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MASSEY AGRICULTURAL COLLEGE  
[UNIVERSITY OF NEW ZEALAND]  
PALMERSTON NORTH.

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THE ECONOMICS OF THE INTENSIVE  
ROTATIONAL GRAZING OF SHEEP.

1st ANNUAL REPORT

G. S. PEREN, A. W. HUDSON, A. C. MORTON  
and C. C. YATES.

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# Massey Agricultural College

[UNIVERSITY OF NEW ZEALAND]

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## FARMING COURSES

(SHEEP FARMING and DAIRY FARMING)

BEGIN ON

1ST NOVEMBER

10TH JANUARY

OR

1ST MARCH

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THE REGISTRAR,

P.O. BOX 367,

PALMERSTON NORTH.

## THE ECONOMICS OF THE INTENSIVE ROTATIONAL GRAZING OF SHEEP.

By G. S. Peren, A. W. Hudson, A. C. Morton and C. C. Yates.  
Massey Agricultural College.

### INTRODUCTION.

The adaptation to sheep management of the principles of the system of grazing known as Intensive Rotational Grazing has been worked out by several farmers during the past few years and from their statements, they would appear to consider the extra work and capital outlay involved to be worth while financially.

The principles of this system of management are :—

1. Subdivision into paddocks of such a size that they will carry the number of sheep concerned for roughly a day and a night.
2. Shifting the sheep from paddock to paddock in a regular rotation.
3. Dispensing with the use of cattle to keep the pastures in order for sheep.

It is claimed that the system has a very beneficial effect on the pastures ; selective grazing is reduced to a minimum, the feed being eaten down evenly as if cut with a lawn mower, and the dung is spread uniformly over the pasture. Further, the pasture plants are not weakened by continual nibbling and trampling ; they are grazed once a week or fortnight and are given the intervening period in which to recover. This treatment it is stated, produces a very strong, dense sward and, taken in conjunction with the efficient use of every bite of feed, considerably increases the carrying capacity. As the latter increases, so the pastures improve as a result of the heavier dunging until the maximum of which they are capable is reached. Evidence in support of these claims has been presented by Hudson. (\*)

As the system runs counter to several of the accepted canons of sheep grazing, particularly in the matter of the rate of stocking of paddocks when grazed, it has created considerable interest among sheep farmers. The majority, however, are sceptical of its soundness ; they feel, quite naturally, that the frequent shifting of the sheep must result in a lot of mismothering and bruising of the lambs, that the daily changes of pasture must upset the digestive systems of the lambs, that sheep cannot possibly do well when run in such large numbers per acre and that the net result must be a serious decrease in the percentage of lambs fattened on their mothers and a bigger percentage of lambs to be fattened on either grass or crops, or to be sold as stores. As the books of the few farmers practising this system are private and there was therefore no means of comparing their financial returns per acre with those obtained from other methods of management, the College decided to set aside a portion of its property to be run for a number of years as a small sheep farm under the intensive system and to publish each year a set of accounts covering the previous season together with a detailed report on the managerial problems involved. It was considered that unless the trials were carried out on a reasonably large scale, some of the managerial difficulties might be underestimated and farmers would have good reason to doubt the application of the results to farming practice.

**It will be understood that the College is not recommending this system of management—it is not yet in a position to express an opinion on the subject. It is merely carrying out an unbiased trial.**

**Commencing Date of Trial.** 1st March, 1936.

\* Reference : Hudson A. W. "Intensive Rotational Grazing with Sheep". Proceedings of a Meeting of Sheep Breeders. Massey Agricultural College, 1935.

## PART I.

## 1. DESCRIPTION OF THE LAND WHEN TAKEN OVER FOR THE PURPOSE OF THE EXPERIMENT.

**History.**

The country originally carried heavy bush composed chiefly of rimu and rata together with totara and maire and some hinau on the faces of the gullies. The bush was felled in 1886 and grass sown on the ashes of the burn as was the usual custom. Initially the country did very well but by 1927 when the property was taken over by the College the pasture had reverted to a Brown Top—(*Agrostis tenuis*)—Dogstail (*Cynosurus cristatus*)—Sweet Vernal (*Anthoxanthum odoratum*) association with a very heavy growth of rushes and much Penny Royal (*Mentha pulegium*). It was very badly in need of drainage, the more level areas being waterlogged during the winter and spring months. Between 1927 and 1936, when the trial in question was commenced, the College carried out a considerable amount of mole drainage, cropping and laying down of pastures of certified grass and clover combined with liming and topdressing. As a result, the carrying capacity was approximately trebled.

At the time of taking over for the purpose of the trial much remained to be done in order to put the block into first class condition, vide the details of the pastures given below, and while it was appreciated that it could not be sufficiently developed for several years to enable maximum carrying capacity attainable under the system of management to be demonstrated, it was felt that a start should be made as managerial experience was necessary before the method could be given a fair trial.

The principal features of the area of land when taken over for the trial were as follow :  
**Area**—78.7 acres.

The acreage could not be increased without increasing the proportion of gully unduly. Eighty acres (78.7 acres), being one-eighth of a square mile, is, however, a convenient unit and the results obtained therefrom can be applied to larger units by simple multiplication assuming a pro rata basis.

**Plan of Block.**

A plan of the block is shown in Fig. 1. It will be noted that the area has been divided into fifteen paddocks, the level and ploughable paddocks varying in size from 4.61 acres to 5.76 acres and the gully paddocks Nos. 2, 4 and 10 from 5.54 acres to 6.5 acres. The latter were, in the main, made the larger as the pasture of the gullies, even under the best treatment, could never carry the same number of stock per acre as the level paddocks re-sown in certified rye-grass and white clover. Topography, existing fence lines and convenience when shifting sheep made it impossible to subdivide so that all ploughable and all gully paddocks should be exactly equal in size.

Assuming a regular rotation, the sheep shifted daily, and one paddock in roots, the number of paddocks allowed a paddock thirteen days in which to recover from the heavy grazing and dunging or about six days if the sheep should be in two mobs. In the light of the experiences of others, this seemed the soundest basis on which to make a start.

**Topography.**

The area is intersected by two long, deep gullies, (20 acres), the sides of which are too steep to allow the use of grassland harrows. Otherwise, the area is either more or less level or gently sloping to the gullies.

It was realized, when it was decided to utilize this block for the trial, that the gullies would seriously limit the maximum carrying capacity, compared with an area wholly ploughable, but no more suitable block of land was available.

**Description of the Soil.**

Although the soil is commonly referred to as a clay, it is really a fine sandy loam having, as indicated by analyses of similar areas, a mechanical composition as follows :—

Coarse Sand	0.5% approx.
Fine sand	50.0% approx.
Silt	20.0% approx.
Clay	20.0% approx.
Organic Matter	5—6% approx.

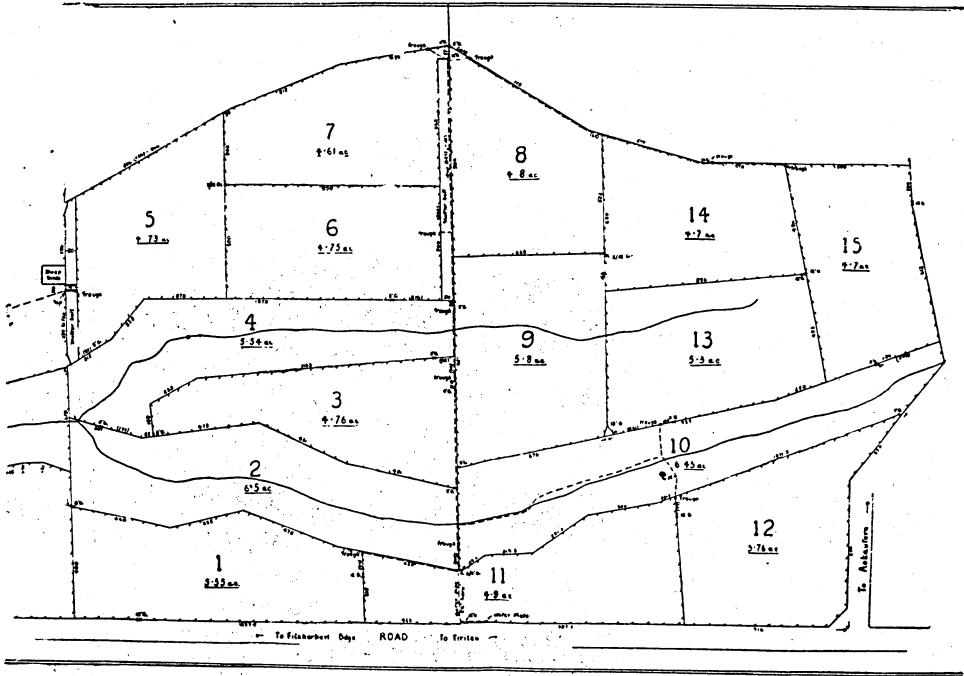


FIG. 1.—Plan of farm showing subdivision as completed in the winter of 1937. (Note: The fence between Fields 8 and 9 is not yet in its permanent position. A temporary fence along the edge of the gully in Field 9 will divide these two fields until both are laid down to improved permanent pasture).

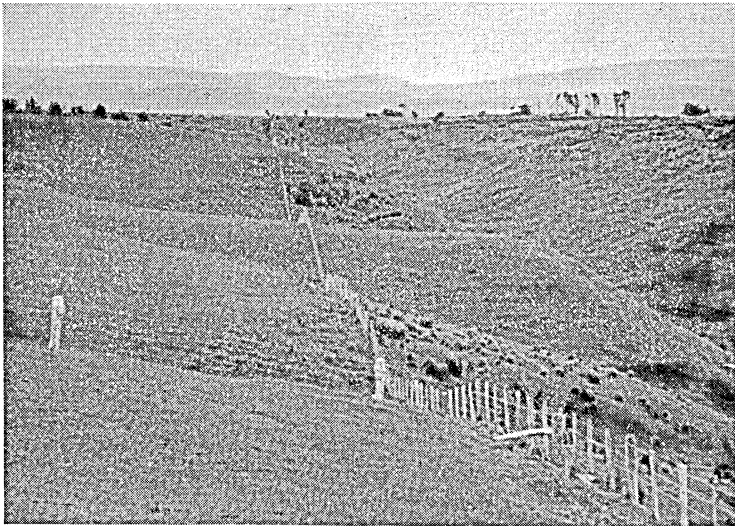


FIG. 2.—View of portion of the farm taken from Field 5, in the foreground, with Field 6 on the left. Fields 4 and parts of 9 and 13 occupy the gully on the middle right. Fields 3 and 9 are shown in part on the rush-covered ridge on the right.