LETTUCE OBSERVATIONS AT VUDAL AGRICULTURAL COLLEGE, NEW BRITAIN

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ABSTRACT

Lettuce trials in wet tropical lowland at Vudal Agricultural College in 1966 showed the variety Pennlake to be outstanding in setting firm heads and not bolting to seed. Direct seeding was a failure compared with nursery seeding and transplanting. Shading of transplants with trash covers in a traditional gardening manner was not necessary and seriously retarded the crop.

INTRODUCTION

LETTUCE crops are grown by Papuan and New Guinean farmers throughout the Territory for sale at local markets where European shoppers are present. Lettuces with good firm heads have been the exception rather than the rule despite the shoppers' preference and willingness to pay more for such types.

Gazelle Peninsula farmers purchase seed from Rabaul stores and have been known to buy the cheapest seed available regardless of variety. It was considered desirable to compare under uniform growing conditions the different seed lines offering in Rabaul stores, so that variety recommendations might be made to growers, resulting in a better type of lettuce arriving at the markets.

Trials were conducted at Vudal Agricultural College by the foundation students who were then in their second year. The college is some 30 miles from Rabaul, near Keravat, and is at a latitude of 4 degrees south and an altitude of 200 feet above sea level. The average annual rainfall is 109 inches and the soil is a fertile pumice brown loam typical of the Gazelle Peninsula. Results obtained might well be widely applicable to wet tropical coastal lowlands after making due allowance for differing soil types. As far as is known there have been no previous publications in scientific literature of lettuce research in Papua and New Guinea.

METHOD

A variety trial was sown on the 10th August, 1966, into seed pots in a shaded nursery. Varieties were Pennlake, Imperial 615, Imperial 847, Iceberg, Butterhead and Mignonette. They were transplanted on the 24th August, into freshly cleared virgin soil which had been rotary hoed. Each plot consisted of six plants placed one ft. apart in the row, with four ft. between plot rows. Varieties were replicated in three blocks and randomized. All plants were covered with small shade shelters made in a traditional gardening manner from sorghum grass trash. A separate bed of reserve plants was not covered with shade shelters. Two replicates were hilled before planting, but the third was planted directly onto level soil. No fertilizer was applied. Misses were replanted on 27th September, 1966.

A fertilizer demonstration was sown on the 11th October, 1966, directly into the field. The same varieties were used but were not replicated. Rows 11 yards long were sown with seed $\frac{1}{8}$ to $\frac{1}{4}$ in. deep. Half of each row had fertilizer banded 2-3 in. below the seed at the rate of four cwt. per acre 20-20-14 NPK and $\frac{1}{2}$ cwt. per acre flowers of sulphur. Establishment was very poor and the trial was re-seeded two weeks later, but once more establishment was so bad that the trial could not be continued.

RESULTS

Germination was excellent in nursery seed pots but, following transplanting under grass trash, survival was as follows on 27th September, five weeks after transplanting *(Table 1)*.

Thirty-three plants survived out of a total 108 transplanted, giving a loss of 69 per cent. This loss was apparently caused by overshading and/or insect damage fostered by the grass trash. Adjacent areas of reserve seed-

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Table 1.—Lettuce transplanted under trash shade shelters—survival counts per plot of 6 plants.

	Pennlake	Iceberg	Imperial 615	Imperial 847	Butterhead	Mignonette
A	0	2	0	0	2	3
Replicate B	3	6	0	0	1	5
C	0	2	1	2	3	3

lings, transplanted without trash shelter, survived well and suffered little or no loss. Following the replanting of the missing plants on 27th September, the variety Pennlake was outstanding as the only variety to set firm heads, and as the last variety to flower.

DISCUSSION

Despite a high number of re-plants, the variety Pennlake set firm heads and was the last to flower. It cannot be argued that Pennlake did better because of not being replanted as much as other varieties. Iceberg and Mignonette each with ten surviving plants out of 18 were affected least by replanting yet they both flowered earlier than Pennlake. Imperial 615, Imperial 847 and Butterhead required approximately the same amount of re-planting as Pennlake, but Pennlake flowered later than these.

It could not be expected that Butterhead and Mignonette would set firm heads as these are non-hearting varieties known as butterleaf (Poole, 1959) or butter-head (Morgan, 1962) types. But the remaining varieties do set good heads under favourable temperate conditions. Only Pennlake succeeded in doing so under the existing tropical lowland conditions.

Whilst too much emphasis should not be placed on the results of this one trial, and other sowing times in different years may produce varying results, it is of interest to note that the superiority of Pennlake as a hot climate lettuce has been demonstrated in Queensland where in 1955, Morgan (1955) reported it to be the most reliable of the available warm weather varieties. Morgan (1962) again confirmed this and outlined the history of the search for a suitable summer lettuce in Queensland saying that the butterhead type had been the main summer variety for many years. Consumer preference changed with the advent of Imperial lettuce strains, but they were subject to tip burn, a serious physiological disorder of summer lettuce. A reliable hot weather lettuce came in the Great Lakes variety produced by the United States Department of Agriculture in 1941. It showed some resistance to tip burn and headed well under fairly hot conditions. Pennlake is an early, medium sized variety of the Great Lakes type.

Ward (1967) says that recent observations in Queensland lend doubt to the reported tip burn resistance of Pennlake, and Kruger (1966) attributed tip burn in Pennlake to a deficiency of calcium in the young leaves.

The failure of plants to establish in the direct-seeded fertilizer trials may have been due to high soil temperatures. Morgan (1962) states that a temperature of about 75 degrees F is best and that higher soil temperatures delay and reduce germination. Higher temperatures would have been obtained in these trials, and whilst the precise reason for failure cannot be stated, it is evident that direct seeding of lettuce could be risky under Gazelle Peninsula conditions.

CONCLUSIONS

A far wider use of the variety Pennlake would seem warranted in the tropical lowland areas of Papua and New Guinea when market preference is for lettuces with good firm heads.

Comparisons of Pennlake with the latest Great Lakes strains and new tropical varieties like Kauwela and Kulanui developed by Poole (1959) in Hawaii would seem to be the next step for lettuce research in lowland Papua and New Guinea.

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