

NEW PERMANENT PASTURE AS GREENFEED IN CANTERBURY

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The Canterbury farmer depends to a great degree upon supplementary greenfeeds as part of the diet of sheep and dairy cows, but the actual extent to which he is dependent upon them is seldom fully realised until the occurrence of a very dry period. For instance, the low lambing percentages and high mortality in the Spring of 1933 can be attributed in general to defective or unbalanced nutrition arising from feed shortage. This feed shortage occurred in the Autumn and Spring of that year. Both seasons were dry, and supplementary greenfeed crops were very much reduced in production. Had there been ample and better balanced greenfeeds for Autumn and Spring flushing and for lambing, more lambs would have been born and more would have survived.

The question now arises as to whether, in the establishment of permanent pastures, sufficient greenfeed is not thereby provided so that ordinary temporary greenfeeds may be largely dispensed with, or at least, reduced in area with advantage.

It is the object of this paper to discuss this question and to show that new permanent grass can provide: at least a part of the greenfeed ration.

GREENFEED CROPS, METHOD OF GROWING, USES, ETC..

Greenfeed is usually provided by such crops as oats, barley, Italian ryegrass, kale, rape and sometimes turnip tops. Oats and Italian ryegrass form the main spring greenfeeds, while these and others mentioned are used for flushing and late autumn feed. Turnips, as well as providing the bulk of the winter feed, often provide the very early spring supplementary feed, especially along the foothills.

On many farms, greenfeed oats or barley are sown after a grain crop. Under these circumstances, except on the best soils, little autumn feed is secured. Fair grazing is provided in the spring. If these crops are sown in February on land fallowed from December or earlier, then very good production is obtained in autumn, winter and spring. Italian ryegrass is generally sown in January-February after a fallow, or it may be sown in February-March following a grain crop. It provides a good bulk of ~~the~~ feed in the late autumn, some winter feed and good spring feed. Part or all of it, on good land, may be shut up for seed production,

Rape and Bale, of course, are sown about November after a winter fallow.

When greenfeed oats or Italian ryegrass are grown purely for greenfeed, the cost per food unit, or per sheep week of grazing, is high. If seed production or a chaff crop can also be secured the cost may be kept low, and this can be, and usually is, done, on the better classes of land. On the medium and light lands, however, where the growing

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of large areas of green crops is the general practice, green-feed and a cash crop cannot be secured satisfactorily or profitably from the same sowing,

PRESENT METHODS OF SOWING GRASS.

Many farmers sow grass-with turnips, kale or rape, and sometimes even with oats in the autumn. The threefold object in adopting this procedure is to obtain

- (1) a better balanced supplementary feed,
- (2) cheap sowing, and
- (3) a permanent pasture following the supplementary crop without the necessity of further tillage.

Although the resultant thin and open sward usually indicates the method of sowing, in a normal season on light land the first and third objects are generally gained. The second, cheap sowing, may prove to be false economy, however, when the weed invasion and lowered production resulting from the bare spaces of such a pasture are considered over a period of years. On heavy land the supplementary crop, if as good as it should be, often smothers the young establishing pasture to a large extent,

In either case, the young grass is severely treated

- (1) by the heavy tramping in the autumn and winter when the higher yielding crop is being grazed, and
- (2) by severe grazing in the case of rape and kale at a very early stage. In connection with the latter consideration, it is characteristic of the sheep to eat out the lesser and more palatable constituent before turning to the more bulky crop,

In general, the practice of sowing permanent pasture along with a supplementary feed crop is unsatisfactory. Because of the smothering and the early severe grazing, but little autumn, winter or lambing greenfeed is obtained from the new pastures sown with these supplementary crops,

PERMANENT PASTURE - ESTABLISHMENT,

Nom from the point of view of season and fallow, with the exception of sowing immediately after a grain crop, permanent pasture sown alone on a firm and weed free seed bed could be established in the place of any of the crops that have been under discussion above,

The best method of permanent pasture establishment, whether it be on heavy or light land, is that of sowing a suitable mixture of truly permanent strains alone on a properly prepared and well fallowed seed bed. The length of time between original ploughing and the sowing should not be less than three months. Deep cultivation should be completed at least 6 weeks before the intended sowing date, and this final period should be filled in with surface working only; that is, suitable light harrowing and rolling that will result in moisture conservation and weed control, and mill leave, ultimately, a fine, firm, moist weed-free seed bed. Sowing a pasture under such conditions in October or November, on almost any soil, gives a good germination, a rapid establishment and complete cover. Where properly regulated grazing is maintained, particularly in the first year, a good permanent pasture is assured. The new pasture provides lucious grazing as greenfeed, as soon as it is several

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inches high.

SEED MIXTURE,

The grass seed mixture which is recommended for maximum greenfeed production and a permanent pasture, and which can be grazed hard for a short time if absolutely necessary is the dominant ryegrass type as follows:-

True or certified perennial ryegrass	30-35lb.	} per acre
Akaroa cocksfoot	5- 7lb.	
Red clover	3- 4lb.	
Wild or certified white clover	1- 2lb.	

With the price of certified ryegrass at 6/- per bushel, cocksfoot at 1/- per pound, red clover at 10d per pound and white clover at 1/9 per pound, the mixture may vary in cost between 18/- and 24/-, say £1 per acre.

To those accustomed to sowing temporary lines of seed this cost may seem excessive. That this is not so, however, may be appreciated by a consideration of the long term view. The cultivation costs are no more for the establishment of this permanent pasture than for the sowing of a temporary pasture.

As against greenfeed alone, the cost may appear even more excessive, but is easily offset by the cultivation, seeding and manuring costs of greenfeed production over a period of say, five years, during the whole of which time the one permanent pasture is involving no other expenditure than that for annual top-dressing, etc.

SPRING OR AUTUMN SOWING FOR PERMANENT PASTURE AND THE MAXIMUM GREENFEED PRODUCTION THEREFROM?

Good ryegrass pasture establishment may be obtained by autumn sowing, and on heavy land in a high state of fertility early autumn sowing of cocksfoot and clovers may be highly successful. Because of better weed control, early autumn or summer sowing on heavy or weed infested land is preferred. The degree of success, although dependent upon the weather experienced at and after sowing, will vary with the length of fallow and fitness of the seed bed. These pastures usually give late autumn greenfeed for late lambs, for flushing of ewes, and abundant spring greenfeed. It would probably be April, at the earliest, before grazing could be commenced - assuming a February sowing. Sowing should generally take place not later than the end of March.

On the medium and light land, spring and early summer sowings are not affected, as a rule, by the annual weeds that are troublesome on the heavy lands. Along the foothills of Canterbury, however, spurry (or yarr) may be troublesome in certain areas, although December sowing is desirable on these foothill lands, January and February sowings on well fallowed land make a rapid and thorough establishment, on account of the favourable rainfall conditions that generally prevail. On these areas extremely good pastures have also been obtained by sowing alone in November and December on well fallowed land after turnips.

On every class of land the earlier the sowing can take place the longer will be the "greenfeed" season. On light land, pasture sown at the end of September should be ready for grazing in December. According to the conditions of rainfall and fertility such a pasture will give greenfeed throughout the autumn and up to October of the following spring.

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Regardless of the time of sowing the "greenfeed" value of the pasture disappears with the approach of the November following the date of sowing, because firstly the ryegrass (especially on the lighter soils), tends to shoot rapidly to seed at this time, and secondly there is usually adequate feed from the other grazing pastures.

In general, and especially on medium and light land, spring and early summer sowings are the best for securing ~~the~~ greenfeed and a good mixed pasture, and should be aimed at wherever tillage and need conditions will permit.

USES AND MANAGEMENT OF NEW PERMANENT PASTURE.

In a season of average rainfall a new permanent pasture of the type described, and sown in October or November as indicated, should be ready for a light grazing in the latter part of January or the beginning of February. Throughout the autumn, provided that rainfall is adequate and nor-westers are not too frequent, such a pasture provides useful greenfeed, and, if reserved for special purposes such as lamb fattening or flushing of ewes and rams, allows a reduction in area of feeds grown for these purposes*

It is recorded that such a pasture on medium land will, throughout the autumn period, fatten 5 or more lambs per acre without supplementary hand feeding. With $\frac{1}{2}$ lb wheat per lamb daily, 8-10 lambs per acre can be fattened. This fattening should not ^{take} more than a 2 or 3 months period.

Late autumn feed, some winter feed and spring lambing feed can be obtained by spelling the new pasture pending the use to which it is to be put. Except in the case of lamb or cull ewe fattening, this pasture should, of course, be rationed at the rate of 2 or more hours per day as ~~is~~ is now good practice with greenfeeds.

In the spring, ewes and lambs should be put on in groups of several days lambing, or mobs of ewes and lambs may be put on breaks for several hours daily. At no time should the pasture be eaten hard for any lengthy period. This is important, particularly if the cocksfoot and clovers are to be given a fair start,

The permanent pasture sown in October, November or December will then, under average rainfall conditions, assist in the provision of the following:- lamb fattening feed, flushing feed, late autumn feed, some winter greenfeed, spring flushing feed and lambing feed up to October - November following sowing,

At this time the ryegrass begins to shoot to seed, and the whole or part of such a pasture may be shut up for a profitable seed crop. If a high yield 'of easily cut seed' is desired, shutting up in the middle of September for medium and light land, and the middle or end of October for medium to heavy-land is necessary,

If not to be used for seed production, the pasture may be grazed in the usual manner throughout the spring. Under ordinary grazing conditions a payable yield of seed may be obtained by means of stripping.

Gentle or light grazing from October onwards allows the cocksfoot and clover to recover after the closer grazing

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during lambing, By spelling the pasture from mid-November to about the end of December, a bulk of succulent grazing may then be obtained from the clover content of the pasture, in late December and January at a time when it is most valuable for maintaining ewes and lambs in a thriving condition.

The ryegrass that shoots to seed during this "spelling" period, even if it is not stripped, need not cause any concern, because under Canterbury conditions, if the pasture and stock are to receive the best treatment, and if lamb production is the object, some seed stalks cannot be avoided - even with continuous grazing. The best treatment for the pasture is to allow seed stalks to develop; for the sheep, to secure fat lambs off the mothers. If grazing in the first year is allowed to be hard enough to prevent the growth of seed stalks, then cocksfoot and clover development is very poor,, the value of the pasture in January - February is lost and fat lamb production is proportionately retarded.

CARRYING CAPACITIES OF NEW PERMANENT PASTURES USED AS GREENFEED.

Although there are no comparative figures for greenfeed oats, Italian ryegrass and new permanent pastures grown under experimental and exactly similiar conditions, yet records have been kept of the grazing obtained from new permanent pasture when grazed as though it were greenfeed. A few representative figures are given in the following table.

TABLE I. Carrying Capacity of ^A ~~New~~ ^{Permanent} Pastures When Grazed as Greenfeed. Dry Sheep or Ewes per Acre by Months.

Local- ity Grass	Light Land (Plains)	Light Land (Foothills)	Medium Land (Foothills)		Medium- Heavy Land (Plains)
	Nov, 1932.	Nov. 1933.	No. 1 Nov. 1933.	No. 2 Dec. 1933.	Nov. 1933
Jan,		-	7.63	-	7.12
Feb.		7.96	14.50	-	12.01
Mar.		4.60	9.20	2.20	3.68
Apr.		3.81	8.96	5.30	3.85
May.		\$3.05	3.59	5.60	3.66
June		2.31	-	2.73	1.06
July	0.13	0.91	-	-	-
Aug.	0.62	1.84	-	-	-
Sep.	3.81	3.02	0.07	-	Shut Seed
Oct.	3.29	2.06	5.20	-	Went Flat
Nov.	3.47	6.93	2.30	-	& only 2c
Dec.	1.35	2.84	1.40	-	bus'. per
				No? records kept.	ac. saved

Records have also been kept of the grazing obtained from greenfeed oats and from Italian ryegrass whenever opportunity permitted. Some of these figures are given below:-

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TABLE II. Carrying Capacity of Greenfeed Oats & Italian Ryegrass When Used as Greenfeed. Dry Sheep or Ewes per Acre by Months.

Local- ity Sown..	Greenfeed Oats			Italian Ryegrass	
	Light Land (Plains)	Light Land (Plains)	Med-Heavy Land (Plains)	Light Land (Plains)	Heavy Land (Plains)
Jan.	0.86	-	-	-	-
Mar.	9.28	0.11	-	0.81	1.13
Apr.	-	3.18	0.34	2.10	2.14
May	-	1.15	1.95	0.10	3.36
June	-	0.73	9.65	0.14	0.14
July	0.32	0.95	0.07	0.23	2.12
Aug.	3.76	3.94	0.07	4.28	3.58
Sep.	2.60	4.23	8.77	3.45	5.34
Oct.	2.50	4.48	2.97	2.84	2.58
Nov.	-	4.71	2.81	2.28	Yielded ⁴⁹ 20
Dec.	-	2.18	-	?	bus, per ac.
Jan.	-	-	-	?	7.60
Feb.	-	-	-	?	-

It is not intended that these tables should be taken as truly comparative of the grazing capacity of new permanent pasture as against that of greenfeed, but the figures do indicate that new permanent pasture, sown alone in the fashion outlined, is capable, under ordinary circumstances, of giving satisfactorily high grazing when used as greenfeed. It should be stated that the examples recorded above have been used because the methods of tillage and seed-bed preparation, and the grazing procedure are known to have been most satisfactory..

CONCLUSION.

Where permanent pastures are desired, whether it be on heavy or light land farms, the method of establishment and grazing management as outlined is economically applicable to at least one paddock each year.

Such a ^{practice} ~~practice~~ allows some reduction at least in the area of costly temporary feeds; on account of the method and time of sowing, successful establishment is almost certain; by correct management valuable feed is obtainable at every special "greenfeed" season for a period of approximately one year; the production of a valuable strain of seed is possible in the first harvest year if desired, but otherwise in later years; and, ^{finally} ~~and~~ truly permanent first class pasture is established. This last consideration, on all farms, except those of the dominantly cropping type, and they are few; cannot help but appeal to the farmer who has tried the method thoroughly.

The greenfeed value of Italian ryegrass, when sown after a lengthy period of fallow has been well established, then why not permanent pasture for greenfeed after a similar fallow, on all farms where permanent pastures are desired?

This method of establishing and managing new permanent grass has become a definite part of a profitable programme on a large number of Canterbury farms.