

Mixed Arable Farm on which Seed Production is Prominent

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THE demand for an ample supply of pasture seeds has always existed in areas where arable farming is practised and the demand for good seed has increased with the knowledge of the influence of strain and its effect on the production and life of pastures. As a result there is now a fairly stable demand for more highly productive types and strains of seed for both re-sowing arable land and for re-sowing those areas which are used solely for herbage production. As pasture-seed production demands similar conditions of soil, climate, and contour as the production of cereals and other annual crops, it is natural that Canterbury should be the largest producer of pasture seeds, the main kinds of which are ryegrasses and clovers.

In order that the present and, if possible, the future position of pasture-seed, production and its relationship to arable farming may be appreciated it is necessary to understand the facts leading up to the present situation.

Up to about 1930 the method used by Canterbury farmers for sowing pasture was to sow down with wheat or other cereal or rape or turnips about a bushel of "ryegrass" with 2 or 3 lb. of red clover. One of the areas sown was left for ryegrass seed in the summer of the following year and after sufficient seed was kept for the following year's requirements the surplus was sold. Red clover was saved for seed after an early hay crop, and white clover was sometimes taken in suitable seasons from stubble areas which had been left over from the previous harvest.

In short, pasture was considered secondary to cropping, and pasture seed was taken only to save the expense of buying. This was the situation up to 1939; paddocks were sown down only to give them a spell, the use of lime was considered unnecessary, and superphosphate was still regarded by most farmers only at the best as a stimulant and not a necessity to crops.

Production of Ryegrass Seed

Ryegrass-seed production in Canterbury received its first modern impetus with the sowings of "Hawke's Bay" ryegrass sown under contract about 1929-30. As a result of this the pendulum swung back, and but for the strenuous efforts of a few this initial effort would have ended in disaster; even as it was it retarded development for some years. The pure sowing of ryegrass without clover on cropped

land, without lime, and with little phosphate was, as is well known, the cause. In fact the only feature which kept the project alive was the price, another stimulant which was ultimately to react against the true development of pasture-seed production and its relationship to arable farming.

During the boom-price period pasture seeds were produced for their return per bushel or pound of seed rather than their yield per acre. Machine-dressing loss and quality were forgotten in what can be termed the mad rush for the buried treasure of small seeds, a treasure which only a few ever found. This culminated in the collapse of the market, the causes of which were receding prices, record areas, bad harvesting conditions, and disease.

Period of Formation

Those 15 years of alternating periods of hope and despair can be regarded now as a period of formation and development during which the true relationship between seed production and arable farming was straightened out. Lessons were being learnt and applied throughout this period which have gradually placed seed production on arable land into its true perspective.

It has been proved that, first, pasture-seed production on a catch-crop basis is a quick revenue earner is risky, and, secondly, that it is not sound practice to devote the farm wholly to seed growing and to ignore the use of livestock in arable farming.

Like any other business, whether farming or commercial, seed production resolves itself into one routine. Certain operations must be carried out annually and throughout the farming year to ensure continuity in production and revenue and to avoid failures.

It has been claimed, and rightly so, that on many farms throughout the 15-year period from 1930 seed growing reduced the areas, of crops and the number of sheep carried and fat lambs produced. This, however, has taken place only on those farms (and they may still be in the majority) where haphazard methods have been used. On farms where seed production has been dovetailed into arable farming combined with sheep raising and where the lessons learnt through the development period have been applied land fertility, crop production, and carrying capacity have improved and revenues have increased.

Use of Built-up Fertility

The basis of sound arable farming is a constant annual supply of first-year harvest paddocks of perennial, short-rotation, or Italian ryegrasses and second year paddocks of red or white clover sown under conditions suitable to the establishment and growth of pasture seed conditions which make full use of built-up fertility by adequately-limed and fertilised land and a good fallow, and cultivation and which encourage the crop and make the maximum use of the initial vigour which all plants and animals possess in youth.

The basis of all first-year harvests is, of course, yield, and high yield has been found to be associated with high purity and low machine-dressing loss, and, in the case of the ryegrasses, good germination or less susceptibility to blind-seed disease. These first-year harvests mean a fairly short-lived period that the paddocks are down to pasture if any area is being saved? but this procedure fits in comparatively well where conditions are such that winter and fattening feed have to be grown because they are essential or as a safeguard. In order to maintain continuity it, is necessary that after two seed crops, one of ryegrass and one of clover, the paddocks are still good feed producers for the rest of their lives, which depend on the length of the rotation.

Production Programme Intensified

From this it can be seen that, provided the sowing of pasture seeds on an arable farm is carried out on the proper basis, it intensifies the programme of production. Though as a rule the length of life of a pasture is too short where seed production is combined in the programme, the pasture never reaches the stage of becoming worn out and unproductive. The system also ensures that the sowing of a paddock to grass becomes the final operation of the cycle for that particular area. This means that all the effort goes into seeing that the procedure is successful, so that pasture establishment becomes of first priority instead of being pushed into the background as in former days. Livestock numbers and the crop-pasture ratio, together with the fallow area and liming and topdressing area, become more stable; a condition which is ultimately reflected in the well-being of the farm.

The closing of paddocks for seed takes place when grass growth is starting to make its maximum development and surplus feed is beginning to show, and this is an advantage, for it is generally recognised that in Canterbury stocking up to late-spring and early-summer capacity is

not wise. Of course, this surplus could be made into hay, but the revenue obtained from an average seed crop has been found to be one of the best ways of balancing the budget on average-sized holdings in South Canterbury. In arable farming the whole secret of Success seems to be in not letting specialisation in particular feature, whether seed, sheep, or cereal, dominate, the position to the detriment of the others. Otherwise, the balance is upset, and once upset it is difficult to restore. The tendency of the seed producer is, of course, to save too great an area for seed, the temptation being to save older paddocks as well as newly-sown ones. This procedure reacts against the well-being of the livestock on the farm, and consequently, the ewes and lambs suffer. Sometimes grazing is obtained elsewhere, but this is not generally satisfactory.

Improving the Land

From experience it appears that seed production is less complicated when the farm on which it is practised is on what can be termed a rising plane of fertility. The difficulty is more the improving of the land so that the seed can be grown rather than the actual growing of the seed, which is more or less the result of experience from season to season. Under low-fertility conditions it is difficult to obtain harvestable and payable crops, and in the case of ryegrass it is well known that it takes quite "a bit out of the ground." At the other end of the plane, that is, under high-fertility conditions, it is again difficult to obtain harvestable crops because of too much growth and consequently poor ripening and difficult harvesting conditions. It must be remembered that the grasses and clovers used for seeding are types that have been produced for leaf rather than for seed; they, like high-fertility conditions, making leaf to the detriment of the seed yield.

The creating of this upward trend of fertility is therefore as necessary in seed production as it is in every phase of farming if success is to be achieved.

The beginning of a set rotation, including seed production on arable farms in Canterbury, will be governed by the set-up of the individual farm, in which consideration has to be given to contour, fertility, and previous farming practice.

On a farm where a rotation that includes roots and fodder crops, peas, linseed, and linen flax out of lea ground is followed by cereals a start is made with the establishment of pasture for seed production after the cereal crop. The basis is a fallow from autumn to autumn, coupled with

good cultivation, adequate liming, a liberal manuring, and the use of a good seed mixture. Good husbandry gained through experience under average conditions should enable payable pasture and seed crops to be obtained.

The annual area sown to new pasture should correspond as near as practicable to the annual area broken up out of old pasture, which for all practicable purposes can be taken as a tenth of the area of the farm. Once ploughed, the area will be out of grass for approximately 3 years. This means about three-tenths of the farm is under cultivated crops and fallow, a tenth in first-year ryegrass for seed, and a tenth in second harvest as white or red clover for seed. This amounts in all to about half the holding, leaving the other half for grazing purposes in 2-to 3-year-old pasture.

The stocking of the grazing pasture should be up to full capacity, reliance being placed on the supporting feed to be obtained from the first- and second-year seed stands in times of scarcity, etc. With this well-spread programme of work there will be few idle moments, but it is one that is well within the capacity of a modern mechanised plant on a Canterbury arable farm.

Pasture Establishment

The practice adopted by the writer for pasture establishment, with the aim of producing as great a yield of quality seed as possible from the area, can be summarised as follows:—

Thorough preparation of the seed-bed with good cultivation is necessary after a lengthy fallow. The final workings should be of a surface nature only, and at least 1 ton of carbonate of lime should be applied before the firming of the seed-bed. It will be seen that in combining seed, feed, and pasture it is necessary to sow in late summer or autumn so that the initial vigour will be carried through and the highest possible yield of ryegrass seed will be obtained.

Methods of sowing the seed vary. Where perennial ryegrass is being used broadcasting a mixture of 30lb. of perennial ryegrass with 31b. of white clover and 21b. of crested dogstail per acre is generally favoured. When Italian ryegrass is sown it is usually drilled at the rate of 25lb. to-

gether with 41b. of broad or Montgomery red clover. For short-rotation ryegrass used either with red or white clover drilling and broadcasting seem to find equal favour. The method used by the writer is to drill a bushel of ryegrass with a liberal sowing of superphosphate and to broadcast about ½ bushel of ryegrass with 31b. of white clover or 41b. of red clover and 21b. of crested dogstail through the front box of the drill in late February or early March.

In seed production it is, of course, essential that the highest grade of Certified seed obtainable is used in all the species sown in the mixtures.

The management of the newly-sown areas in autumn and early winter is to stock as soon as possible and to graze off quickly and allow time for recovery. In spring before the closing of the area the practice is not to hard graze, but rather to lighten the grazing just to keep the flaggy top off and give the plants a chance to bring every tiller to a seed head. Finally, the stock should be taken off when definite signs of heads are appearing. By this time growth will have reached a height of 6in. or more and will almost certainly mean a lodged crop, which, according to an old saying, "ruined no man." With these conditions high yields result, with which are associated higher germination.

The treatment of the final closing up of a white clover area is somewhat different; treatment can be harsher and shutting up later. On average moist, clay subsoils a good sprinkling of flowers appears before closing of the areas. The right time to shut up the seed-production areas is learnt from experience and a thorough understanding of the soil type and rainfall.

For the first 2 or 3 years after the beginning of such a programme there appears to be nothing but hard work and heavy expenditure in fuel, fertilisers, lime, and seed. But once the rotation begins to take shape enthusiasm begins to increase. The result of the work begins to show in an improved holding and increased returns, the farmer begins to see that he is making progress, every step is of interest, and it takes a major upset for anything to fall out of place in the cycle.