

Trials of Flue-cured Tobacco Varieties

To obtain the best returns from a crop of tobacco the most suitable variety must be grown. Choice of variety is governed by soil and climate, the same varieties producing different results under varying conditions. So much is this the case that usually each country has developed its own group of varieties most suited to its local requirements. To determine those most suited to New Zealand conditions field trials of flue-cured varieties have been carried out at the Department of Scientific and Industrial Research's Tobacco Research Station, Motueka, for a number of years. In this article R. Thomson, Director of the Station, describes the results of these trials.

THE tobacco-growing district in New Zealand is relatively compact, being confined to Waimea County of the Nelson Province. There is a fairly wide range of soil types, but the climate is much less diversified. While individual variations, such as in the prevalence of wind or earliness of frosts, do occur, in a broad sense the climate throughout the growing district is reasonably uniform. For this reason the requirements of the district probably would be met by a much smaller number of varieties of tobacco than would be the case in a country where there was a greater range of both soil and climate.

Before the establishment of tobacco growing in this country New Zealand was entirely dependent on the United States for its tobacco requirements, either directly as raw leaf or indirectly through manufactured products. The public taste was therefore built up on Virginia-type leaf and it was necessary that the characteristics of any leaf grown in New Zealand should conform fairly closely to those of the imported article which it would eventually replace. With this objective obviously the first varieties to be grown here would be those which were in general cultivation in the United States. Some of these had definite shortcomings in yield or quality, and subsequent trials have had the object of finding a variety



Tobacco crop in the Riwaka district with curing kilns in the background.

which would give a good return to the grower and at the same time not differ too widely from the imported leaf in quality.

Material and Methods

The first trials included all the chief varieties that were in general cultivation in the United States. As information was gained on these they were dropped from the trial and other more recent introductions included. In addition to varieties from the United States, flue-cured tobaccos were received from Canada and Rhodesia and these were tested for their performance under local conditions.

Plots consisted of 100 plants each. At the beginning of the trials, when a large number of varieties was under consideration, it was not possible to

grow more than two replications. Early trials indicated some definitely unsuitable varieties, and by omitting these it was possible to increase the number of replications to four. Trials were continued over a varying number of years. If a variety possessed some outstanding defect, such as extreme susceptibility to black root rot, or an undesirable leaf type, it was discarded after 1 or 2 years. On the other hand varieties showing promise were carried on up to 6 seasons. All received the same cultural and fertiliser treatment. One weak point in the trials was the necessity to cure all the varieties together in the same kiln, and as all did not have the same leaf characteristics, this obviously reacted to the detriment of some lines.

With such a large number of varieties in trials extending over varying

TABLE 1—YIELD PER ACRE OVER A PERIOD OF 7 YEARS

Variety	Yield per acre							Average	No. of years	Yield of H. Sp. 215 for same period	Yield as % of H. Sp. 215
	1942-43	1944-45	1945-46	1946-47	1947-48	1948-49	1949-50				
Harrisons Special 215	1354	1642	1824	1958	1415	1699	2015	1701	7	1701	100.0
Harrisons Special 218	1147	1253	1304	1406	883	765		1126	6	1649	98.4
Special 400	1246	1451	1825	1701	1287	1415		1487	6	1649	90.2
Special 401			1788	1757	1466			1670	3	1732	92.8
Special 402				1636	1434		1194	1421	3	1691	84.0
Yellow Special		1239	1380	1735				1451	3	1808	80.3
Broadleaf	1478	1277	1455	1867				1519	4	1694	89.7
Gold Dollar	1017	1031	1400					1149	3	1607	71.5
White Mammoth	1021	1198						1110	2	1498	73.5
Yellow Mammoth	1107	1127	1377					1204	3	1607	74.9
Virginia Bright Leaf	993	884						939	2	1498	62.6
Jamaica Wrapper	384	557						671	2	1498	44.8
Cash	824	433						654	2	1498	43.7
Bonanza	984	914						949	2	1498	63.3
Mammoth Gold	894	860						877	2	1498	58.6
W. S. Orinoco	1072	976						1024	2	1498	68.4
Duquesne	1204	861						1033	2	1498	69.0
Meadows Giant	1204							1204	1	1354	89.0
Oxford 1					928			928	1	1415	65.6
Oxford 3					877	858		868	2	1557	55.8
Oxford 26					1083			1083	1	1415	76.6
Delray			1518	1500				1509	2	1891	79.8
Delevest							1079	1170	2	1857	63.0
C-7/46								943	1	2015	46.8
C-10/46								1152	1	2015	57.2