



# Herbage Production of Short-rotation Ryegrass

## Eight Years' Production Records from a Trial at the Marton Experimental Area

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**I**N producing short-rotation ryegrass the Grasslands Division of the Department of Scientific and Industrial Research made a notable contribution to the farming economy of New Zealand. Since its release to farmers in 1943 short-rotation ryegrass has rapidly grown in popularity so that today some 100,000 bushels of seed are produced each year, of which approximately 75 per cent. is sown within the Dominion. Farmers' experience with short-rotation ryegrass, together with the results of many years of experimentation, has shown that it can produce at a high level and be fairly persistent under conditions of reasonably high soil fertility, good moisture supply, and satisfactory management, by which is meant more particularly the avoidance of over-grazing, especially in summer and autumn.

**T**HE purpose of this article is to present results to date from a trial with short-rotation ryegrass which has been in progress at the Marton Experimental Area for the past 8 years.

### Details of Trial Area

The trial area was ploughed out of grass in 1940 for a swede crop in

1940-41. After the swedes it was ploughed in September, 1941, worked down, and sown to grass on October 30, 1941. The soil type (Wanganui loam) is not particularly fertile and is typical of thousands of acres of terrace and gently rolling downs between Wanganui and Palmerston North. Rainfall is not high, the average being about 35in. per annum, and the district is liable

to dry spells in summer, the effects of which are magnified by persistent winds so that the soil dries out and cracks badly. At the same time some type of drainage is essential, for water does not run freely through the soil and the subsoil is a heavy, compact clay loam. The country is ideally suited to mole draining and the Marton area was thoroughly mole drained shortly after the trial began.

The spring sowing to grass used in the trial is not the usual practice, but was adopted in this case to obtain a sward as quickly as possible. Fortunately it proved very successful and a highly productive sward was soon obtained on all treatments. Particularly for short-rotation ryegrass, spring sowing is not advocated today, because the grass enters into a relatively dormant period in summer and autumn and consequently cannot offer strong competition to weeds or other pasture species at this critical time, shortly after sowing. At the time the trial was sown, however, the behaviour of the plant in this respect was not fully appreciated.

The strain of short-rotation ryegrass then available for trial is not considered as persistent as that being released at present, but as will be shown this fact has not prevented the strain sown persisting as a valuable and productive element of the sward for more than 8 years.

The grazing management has at all times been rotational grazing with sheep. All trial fields have carried over the last 7 years on the average about 28,000 sheep days per acre, which works out at approximately 11 dry sheep per acre average daily carrying capacity. This high figure has been possible with the first-class herbage utilisation which can be obtained with small trial fields ( $\frac{1}{2}$  acre each) and probably could not be duplicated on a farming scale. At no time has the grass been allowed to reseed. This policy has been adhered to in an endeavour to establish the persistency of short-rotation ryegrass without re-seeding.

**TABLE 1: YIELDS OF DRY MATTER OF PASTURE HERBAGE IN YEARLY PERIODS**

Year	Actual period	Yields of dry matter (lb. per acre)			Yields relative to Field 1 (perennial ryegrass) = 100	
		Field 1 Perennial ryegrass	Field 2 Perennial and short-rotation ryegrass	Field 3 Short-rotation ryegrass	Field 2	Field 3
1942 (18 months)	12-1-42 to 25-8-42	2,971	4,120	4,388	138.7	147.7
1942-43 ..	26-8-42 to 1-9-43	8,548	8,402	7,227	98.3	84.5
1943-44 ..	2-9-43 to 29-8-44	8,722	9,536	9,728	109.3	111.5
1944-45 ..	30-8-44 to 27-8-45	11,955	12,490	13,539	104.5	113.3
1945-46 ..	28-8-45 to 19-8-46	10,062	10,812	10,365	107.5	103.0
1946-47 ..	29-8-46 to 16-9-47	10,243	11,271	9,522	110.0	93.0
1947-48 ..	17-9-47 to 30-8-48	5,516	6,239	5,869	113.1	106.4
1948-49 ..	31-8-48 to 16-8-49	10,978	11,905	11,568	108.4	105.4
Totals (8 years)	12-1-42 to 16-8-49	68,995	74,775	72,206	108.4	104.7