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The Making of New Grassland

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Making of New Pastures

C. H. Gardner

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THE MAKING OF NEW GRASSLAND

pasture grazed *closely and evenly*, and never to allow any of the plants to send up flowering shoots. This can be done only by skilful grazing with mixed stock. Sheep are invaluable as an aid to pasture formation. Some of the best results I have seen have followed the close folding of ewes and lambs on a new pasture in its first season, instead of mowing it for hay, which I suppose is the most usual practice. I should not advocate this course in the case of fields sown late in the previous autumn, where the clover plants will probably be too small to stand the close grazing of the sheep.

At the same time, I have convinced myself that the old teaching that the grazing of a pasture in the first year should be confined to cattle is erroneous. If the plants are reasonably well established, as they will be by the time they have been sown twelve months, they may be grazed, and grazed closely, by sheep with advantage. This close grazing will cause the wild white to spread as will nothing else, and in this way the whole of the ground will rapidly become covered with a close and dense sward.

I have outlined only a few of the more important considerations, and I am afraid I have not contributed anything new or original. At the same time, I am satisfied that if, under Eastern Counties conditions, the work is carried out on the lines I have suggested a good pasture will result in almost every instance.

MAKING OF NEW PASTURES

By C. H. GARDNER

Kitchen End, Silsoe, Beds

IN no way is it intended to present this paper as containing superior knowledge of the subject in any way likely to supersede general practice. It is but a plain statement of procedure that has produced satisfactory results with land of average possibility, my soil being a rather sticky clay, situated a few miles north of the Chilterns.

Just sowing down unwanted arable land is not enough. Some guiding principle is needed as to its subsequent use and place in farm economy. I conceive most things in life and business as working in one of two circles of sequences. In laying down land to grass the first requisite is to plan and work within the accommodating circle, so that each possible sequence makes possible yet another advantageous one. Here are factors we need to consider—labour is expensive, straw is scarce, cattle prices boom in spring and slump in autumn, store and growing cattle are best wintered out. Land is warmer where compressed. Clovers subsequently feed grasses, nitrogen is cheap. It is necessary to grasp the part expected to be played, or a full stop may occur at a vital moment and so nullify a good original intention.

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I am not a believer in the orthodox way of seeding land to grass, having been convinced by experience that it is expensive and far from being always reliable. In no way, however, do I wish to impeach either the ability or integrity of seedsmen. I simply say I have found a better way than buying a mixture of seeds at a cost of 70s. an acre, the actual cost for 22 acres sown down by me in 1919. It is assumed that the land under review is comparable.

This field, and another sown by my predecessor, showed signs of restricted growth and development from the time the nurse crop was harvested. The grass plant was too thick and the clover content out of proportion, with the wild white obviously a sickly little plant and incapable of any domination.

I became so disappointed that in the spring following I dressed the whole with superphosphate, and made experiments with kainit and sulphate of ammonia. The results were not good except in the case of sulphate of ammonia, which to my surprise developed the clovers as well as the fine grasses, and continued to show an advantage for at least five years from the one initial dressing. During ten years this field has been dunged twice, "supered" once, slagged twice (6 cwt. each time), and all has received $\frac{3}{4}$ cwt. of sulphate of ammonia. Part was dressed with lime, which had no marked effect. The conclusions I came to in regard to this particular seedsman's mixture were (a) that the wild white was not a persistent or robust strain, or suitable to my locality; (b) that $\frac{1}{2}$ lb. was insufficient to dominate the pasture in its early stage, and (c) that far too many varieties of grass seeds were included, and thus gave little chance for the wild white in the struggle for existence. In 1926 I came across a very robust strain of semi-cultivated wild white clover, with exceptional creeping propensities. I bought a quantity direct from the growers for sowing down other fields, and drilled $1\frac{1}{2}$ lb. per acre upon the above-mentioned field. The year following the improvement was very pronounced. The whole field developed a nice carpet, which encouraged the cattle and sheep to spend more time upon it.

Bearing all this in mind, I determined in future to confine new mixtures of seeds to essential varieties only, and to give the new strain of wild white more chance. The mixture was made up roughly as follows:

	<i>s.</i>	<i>d.</i>
Perennial Ryegrass, 15 lb.	5	0
Cocksfoot, $7\frac{1}{2}$ lb.	5	0
Timothy, 3 lb.	1	6
Wild White Clover, $1\frac{1}{2}$ to 3 lb.	8	6
A few pounds of Red Clover and Cowgrass I had by me—say	3	0
	<hr/>	
Total cost at market price	23	0

Timothy was included because I had seed on the farm.

I believe that it is unwise to mow in the first year a new pasture intended for permanent grazing because of (*a*) the curtailment of the incentive for reproduction ; (*b*) the absence of beneficial treading, with its effect upon capillarity, and (*c*) the impoverishment of young seeds at a vital stage.

But I have personal knowledge of cases where the maximum development of a pasture has been held up in the succeeding years until a hay crop has been cut. On this assumption the addition of big clovers does not jeopardize the chances of the wild white, but it ensures greater stock-carrying capacity the first year, particularly in the first autumn and early spring, and provides a firmer tread for stock, which is essential for the root development of the grasses. I give the highest possible place in new-pasture making to consolidation through treading by stock, particularly sheep, as by this means the soil's warmth is helped during the cold months, and capillarity during the summer months is also better served than by the use of the roller when the soil is plastic.

It is obvious that much beneficial splitting of grass roots is effected, for, as in an oat crop, the less competition for root-room the healthier the growth and the more foliage in proportion to stalk of the individual plant. This to my mind is a point in favour of reasonably thin sowing and stabilization of individual plants of grasses. In regard to wild white clover, no better method could be named than treading for encouraging the stolons to take root and so spread at a greater rate. It may be supposed that treading by stock other than sheep would be too drastic a treatment for young grass on heavy land ; but where any fall exists, and if land needs draining, a light mole plough and a tractor can work wonders in diminishing this risk, and it is surprising where stock-treading is persisted in how firm it becomes eventually when the wild white mat has formed, and the late arable tilth has been consolidated evenly and from the bottom.

Bearing in mind the elementary character of the seeds mixture used, and the necessity for strengthening later on, we rely upon inoculation from adjacent old pastures for this. Indeed the original sparse seeding is designed to allow room for successful inoculation as the annual and biennial clover die down. In practice this works well, for if patches are found about the third year not strangled by wild white, most of the indigenous grasses can be clearly marked, and are in ample supply. This system implies a modified form of ranching, which, incidentally, simplifies the question of water-supply. No dirty gateway or rough hedge not essential for shelter is allowed to remain. I estimate that each gateway spoils at least a rood of valuable winter feed, through over-treading, and that each rough hedge means a water-logged ditch, and a low temperature for the whole field during the cold months. We therefore take away the unwanted gates and hedges and pipe in the ditches, thus releasing more money from labour, for buying nitrogen, which gives a better return. I would here interpose that

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more labour than has been displaced by my grassland farming has been absorbed by intensifying some of the arable portion into market-gardening. Not only this, but it enables cattle to cross and recross new pasture, and as the tendency is for stock to spend more time on sweet young pasture, old pasture tends to become less coarse, and its super-richness moved through dung to new pasture. I know of nothing calculated to depress and irritate a farmer's mentality more than numbers of unwanted dirty and broken-down gateways and untidy hedges. The little shelter these hedges afford in winter is as nothing to the pests they harbour, and the loss of sun. Cattle in summer are less tormented by flies in open fields and sheep need only half the attention. All foddering is done as much as possible on the new pasture, to help consolidation and provide natural seeds if any exist in the hay. (In theory they should not, but in practice they always do.) I may be a rebel, but the only control of grazing I adopt is to stimulate with nitrogen when supplies are short, or threaten to become short. On an average about once in two years this is necessary. We used 11 tons of sulphate of ammonia in November 1929, which helped winter and early spring growth very considerably—rate of application, $\frac{3}{4}$ cwt. per acre. My method is to play for safety the whole time, and I certainly should not be safe in facing the winter without rough keep, and at the mercy of slump stock prices in autumn and a boom in spring. Like most farmers who carry a big head of stock and sheep on pastures all the winter, I have never once in thirty years' farming had any grass left in late March. It is the market value, and not the food-unit value only, that counts in the balance sheet. It is to be noted that we never seek to establish a new pasture as a self-contained field.

Under our system the robust semi-cultivated wild white is the starting-point of accommodating factors. In both theory and practice this provides an abundance of keep for the first few critical years, and enables the land to be trodden well with stock; it also provides a drought-resisting mat, and fertility for the grasses subsequently. Assuming the semi-cultivated wild white does die out in a few years (and I do not concede this point), its place is certainly taken by the indigenous varieties—for I believe there are more than one distributed in the dung of stock, particularly horses. For this and other reasons we never disturb by harrowing any droppings on a new pasture, but allow the seedlings to root. Indeed harrowing and rolling is but a sign of ill management, for a better return can always be obtained by spending money, not upon mechanical equipment and effort, but upon nitrogen, and stock can do much better all that is necessary. At this point I would interpose that we adopt one of two methods for dealing with rough patches of grass—either mow and store for winter use, or give a liberal dressing of dung—and I incline to the latter method as the best. Dung soon converts hard unpalatable grass into succulent and sought-after food. It should also be noted that apart from an initial dressing

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of, say, 6 cwt. of slag before or during the first winter, and possibly $\frac{3}{4}$ cwt. of sulphate of ammonia the spring following, we do not force the pace of growth. Even dung gives a better return if applied circuitously through the old pasture. In grass management we aim at a condition that no water is allowed to stagnate; that further addition of slag no longer gives any appreciable result, and that some growth can always be expected when the thermometer is above freezing-point. A point of interest worth mentioning is whether it is wise to sow foul land. I give my experience in the case of two fields, each of 15 acres. Half of one field was foul, but in really good heart. All was sown together, and after the first year the clean portion showed no superiority over the foul. This I attribute mainly to the firmness in tread, which helped the wild white and stultified the couch and other weeds. (In a self-contained field this advantage would not obtain, as the numbering head of stock would be limited.) The other field was all in poor heart, half being clean and the other half foul. The foul portion is still considerably inferior (five years later) to the clean portion, although dung has been applied since, and none to the clean half. I therefore conclude that foulness is no bar if, at the time of sowing, available fertility is present, and if stock from adjacent old pastures are allowed to spend the time they are wont to do upon it. I would go further, and say that no amount of plant food added after the first year equals a good start before the first winter. If, however, I were faced with a similar problem, I should hesitate to spend, say, £3 per acre in cleaning, when cheap nitrogen is available. I think basic slag at seeding time, say 8 cwt. per acre, and sulphate of ammonia in both autumn and early spring, would overcome the difficulty of a good start. I now give some of my experience of lime upon grass. It so happens that my farm is sufficiently near to a newly opened lime hill to allow me unlimited supplies at a cheap rate, and two years ago I dressed 150 acres with about 3 tons or more to the acre. The effect was not so striking on my clay during the drought of 1929 that followed as it was in an impressive case at Woburn in the drought of 1895 (with a more sandy soil), but it was quite obvious it helped to preserve growth. I am aware that the theory is that lime acts mainly, if not exclusively, by chemical action, but ever since the Woburn experiment I have always contended lime also acts as a capillary or absorbing agent. I may be wrong, but I think it a point worth considering.

Lest anyone should have the idea that my grass is of a rough non-nutritious character, this idea can soon be dispelled by my stating that a herd of cows I kept on behalf of a relative has gained the highest place this year in milk recording for the county of Bedfordshire. These cows graze pasture every day through the winter, and their condition is second to none in the whole of the country. Further, by wintering out I am able to market many fat beasts in the early summer, and I am still selling to local butchers cattle off the grass, receiving cake. My

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ewes, which have had access since harvest to fifty acres of new-sown grass, together with old pasture, are really too fat for successful lambing, with no additional food.

Needless to say, anyone wishing to inspect my grass will be welcome to do so. In conclusion, I would urge a more liberal use of current possibilities as they come along. A few years ago it was good slag. To-day it is cheap nitrogen. To-morrow it will—we hope—be something else to continue the accommodating circle. Extension and stimulation of wild white clover, whilst being good for the individual farmer, carries also an advantage to the nation's real wealth, in that huge stores of nitrogen are assured ready for use in more normal times, or in a national emergency. We do not realize sufficiently that under all old rich pasture there exists more latent than potent fertility. It should be our business, and profit, to cash more of this annually without diminishing the source. Grass that grows in winter can look after itself in summer.

THE MAKING OF NEW GRASSLAND

BY CAPTAIN ARTHUR R. McDOUGAL

Blythe, Lauder

IN 1901 I took over the tenancy of my present farm from my father's trustees. It consisted of about 1000 acres of high, poor arable land, along with a big area of moorland grazings. The arable land had all been reclaimed, out of heather, bog, birch, scrub and bracken, by my father, from 1852 onwards. He had a twenty-six years' lease, and under its security he reclaimed this 1000 acres and made it arable land, and built a steading, and ten cottages, etc., all as a tenant. This was typical of hundreds of others—our forefathers—whose optimism, fanned by high grain prices, led them to drive the plough in Lammermuir higher than anywhere else in the country, right up to the 1200 foot mark in the case of my father.

It was cropped on the five-shift rotation for one or two rotations; then as prices fell, and the virgin turf which was its only wealth was exhausted, it was sown out with the old-fashioned ryegrass mixture and left. The lower areas were retained under regular crop, but the higher and poorer areas were left to revert slowly to *Agrostis* and *Bent*. The problem is to reconvert this into good modern pasture. It had all been drained, and had got about 5 to 6 tons of shell lime per acre. It all lay at an elevation of from 700 feet to 1200 feet. The soil varies from sharp slaty land to stiff blue clay, with peat on top, and it is all very stony.

At the time I took it over we had twelve work horses, and sold