmer's use. It may not be nutritious, it may be offensive to stock. A grass which thrives in one place

may fail in another. Because a grass is a native to the country it is no sign that it thrives there best. On the contrary, introduced plants often thrive better than those which are indigenous.

As an instance, we have only to think of some of our worst weeds, most of which are foreigners. There is no one model grass,—a grass best suited for all purposes. This has been found to be the case with roses, with all kinds of fruits, grains, and vegetables. Some grasses are too slow in starting, or they are too sensitive to frost, or they will not endure dry weather; the stems are too woody, the leaves too thin, the tops too short, or the aftermath is of no account.

In making selections for sowing, the farmer must be guided by the climate; the soils, whether wet or dry, light or heavy. He will be guided by the uses to which he puts the field, whether for meadow, or pasture, or both, whether it is to remain seeded for some years or for one or two years. He will be guided by his location with regard to markets and supply of labor.

It is to the advantage of a grass, especially for alternate husbandry, if it seed freely, and if the seeds are comparatively large, quite certain to grow and produce good strong plants in a short time. These are doubtless some of the reasons why the rye grasses are so popular, and why Timothy and orchard grass, and the larger fescues are so much used in Europe.

For permanent meadow, there is less objection to waiting a longer time for the slower, finer grasses to become established, such as meadow foxtail, June grass, and red top.

The success of grasses depends on the supply of moisture. Liberal spring rains, with mild weather, give grasses a good start for the summer. For the dryer portions of the northern United States, a grass must endure drying for months; it must endure freezing with bare ground in a dry atmosphere, with the mercury down to 40° or 50° below zero, or endure a burning sun with the mercury up to 100° in the shade. It must be provided with

means to withstand fires in dry weather. In the south it must stand great heat, much moisture and much drought. In dry climates it is often hard to start grasses. They must be perennial, or produce an abundance of seeds, capable of starting quickly when the season is favorable.

From *Crops of the Farm*, I quote: "Strong, rich pastures, producing succulent grasses abundantly are well adapted for fattening large cattle, either without extra food or with the aid of a little cake [oil meal]. Second rate pastures, especially if on a cold subsoil, will generally yield a better profit from the dairy, and from the rearing of young cattle. Dry, hilly pastures are most suited to sheep. The grazing of land by mixed stock of cattle, sheep, and horses, or these in frequent succession, will keep the land more evenly grazed than where one kind only is kept. Sheep eat many weeds which cattle dislike and avoid. Horses are very uneven grazers."

In the words of the late I. A. Lapham, of Wisconsin: "It is not to any one species of grass that we should look for the support of our stock. On the native prairies we find many species intermingled, each doing its part; some preferring low, wet situations, others grow only on dry ground; some prefer the shade of forest trees, while others flourish best on the most exposed parts of the broad prairies; some grow only in the water, others along the margins of lakes and streams; some attain their maturity early in the season, others late in autumn."

Farmers who have a large quantity of meadow will often find it best to have the grasses of different sorts in different meadows that they may not all be fit to cut at the same time, thus prolonging the season for haying.

For a meadow, grasses should mature at about the same time; for pasture the time of flowering or of most rapid growth should vary and extend from early spring till late autumn, or in the South they should extend over a good portion of the year.

M. Gætz found out what grasses were best adapted to his soils by a slow process of testing each separately, then he used a mixture of the seeds of those species which he had found did the best. Chemical analysis might tell the same story or it might not.

WHAT IS NOW SOWN IN GREAT BRITAIN.

The following notes are taken from a recent admirable essay by C. L. F. De Laune in Jour. Roy. Agr. Soc., 1882:

“Gross ignorance prevails in reference to the kinds of grasses. The use of short-lived grasses and of biennial clovers, coupled with an insufficiency of proper seed, is the main cause of the deterioration of new pastures after the first two or three years.

“The five coarse grasses most valuable for permanent pasture are the following:

“*Dactylis glomerata* (Cocksfoot).

“*Festuca pratensis* (Meadow fescue).

“*Festuca elatior* (Tall fescue).

“*Phleum pratense* (Timothy).

“*Alopecurus pratensis* (Meadow foxtail).

“These five should form the bulk of all pastures on good soil, either for sheep or cattle.

“The most valuable of the finer grasses are:

“*Cynosurus cristatus* (Crested dogstail).

“*Festuca duriuscula* (Hard fescue).

“*Poa trivialis* (Rough meadow grass).

“*Agrostis stolonifera* (Fiorin).

“*Festuca ovina* (Sheep's fescue).

“*Avena flavescens* (Golden oat-grass).

“In much smaller proportion should be used permanent red clover, cow grass (a kind of red clover), alsike, and white clover. Seeds of yarrow ought never to be omitted. These should be varied with the soil.

“The grasses most pernicious to newly formed pastures are rye grass in all its varieties and *Holcus lanatus* (soft, woolly grass). These produce an abundance of seed, are cheap, and quickly make a great show, but they soon die out and leave room for weeds to fill their places. All rye grasses, or nearly all, die after once seeding.”

He insists strongly that among the best feeding grasses are some of strong and coarse habit, while among the finer kinds are many that are worthless, although many seedsmen recommend the finer grasses as of the best quality. He finds rye grass a gross feeder, and where it has been sown it is very difficult to get other grasses to grow. The flower-heads of all the best permanent grasses are much liked and greedily eaten by stock, consequently they rarely seed in a pasture, whereas the flower-heads of the worthless grasses, which are disliked by stock, are constantly seeding. In this manner the poor grasses often increase while the better grasses diminish. The best grasses are cropped closely, sheep, especially, discriminating very carefully even where the grasses are intermingled.

“Nature has provided a succession of nutritious grasses. A meadow composed of a large percentage of foxtail is certain to produce a large quantity of early keep.”

For obtaining a good permanent pasture, it is as important to secure good pure seeds of the right sorts as it is for a pomologist to obtain the proper varieties of apple trees.

Mr. De Laune continues by recommending the following mixtures for permanent meadow and pasture:

For Good Medium Soils.		For Wet Soils.		For Chalky Soils.	
	Lbs.		Lbs.		Lbs.
Foxtail	10	Foxtail	4	Cock's-foot	14
Cock's-foot	7	Cock's-foot	10	Cat's-tail	3
Timothy	3	Timothy	3	Meadow fescue	2
Meadow fescue	6	Meadow fescue	3	Crested dog's-tail	5
Tall fescue	3	Tall fescue	8	Hard fescue	4
Crested dog's-tail	2	Crested dog's-tail	2	Sheep's fescue	4
Rough meadow grass	1½	Rough meadow grass	2	Yarrow	2
Hard fescue	1	Hard fescue	1	Golden oat-grass	1
Sheep's fescue	1	Florin	2	Perennial red clover	1
Florin	1½	Yarrow	1	Alsike clover	1
Yarrow	1	Perennial red clover	1	Dutch clover	1
Perennial red clover	1	Cow grass	1		
Cow grass	1	Alsike	1		
Alsike	1	Dutch clover	1		
Dutch clover	1				
Total	41	Total	40	Total	38

The reader will observe that this recent experimenter omits the rye grasses, sweet vernal and some others, which are found in nearly every list generally recommended for use in Great Britain.

Rye grass was the first true grass recommended for cultivation more than 200 years ago, and has been most extensively recommended by seedsmen and used by farmers generally for permanent grass lands. It is still much used, but some of them agree with Mr. DeLaune, that it is one of the least desirable for such purposes. This slow progress and the following of an old custom is more than matched by the following in reference to the practice of medicine.

Some years ago, Dr. O. W. Holmes, of Harvard, said: "Doctors have been using common elder as a remedy for more than 2,000 years, and have just found out that it possesses no medicinal value whatever."

The fact is, the farmers of Great Britain seem to rely largely on the recommendations of seedsmen as to what sorts and how much they shall sow. These men naturally put in a liberal

allowance of seeds which are easily obtained at a cheap rate, especially if such seeds start soon and make a rapid growth which soon covers the ground. Many of their mixtures contain the Italian rye grass, which generally lasts for one year only. It makes a fine growth for a while, and after taking the cream of the soil quickly perishes, leaving vacancies on impoverished land for other grasses or, more likely, for weeds to come in and occupy.

List of Grasses for the North.—The writer approaches this subject with some want of confidence on account of the great size of our country, the diversity of soils, climate, and uses, the lack of well conducted and accurately reported experiments. He will, therefore, not puzzle the farmers with numerous long lists of mixtures, on a guess, but give a few of the best and advise experimenting for themselves. A point is gained when a farmer ventures to deviate from the long established customs of his fathers or his neighbors, many of whom have fallen into certain practices without very good reasons therefor.

The lists are recommended for climates similar to that of Michigan.

In selecting seeds for alternate husbandry, only those grasses and clovers should be sown which rapidly make a large growth, and arrive at maturity in a short time:

Grasses and Clovers for One Year.

Dactylis glomerata (Orchard grass).

Zea Mays (Indian corn).

Secale cereale (Rye).

Avena sativa (Oats).

Panicum miliaceum (Millet).

Seteria Italica (Hungarian grass, Bengal grass, sometimes called Millet).

Lolium Italicum (Italian rye-grass).

Arrhenatherum avenaceum (Tall oat-grass).

Trifolium pratense (Red clover).

Grasses and Clovers for Two Years.

Dactylis glomerata (Orchard grass).

Phleum pratense (Timothy), heavy and loamy soils, not on sand.

Arrhenatherum avenaceum (Tall oat-grass).

Festuca elatior (Taller fescue), heavy and loamy soils.

Festuca pratensis (Meadow fescue), heavy and loamy soils.

Lolium perenne (Perennial rye-grass).

Trifolium pratense (Red clover).

Trifolium repens (White clover).

Trifolium hybridum (Alsike clover).

Grasses and Clovers for Three or more Years.

Dactylis glomerata (Orchard grass).

Arrhenatherum avenaceum (Tall oat-grass).

Festuca elatior (Tall fescue).

Festuca pratensis (Meadow fescue).

Alopecurus pratensis (Meadow fox-tail).

Phleum pratense (Timothy), for mowing only.

Poa pratensis (June grass, Blue grass of Kentucky), for pasture only.

Agrostis vulgaris (Red top), for rich loam or low land.

Lolium perenne (Perennial rye-grass), the larger varieties.

Trifolium pratense perenne (Perennial red clover, Cow grass of the English).

Trifolium hybridum (Alsike clover).

Trifolium repens (White clover), for pasture only.

Grasses for Marshes.

Agrostis vulgaris (Red top).

Festuca pratensis (Meadow fescue).

Festuca elatior (Tall fescue).

Poa serotina (Fowl meadow).

Poa pratensis (June grass, Blue grass of Kentucky).

Alopecurus pratensis (Meadow foxtail).

Deyeuxia (*Calamagrostis*), *Canadensis* (Blue joint).

Concerning a selection for central Kansas, Professor Shelton remarks: "For pasture, I have no hesitation in recommending the following sorts, placing them in the order of their importance: orchard grass, alfalfa, red clover, taller fescue, Kentucky blue grass. For mowing purposes, our experience has shown, very steadily, that alfalfa, red clover, taller fescue, perhaps meadow oat-grass, and Timothy are the best. So far as the matter of withstanding the effects of drought is concerned, these sorts rank, with us, in about the following order: alfalfa, orchard grass, red clover, meadow oat-grass, Kentucky blue grass, taller fescue, and Timothy. Along the eastern borders of the State, and for thirty or more miles west of the Missouri line, Kentucky blue grass and Timothy are standard grasses which uniformly produce bountiful crops of hay and pasture, while in our experience in the central part of the State these grasses have uniformly failed."

Prof. I. P. Roberts, of New York, says: "We have tried in a small way many of the grasses and clovers in past years, and as yet we find nothing that gives as good satisfaction as medium red clover and Timothy: The seed dealers may 'boom' the tall, coarse, reedy grasses or the tender, dwarf, creeping varieties, nevertheless, in New York, clover and Timothy have come to stay."

Grasses for the South.—In many portions of the southern States, the people are still ignorant of the best grasses. They have long been wedded to cotton and have learned to believe that grasses and clovers will not thrive in their country.

In numerous places it has already been proved that many grasses and clovers grow well and produce abundantly.

The South possesses great advantages over the North in raising

live stock, as the winters are so short and mild little hay need be cut and stored.

Rev. C. W. Howard of Georgia, J. B. Killebrew of Tennessee, and Dr. D. L. Phares of Mississippi, have each written valuable books concerning grasses for the South, and these books have been well received and extensively purchased.

Mr. Howard says: "It is a significant fact that the rich lands in upper Georgia, in which a mixed husbandry prevails, have rather increased in value than decreased since the war. *The depression in price has occurred only in lands devoted to exclusive cotton and rice culture, both of which require a large amount of labor.* In the South land is very very cheap, while at the North land ranges from \$50 to \$200 per acre. He looks to England, Holland, or Belgium, and finds it averaging from \$300 to \$500 per acre. Why this difference? Is the land in these countries better than ours? Not by nature; if it be better it is by the difference in treatment. Is their climate better than ours? The acknowledged superiority is on our side. Are the prices of their products any better than ours? On an average not so good. Are their taxes lighter than ours? If we were compelled to pay their tax, either at the North or in England, our land would at once be sold for taxes. Have they valuable crops which they can raise and which we cannot raise? There is not a farm product in either old or new England which we cannot raise in equal perfection at the South. Is their labor cheaper than ours? The cost of labor at the North nearly doubles the cost of labor at the South. If, then, all these things are so, why is it that their land is so valuable and ours so valueless? If we take the map of the United States and put our finger upon the State or parts of States in which land sells at the highest price, we shall find that in those States or parts of States the greatest attention is paid to the cultivation of the grasses and forage plants. If we open the map of Europe we shall find the same rule holds good. The

cheapest lands in Europe are those of Spain, where little attention is paid to the grasses. Holland is almost a continuous meadow, and their land sometimor reaches \$1,000 per acre.

“A Belgian gentleman, who sold his land in Belgium for \$500 per acre, and bought river bottom land in Floyd county, Georgia, at \$20 per acre, told the writer that he made more on the Belgium farm, valuing it at \$500 per acre, under the Belgium system, than he did on the Georgia land at \$20 per acre, under the Georgia system of cotton and corn. He even believed that clover and grasses would not grow in Georgia, and therefore did not attempt the Belgium system.

“If more of the land were in grass, much less labor would be required to manage it. To the wearied business man there is something charming in the thought of broad acres, a few select laborers, green grass, cool shades, running water, thrifty live stock, and all the abundance of the farm.

“A small, well manured, and well cultivated area of land in cotton and the cereals, with a large proportion of forage plants and grasses, would give to the cotton planter a pleasure in his business, and an amount of real profit which he has never before known.”

Killebrew says: “These are more applicable to Tennessee than to Georgia. A stranger appears in the country desirous of investing in land, and while he would turn from the cotton plantation at ten or twelve dollars per acre, he would gladly invest in the grass farm at forty or fifty. Grasses mean less labor, less worry, fewer hands, more enjoyment, finer stock, and more charming homes, and as a consequence, happier families, more education, more taste and refinement, and a higher elevation of the moral character.”

Will the cultivated grasses and forage plants grow at the South?

In reply to this question, we read again from Mr. Howard: “There are some portions of the South, as is the case in all

countries, where the valuable grasses will not grow, but as compared with the Northern States, the climate of the South is certainly better adapted to grass culture, if we take into consideration the whole year. At the North, during the whole winter and late in the spring, the ground is hard frozen or covered with snow. Of course, during that period the grass is useless, and this constitutes a large portion of the year. The heat and dry weather of the summer are the drawbacks to grass culture at the South. But these affect summer pasture alone. They do not affect the hay crop. Clover and hay grasses are cut before dry weather sets in. The hay crop at the South will not be injured one year in twenty by dry weather in the spring. We do not know a country more favored in this particular. In England, while the grass grows luxuriantly in the spring, it is very uncertain whether there will be enough dry weather at the proper time to save the hay. We, on the contrary, always have rain enough in the spring to mature the grass, and not enough rain to render the hay harvest at all precarious. When the hay is cut, will not the July and August sun kill the grass? There is danger of this result if live stock are turned upon the meadow as soon as the hay is hauled out, and the grass is grazed close to the ground. *A meadow at the South should never be grazed during the summer.* The aftermath will protect the roots of grasses during summer.

“After fall rains set in and cool weather begins, the meadows may be moderately grazed in dry but never in wet weather. With some grasses this grazing may be continued during all the dry weather of the winter. This winter grazing is the great advantage of the South. It more than compensates for the drought and heat of summer. It saves, to a considerable extent, the cost of cutting and curing hay, and of the construction of expensive barns. At the North, cattle and sheep are shut up in

great barns for six months of the year, requiring costly feed and attention.

“At the South, in each of the plantation States, we have three different climates—that of the mountains, the interior, and the coast. For live stock, the mountains have the advantage in summer, the low country in winter, while the middle country has a share of advantages and disadvantages of both without the special excellencies or defects of either. As a general rule, a clay soil is best suited to growing grass. Any land that will bring good wheat will bring good clover, and any land that will bring good oats will bring good grass. The lands most likely to produce heavy crops of Timothy and herd’s grass (red top) hay are the rice lands of the coast. They are very rich and have ample command of water. Do the rice planters know that the grass lands of Lombardy, near Milan, where irrigation is practiced, rent for from \$6 to \$100 per acre, while hay sells at \$10 per ton? A level surface of upland, without running water, with an excess of sand, is the most unsuitable for a grass farm, and of course for stock raising.

“The writer has seen the various useful forage plants and grasses tried from the mountains to the coast of Georgia. He has been closely observing in regard to this important interest for more than twenty years. As a conclusion he does not hesitate to say if ground be made sufficiently rich and as well prepared, that if judgment be exercised in sowing and in adaptation of species to particular locality, and proper subsequent management be observed, that so far as soil and climate be concerned the South has unusual fitness for successful cultivation of the valuable grasses. The grass of the South will have some difficulties to contend with, but none so formidable as those which are incident to cotton and wheat. Broom-sedge, and crab-grass in the stubble, gives excellent summer pasture. Bermuda grass is excellent

for summer. In the whole range of southern agriculture there is no crop on which manure pays as well as on winter pastures.

“On the whole, the drawbacks to successful grass culture at the South are as few and as easily removed as in any portion of Christendom. Sound political economy requires that the South should raise its own horses, mules, sheep, cattle, and hogs, and produce its own wool, butter, cheese, and hay. Grass culture is the basis of this independence.”

In other portions of this work will be found quotations from Mr. Howard in reference to lucerne, sainfoin, field pea, vetch, red clover, alsike clover, white clover, millet, gamma grass, crab grass, brome grass, Bermuda grass, meadow oat-grass, orchard grass, Italian rye-grass, blue grass, Timothy, red top.

Mr. Howard believes, and rightly, too, that none of the native Texas grasses are equal, either for hay or pasturage, to some of the artificial grasses now in cultivation.

Grasses for Winter Pasture at the South.—The late C. W. Howard, of Georgia, recommends meadow oat-grass, blue grass, wild rye (species doubtful), orchard grass, red and white clover.

Dr. D. L. Phares, of Mississippi says: “The list depends on whether the pasture is for one season or for permanent pasture, as well as on location, soil, drainage, etc. For a single winter, sow wild brome grass (*Bromus unioloides*). Several other plants furnish good winter pasture, but none are so valuable as barley, though I have tried wheat, oats and rye. It does not lie on the ground like rye, but stands up.”

For further remarks concerning grasses which are suited to pastures and meadows, consult what is said in regard to each of the several species usually cultivated.