Te Paraiti

The 1905–1906 potato blight epidemic in New Zealand and its effects on Māori communities

'kua piopio nga riwai'

— The potatoes have gone like the piopio

A Ngāti Maniapoto saying that compared the failure of the potato crops during the 1906 blight epidemic with the extinction of the piopio (native thrush) in the early twentieth century

Abstract

In 1905 and 1906, a potato blight (*Phytophthora infestans*) epidemic infected potato crops throughout New Zealand. It had a particularly devastating effect on Māori, many of whom, by the end of the nineteenth century, had become dependent on the potato as their primary food source. This study of the blight epidemic, and how it affected Māori, is preceded by a discussion on the evolution of traditional Māori horticulture. The paper is presented in two parts.

Part 1, *Māori horticulture — from prosperity to poverty*, is an overview of Māori horticulture, from the introduction and adaptation of the tropical kūmara or sweet potato to the temperate climate of Aotearoa and the adoption and commercial production of European crops, including the potato, to the decline of Māori crop production and the circumstances leading to the dependence of Māori on the potato.

Part 2, *Te Paraiti — the blight*, looks at the arrival of the blight and the extent and duration of the epidemic, its effects on Māori communities and the effectiveness of a range of initiatives undertaken by the government to provide assistance to Māori.

While the effects of the epidemic were not as catastrophic as the series of blight epidemics that devastated Europe, and in particular Ireland, 60 years earlier, it was nevertheless a significant event in New Zealand's history.

Key words

potato late blight

Phytopthora infestans

te mate rīwai

te paraiti

blight epidemic

rīwai

taewa

Māori agriculture.

Ethical statement

In conducting this research, the author has followed the principles of ethical conduct as stated by Ngahuia Te Awekotuku in 'He Tikanga Whakaaro: Research Ethics in the Māori Community' and The Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples (1993).

Much of the information has been gathered from archival documents, many of which contain statements that, from today's perspective, appear to be paternalistic, patronising and, in some instances, racially biased. The author has attempted to report this information accurately and objectively.

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Acknowledgements

There are no people living now who experienced, or have memories of, the potato blight epidemic that occurred a hundred years ago. However, some Māori have heard about the event from their parents, grandparents, kaumatua and kuia. I would like to thank those people who acquainted me with their recollections of what they had been told. The late Mrs Ema (Nanny Ema) Tipene, who lived at Motatau, Taitokerau, was particularly informative, not only about historical events but also about Māori vegetable gardening in general.

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Sources of information

The major source of information for this study was the *Archives New Zealand* files MA 21/3–17. These files include many hundreds of letters, official government documents, pamphlets, newspaper clippings and invoices relating to the event. Most documentation covers the period from 1905–1907.

Most government correspondence was from the Native Department. There was also documentation from the departments of Agriculture, Public Health, Education, Justice and Police.

The other major information source was the *Appendices of the Journals of the House of Representatives (AJHR)* for the year 1906 session II, H – 26A. A section of this volume is titled 'Census of the Maori Population', which includes a report titled 'Special Report Upon the Potato Blight — Notes of Enumerators and Sub-enumerators'. It provides a summary of the severity of the potato blight in each district and its effects on the local Māori communities. The New Zealand Department of Agriculture *Annual Reports* for 1906, 1907 and 1908 also provided useful information.

It is interesting to note that the native schools system played a major part in assisting local Māori following failure of the potato crops. They were involved in distributing replacement seed potatoes and a range of other vegetable seeds and seedlings to the communities. However, there is no reference to this role in two recently published books about the native schools (Simon, 1998, and Simon & Tuhiwai Smith, 2001).

Despite an extensive search of the literature, few references relating to the 1905 potato blight epidemic were located, apart from a brief mention in Best (1925/1976), Holmes (n.d.), Webster (1979) and Pool (1977). The event is not mentioned in Cox and Large's (1966) *Potato Blight Epidemics Throughout the World*, which devotes six pages to later, less-significant epidemics in New Zealand.

List of appendices

15. Letter from government biologist to the Native Department, re quotation for supply of kūmara from America (20 September 1906)

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18. Letters (3) to Hon. Mr Carroll, Native Minister, from Māori requesting seed potatoes.

19. Letter from Native Minister re supply and distribution of vegetable seeds and seed potatoes to Māori (9 August 1906).

20. Northern Star. Page 22 from Hadfield, J. W., (1929). Potato culture: the maintenance of pure and vigorous crops; descriptions of the more important varieties. *New Zealand Department of Agriculture Bulletin 142*, 1–34.

21. A distribution list for seed potatoes.

22. Education Department circular on elementary practical agriculture for native schools.

Research objectives

The primary aims of this study are:

1. To investigate the extent of the 1905 potato late blight (*Phytophthora infestans*) epidemic and the consequences for Māori communities

2. To examine the responses of government agencies to the plight of the Māori people following the destruction of the potato crops by the famine

3. To assess the effectiveness of a government decision to supply modern 'blight-proof' potato 'seed' and a range of other vegetable seeds and seedlings to Māori communities through networks such as the native schools system and local police

4. To evaluate the relative effectiveness in terms of blight resistance and productivity of the potato cultivars 'Northern Star' and 'Up-to-Date' as replacements for 'traditional' potato cultivars that had been grown by Māori for more than 100 years

5. To document and discuss the attempt by the Native Department and the Department of Agriculture in 1906 to import high-yielding sweet potato tubers from San Francisco for distribution to Māori communities, to reduce their dependence on the potato and replace or complement the traditional kūmara cultivars.

To provide a context for this investigation and discussion it is necessary to introduce the topic by briefly reviewing:

- Māori horticultural expertise prior to European arrival and the adoption of European-introduced crops

- Māori horticultural/agricultural enterprise in the nineteenth century prior to the land wars

- The loss of traditional and acquired horticultural and crop production knowledge following the land wars, and the subsequent dependence of Māori on the potato as their primary food source.

The paper will also briefly compare the extent and consequences of the 1905 New Zealand potato blight epidemic with the epidemics that occurred in Europe from 1845–1847, resulting in widespread famine in Ireland.

Te Paraiti — The 1905–1906 potato blight epidemic in New Zealand and its effects on Māori communities

Introduction

In the mid-nineteenth century, a series of potato blight epidemics swept through Europe, destroying the potato crops. Because the potato cultivars (cultivated varieties) grown at that time had a very narrow genetic base, they were all similarly affected.

The consequences were particularly severe in Ireland, where the majority of the population depended on the potato as the primary source of food and the average working man consumed about 6 kilograms of potatoes a day. The epidemic caused widespread famine, with more than a million people dying of starvation and famine-related diseases, and many more emigrating to the United States and other countries. Unable to pay rent to their landlords, thousands of starving peasants were thrown out of their homes. Within a few years of the epidemic, the population Ireland was almost halved. This took place on the doorstep of the United Kingdom — the world's richest nation of the time. *The Illustrated London News* (16 December 1848) published this commentary:

> The work of undermining the population is going on stealthily, but steadily. Each succeeding day witnesses its devastations — more terrible than the simoon, and more deadly than the plague. We do not say that there exists a conspiracy to uproot the 'mere Irish'; but we do aver that the fearful system of wholesale ejectment, of which we daily hear, and which we daily behold, is a mockery of the eternal laws of God — a flagrant outrage on the principles of nature. Whole districts are cleared. Not a roof-tree is to be seen where the happy cottage of the labourer or the snug homestead of the farmer at no distant day cheered the landscape. The ditch side, the dripping rain, and the cold sleet are the covering of the wretched outcast the moment the cabin is tumbled over him; for who dare give him shelter or protection from 'the pelting of the pitiless storm?' Who has the temerity to afford him the ordinary rites of hospitality, when the warrant has been signed for his extinction?

Fig. 1 *Police evict tenants from their house during the Irish potato blight famine in 1845.*

The potato crops were destroyed by the potato late blight fungus *Phytophthora infestans* (Mont.) de Bary. At the time, knowledge of plant pathology was limited, and a number of theories were proposed about why the potato crops were destroyed.

The potato (*Solanum tuberosum*) had been introduced to New Zealand over half a century earlier by European explorers and settlers, and was adopted by Māori who, at the time, grew large crops of kūmara (sweet potato *Ipomoea batatas*).

Māori were quick to recognise the advantages of the introduced potatoes, which were easier to grow, yielded more heavily and were easier to store. Unlike the kūmara, they could also be grown in the colder regions of the country. Māori also realised the potential of the potato as a commercial crop for trade and, by the beginning of the nineteenth century, Māori agriculture was becoming commercialised and losing its wholly subsistence nature.

At the time of the blight catastrophe in Ireland, Māori agricultural production was at its peak. Māori-grown produce played a significant role in feeding the European population of Auckland Province, and provided an important contribution to exports, mainly to Australia. At this time, a range of other European-introduced crops were also being produced by Māori on a commercial scale. These included maize, wheat, cabbage and turnips.

Following the land wars of the 1860s, Māori were dispossessed of most of their lands. As a result, there was a general deterioration in their health and well-being — a factor that contributed to a significant decline in the Māori population. European writers of the time described Māori as having become 'dispirited' and 'fatalistic'. One result of this was that many Māori communities gave up growing traditional crops, as well as many of the European-introduced vegetable crops they had adopted earlier, and became dependent on the potato as their main food source.

Because of their reliance on the potato, when the crops in the North Island and most of the South Island were destroyed by a widespread potato blight epidemic in 1905 and 1906, Māori were particularly badly affected. The situation was further complicated by summer frosts, which damaged maize and those kūmara crops that were still being grown, as well as by flooding, which destroyed many remaining crops in the northern part of the North Island.

The government of the time put in place a programme to supply Māori communities with 'seed' of modern 'blight-proof' potato cultivars, and seeds and seedlings of a range of other common vegetable crops. They also planned to import high-yielding sweet potato 'seed' from California for distribution to Māori communities, in an attempt to reduce their dependence on the potato and to replace or complement the traditional kūmara cultivars. The programme was implemented by the Native Department, in co-operation with the Department of Agriculture and the Education Department.

Māori adoption and adaptation of European-introduced crops

The potato

It is generally accepted by scholars that potatoes were first introduced to New Zealand in the late eighteenth century by Captain James Cook and the French explorer Marion du Fresne. Further introductions of potatoes from a variety of sources, including possible direct introductions from South America, followed into the nineteenth century. Māori were quick to recognise the advantages of these new introductions over their traditional food crops, including the kūmara (sweet potato *Ipomoea batatas)* and taro (*Colocasia esculenta).*

Yen (1961, p. 4), in referring to the introduction of potato, considered that agriculturally the impact of the plant must have been spectacular. Best (1925/1976, p. 284), in reporting accounts of the voyage of the *Venus* (1836–39), wrote:

> The Māori certainly appreciated the potato and it is at the present time his most favoured food supply. When he found that it not only suited his palate, but was also most prolific and was capable of being cultivated to advantage at all altitudes and at all places occupied by the native people, he recognised its great superiority over the kūmara, which requires much more care in its cultivation.

The significant impact of this introduction on Māori society was recorded by Firth (1929/1973, p. 488), who wrote:

> The results of the introduction of the potato bring out, with clarity, the manner in which new culture items affected the economic life and even the environment of the native. The potato is of such hardy nature that it can be grown in all districts and, moreover, it is prolific, yielding a plentiful return for the labour expended. Hence it was speedily introduced into districts, which, like Tuhoe, had formerly possessed no cultivated foods and also tended to replace the kumara among other tribes. Again it effectively supplanted *aruhe*, the fern root (*Pteridium esculentum*) as one of the staple vegetable foods.

In writing of acceptance of new crops in Polynesia, Leach (1983, p. 145) stated:

> Forty years after the Maoris' first exposure in Northland to European plants, the five pre-European food plants were still grown but had been joined in Maori gardens by two other root crops, potatoes and turnips, by a green crop cabbage and by the tall maize. The most successful introduction of all was the potato…

While it is well documented that, by the early part of the nineteenth century, the potato was grown extensively by Māori, some writers contend that at this time they still relied principally on traditional food crops. Shawcross (1967, p. 333)

asserted that it was not until after 1820 that introduced food crops displaced fernroot *(Pteridium esculentum*) as the principal staple food item in the diet of the Māori. By the 1830s, Hargreaves (1963, p. 104) considered that the potato was the basic food crop of New Zealand, 'preferred by the Maoris above all their traditional crops'.

In writing on the introduction of new foods that subsequently became staples to cultural groups initially unfamiliar with them, Leach (1999, p. 132) wrote: 'It is hard to assess the extent to which the Māori valued Solanum potatoes as food, given the importance of the crop in trade throughout the country.'

The same author (1969, p. 56) recorded that fernroot remained in use into the 1840s 'in areas where large acreages of potatoes were grown', and suggested that 'the potato was not the preferred staple for some 40–70 years after its introduction despite the ease with which it could be gathered and prepared'. Leach suggested that it became the staple source of starch not because of taste preference, but because it was technologically undemanding and economically important. She noted that, unlike potatoes, wheat was not accepted initially because the necessary equipment to process it into flour was not provided at the same time.

Because the method of propagation and production of the potato was similar to that of kūmara, it was able to fit into the existing agriculture system of the

Fig. 6 *Scene in Ruatoki, showing women preparing potatoes, during the visit of Lord Ranfurly and party (March 1904).*

Photographer: Malcolm Ross (1862–1930). From the Ranfurly Collection, Alexander Turnbull Library, Wellington, New Zealand. [Reference number PA1-q-634-46-1.]

Fig. 7 *Group outside a kāuta (Māori cooking house) at Parihaka Pa with buckets and kete. In the foreground a woman is scraping potatoes with a shell (ca 1900).*

Photographer: William Andrew Collis (1853–1920). From the W A Collis Collection, Alexander Turnbull Library, Wellington, New Zealand. [Reference number G-12053-1/1.]

Māori with little modification. Best (1976, p. 99) described methods of planting potatoes that were identical to those used for kūmara. He noted that the implements used for cultivation, and the ceremonial rituals, were also the same. It is, however, unlikely that Māori initially accepted that the potato was a new variety of kūmara rather than a new crop, as suggested by Driver (1966). There is no evidence to support this opinion.

While Best and others have stated that Māori adapted kūmara production methods to growing potatoes, Cameron (1964, p. 102) pointed out that this is not strictly correct. He noted that the two vegetables require different soil conditions. Kūmara grow best on warm, well-aerated soils while potatoes prefer cool moist soils.

Māori horticulturalists soon discovered that potato crops grew best on freshly cleared land and would not grow well on the same soils year after year. New land was used at least every second year, and this made greater inroads into the forest than had kūmara production, which could be grown on the same piece of land for several years.

The need to use new land for potato production was partly due to Māori refusal to use animal manure to fertilise the soil. Many aspects of gardening and crop production were regarded by Māori as sacred, and Leach (1984, p. 109) wrote that, for this reason, 'the use of animal dung was totally abhorrent to nineteenth-century Māori gardeners'.

'Waina' — a new kūmara

In the nineteenth century, several new types of kūmara were introduced to New Zealand. These were quickly adopted by Māori to replace or complement their existing varieties. Coleman (1978, p. 5) wrote:

> The name of one variety, Kai Pakeha (freely translated as Food European), showed that the Maori recognised a strain, separate from his own kumara Maori, which was introduced by the Pakeha. Elsdon Best regarded Merikana (American) as the first of the varieties introduced, probably from an American whaler in the early 1800s. The most significant introduction was called Waina by the Maori and from this the Owairaka Red kumara of today has developed.
>
> In the 1850s an American whaler, the *Rainbow,* was in Opotiki under repair. Among the ship's stores was a sweet potato (or kumara) superior to the Maori kumara, Kai Pakeha, and Merikana. Tubers from the ship were brought ashore, and gradually this strain spread throughout New Zealand, supplanting all other varieties. Its vines were long in comparison with the bush form of the Maori kumara and its habit of propagating from vine cuttings rather than the Maori tuber-piece technique, gave it the name Vine which to the Maoris became Waina, as there was no v in their language.

In an earlier paper Coleman (1969, p. 21), referring to the 'Waina' kūmara, said: 'A debt of gratitude must be paid to the Māori people of this country who kept this strain going for 100 years before the Horticulture Division [of the then New Zealand Department of Agriculture] stabilised it'. He noted that there were several strains of 'Waina'. The pink-skinned one was known as 'Kotipu', the white as 'Herangi', and the dark red strain, which was similar to 'Owairaka Red' (the kūmara variety most commonly available in our supermarkets today), was recognised as 'Parakipere' (Blackberry).[4]

[4] Recent research by Gould (2002, pers. comm.) has cast some doubt on Coleman's account of the introduction of the 'Waina' kūmara on the *Rainbow*. Gould noted: 'The *Rainbow* whaler was in New Zealand waters on two occasions — in 1861 and 1862 when it docked at Auckland. It may have visited the Bay of Islands in 1861. There is no sign of a visit to the Bay of Plenty. This information is confirmed from reading the ship's log. The missionary Chapman observed in the early 1870s that Māori growers in the Bay of Plenty had taken to growing a new big red variety of kūmara they had obtained from the North'

Fig. 8 *Unidentified Māori man sorting kūmara (early 1900s). These are the 'Waina' type of kūmara.*

Photographer: Arthur James Northwood (1880–1949). From the Northwood Collection, Alexander Turnbull Library, Wellington, New Zealand. [Reference number G-6227-1/1.]

Other crops

Leach (1983, p. 140) noted that 'a surprising number of plant introductions can be documented for New Zealand between 1769 and 1800'. The French explorer de Surville gave wheat, peas and ears of rice to a chief at Doubtless Bay in 1769. Two years later his countryman Marion du Fresne established a model garden in the Bay of Islands, and planted wheat, maize, potatoes and some nut crops and, with the help of a Tahitian, attempted to explain the usefulness of these crops to the local Māori.

In 1793, Governor King of Norfolk Island returned two kidnapped Northland Māori with gifts of maize, wheat, peas and various garden seeds (McNab 1908, p. 185). By 1800, turnips and potatoes were widely established, but maize was not (Best 1980, p. 68).

Leach (1983) wrote extensively about the acceptance of new crops by Māori. She concluded (p. 109):

> The acceptability of each crop plant depended on the willingness of the gardener to fit a new crop into his various plots, and of the cook to fit a new plant into the menu. The gardener needed to know how to propagate the plant, what spacing it required, its moisture needs and when it was ready to harvest. The cook had to know which parts were edible and when, how to process them, and for how long.

She noted that, 40 years after their first exposure to European plants, the five pre-European crops had been joined in Māori gardens by turnips, cabbage and maize in addition to potatoes, although maize production was not widespread until the 1820s. Cucurbit crops, including pumpkins, vegetable marrows and watermelons, were also well established in Māori gardens by the 1820s. Of the fruit crops, Leach noted that the peach was widely disseminated, since it grew readily from discarded stones. Wheat was not accepted until much later, when the technology to process it into flour and utensils for cooking it were widely available.

Of the adoption of introduced crops, Leach (1984, p. 109) wrote:

> The European introductions added new activities to their seasonal cycle and buffered them from the effects of unsuccessful fishing or fowling expeditions. Their adoption in no way meant that Maori gardening was becoming assimilated into European horticulture. The continuance of the Māori tradition should not be put down to conservatism, since a conservative tradition resists change and innovation. Instead, Māori gardening might be best described as a robust and adaptable tradition — one of the few aspects of Māori life to profit from the arrival of the Europeans.

Māori agricultural enterprise in the nineteenth century

Māori culture in the early nineteenth century was open to innovation, and Māori people were keen to trade. (Stenson and Olssen, 1997, p. 72). The period from 1845 to 1860 has been described as the 'heyday of Māori agriculture' (Hargreaves, 1959, p. 61). Large quantities of Māori-grown produce played a significant part in feeding the European population, and also made an important contribution to exports.

During this period, Māori agricultural production was based mainly on potatoes (Harris, 2001, p. 61), with large quantities of maize and wheat also produced for trade. By the 1850s, Leach (1984, p. 106) noted that vegetables for the rapidly growing town of Auckland were supplied largely by Māori gardeners, with much of the produce coming from the Waikato.

Leach pointed out that Māori tastes continued to favour potatoes, kūmara, taro, maize, pumpkin, cabbage, peaches and watermelons and that, while these were also produced for the European market, another group of vegetables, including beetroot, artichokes, cucumbers, celery and endive were grown by Māori specifically for that market.

As European crops were introduced they were quickly adopted by Māori, and spread from area to area. By the middle of the century, the range of vegetables grown on a large scale by Māori also included onions, carrots, parsnips, turnips, peas and beans, while the range of fruit produced included apples, quinces, cherries and grapes. Oats and barley were also successfully grown (Hargreaves, 1959, p. 64).

Hargreaves considered that, during this period, Māori agricultural production was 'a mixture of the old and new, just as Māori religion, clothing, social customs, warfare and other facets of life tended to give evidence of the two cultures from which they were derived'.

Initially, gardens were prepared as for traditional crops, by cutting and burning the forest and digging the ground with the traditional digging stick (kō). By the middle of the nineteenth century iron tools were widely used, which increased crop production dramatically.

Grey (1994, p. 138) wrote that only those metal tools such as hoes, spades, axes and mattocks that fitted the types and functions of the old wooden gardening implements were readily adopted. The availability of these more efficient iron tools (in comparison with the former wooden ones) was of great significance. The spade and hoe enabled more efficient cultivation of the soil while, with iron

axes and saws, Māori were able to clear much greater areas of forest than was previously possible for cultivation of the potato.

In 1823 Marsden (quoted in Elder, 1932, p. 371) commented:

> The introduction of tools of agriculture … has encouraged very extensive cultivation in every district, and it is extending more and more every day … To give a man a spade is not like giving him 100lb of potatoes to supply his immediate wants, but it is furnishing him the means of raising many hundreds.

In the same year, Marsden estimated that cultivation had increased forty-fold compared with a decade previously, when the traditional wooden implements were still mainly in use.

By the mid-1850s agricultural production was undertaken on a large scale and ploughs were in general use for cultivation. Missionaries noted a great expansion of wheat production during this period, and Māori-owned mills for grinding grain were being constructed.

Rangiaowhia, in the Upper Waikato, was considered to be the showcase of Māori agriculture during the 1840s and 1850s. The Reverend John Morgan of the nearby Otawhao mission station actively encouraged Māori agricultural production and introduced wheat, barley and oats to the district, as well as a wide range of fruit trees. He held the view that not only the spiritual needs of his flock, but their physical needs as well, should be attended to.

By 1850, more than 1300 acres in the district had been planted in crops and a large water-powered mill was in operation (Stenson and Olssen, 1997, p. 157). By 1853 there were ten Māori-owned flour mills in operation in the Waikato, with another two under construction (Hargreaves, 1959, p. 71).

Leach (1984, p. 109) concluded:

> On the whole, the first half of the nineteenth century had been a successful time for Maori gardeners. They had used the new plant material to great advantage, selling produce as the Chinese market gardeners were to do in the later decades, as well as gaining much needed variety and steady supply in their own diet.

The decline of Māori agriculture

Competition between Pākehā and Māori over economic resources, in particular land, was the main factor that led to the wars of the 1860s. The Waikato Māori were insisting on their rights under the Treaty of Waitangi, and would not sell the fertile plains on which they were prospering (Temm, 1988, p. 4). When Governor Grey ordered the invasion of the Waikato in 1863 it began a series of conflicts that spread throughout the country and lasted until 1872.

The most devastating effect of the wars for Māori was the loss of land, which was confiscated under the Suppression of Rebellion Act and the Land Settlement Act of 1863. By the turn of the century, all the best land had been alienated and only two million acres remained in Māori ownership. Stenson and Olssen (1997, p. 158) considered that life in Māori villages was severely disrupted by the wars — crops were lost, stock was stolen, trading schooners were sold to pay for arms, opportunities to plant crops were lost because of the fighting, agricultural implements fell into disrepair and food was in short supply. By 1890, Europeans outnumbered Māori by 14 to one, and by 1892 they controlled over 80 percent of the land.

Hargreaves (1960, p. 354) noted that Māori farming in the 15 years prior to 1886 had generally failed to reflect the changes and advancements made in the farming economy of Pākehā New Zealand and that, by the late 1880s, 'most tribes were producing little more food than was necessary for their immediate needs. A shortage of food just before the harvest was not an uncommon feature in many a hapu'.

While loss of land is often given as the main reasons for the decline in Māori agriculture following the wars, there were other contributing factors as well:

- Māori were no longer able to periodically shift their cultivation to new ground, as had formerly been the practice. This led to a decline in crop yields, particularly as Māori did not apply manures or fertilisers to their crops.
- Yields, and the quality, of many Māori-grown crops declined because of the use of low-grade seed.
- Markets for Māori-grown produce collapsed, due to increasing supply by Europeans.
- The old practice of planting crops according to the stars and phases of the moon and certain other natural signs (Maramataka) had been abandoned and crops were often planted at the wrong time, frequently resulting in crop failure.

- Where land had been alienated, Māori communities had no choice but to work for Europeans for wages — doing bush felling, shearing, flax cutting, kauri gum digging, road construction and other public works projects. They began to purchase vegetables and other food rather than growing their own crops.

At the end of 1862, the *New-Zealander* published an editorial comment[5] that stated: 'Maori agriculture has culminated and collapsed'. Six years later Colenso (1868, p. 414) estimated that the Māori cultivations were less than one-eighth of their former extent.

[5] *New-Zealander*, Dec 31, 1862, p. 2

Māori dependence on the potato

By the late nineteenth century Māori had become dependent on the potato as their main staple crop. Best (1906) writing of the Tuhoe people[6] observed that '… the people live practically on potatoes, very often without any addition thereto save a little *puha*, or the undeveloped fronds of *Asplenium bulbiferum*.' In an earlier statement[7] he noted '... they are much lacking in energy in the way of seeking other channels of food supply … life is much too short for the natives of Ruatoki to engage in the task of cultivating such crops as cabbages, turnips, carrots etc.'

The same author (Best 1976, p. 35), in writing of the plight of Māori communities following the failure of the potato crop in 1905, noted '… we marvel how it is that they should rely to so great an extent upon one product'.

The head teacher at the native school at Te Waotu near Tokoroa, in a memo to the Undersecretary of the Native Department[8] dated 20 July 1906, wrote:

> [while] the cultivation of kumara has in this district been practically discarded for years in favour of the potato, the experience of the past two seasons [the blight epidemic] has shown them that it is not safe to rely solely upon the latter as a food supply…

During the census of the Māori population undertaken in 1906, enumerators were instructed to report on the effects of the potato blight on Māori communities in their districts. These reports were recorded in *AJHR* session II, H 26A. The sub-enumerator reporting on Wairoa county[9] in Hawkes Bay stated:

> The potato blight is very seriously affecting the Maoris in this district; it has completely swept their crops out of existence from one end to the other, and as they live principally on potatoes, it means that a very hard time is coming for them during the approaching winter.

The sub-enumerator for the Waimarino county[10] recorded a total loss of the potato crops of the Māori in his district and reported:

> How then will these people exist? You are aware that this article [potato] is the life of the Maori. Deprive them of it and where are they? These circumstances are deplorable.

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[6] *AJHR*, 1906, H-31, p. 76
[7] *AJHR*, 1905, H-31, p. 75
[8] NA MA 21/4 (WN), file N/200
[9] *AJHR*, 1906, H-26A, p. 16
[10] *AJHR*, 1906, H-26A, p. 29

The degree to which Māori became dependent on the potato varied between districts, and the correspondence and reports discussed in detail later in this paper indicate that dependence on the potato was greatest amongst the Tuhoe people of the Urewera country. Webster (1979, p. 142) wrote:

> In 1905, when the potato crop failed in most districts of the North Island[11], the Tuhoe were in a specially serious condition, for they, more than most other tribes, relied on the potato for their main source of food.

Māori were least dependent on the potato in those regions where grain production and vegetable growing still prospered and where Māori had successfully adopted pastoral farming and were raising sheep and cattle. These areas were mainly in the East Coast — Eastern Bay of Plenty region and in Hawkes Bay, Wairarapa and Rangitikei, where Māori still owned land of good quality that was suitable for arable and pastoral farming (Hargreaves, 1960, p. 364; Stenson and Olssen, 1997, p. 167).

Bourke (1993, p. 92), in discussing the Irish reliance on the potato, cited several references, which agree that the average consumption of an adult male in the 1840s was 14 lb a day. This was generally consumed in three equal meals during the day. Salaman (1926, p. 111) warned of the danger of relying on the potato as a primary food source. Referring to the reliance of the Irish on the potato in the nineteenth century, he noted:

> The excessive use of the potato in Ireland amongst the peasantry has only been physiologically possible because there was generally a cow lurking around the corner, whose milk made good the deficiencies of the potato in protein and fat.

He went on to say:

> The introduction of an article of diet that just fails to be a complete food and which is so easy to raise and so bountiful in its return, is a two-edged weapon. For while it has banished the fear of famine from the peasant, it has probably done more to enslave him than generations of misgovernment.

While many Māori communities in the late nineteenth and early twentieth centuries became reliant on the potato, most still had some other food sources, including other vegetable crops, wild plant foods, sea food and pork to supplement a predominantly potato diet, and it is unlikely that any relied on the potato to the same extent as the Irish in the 1840s.

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[11] During the 1905 potato blight epidemic, potato crops throughout most of the country failed

Part 2, Te Paraiti — the blight

Knowledge of potato late blight in the early twentieth century

When the potato blight epidemic destroyed potato crops throughout New Zealand in 1905 and 1906, it was some 60 years after the blight epidemic that spread throughout Europe.

By the time of the 1905 New Zealand epidemic, there was considerable knowledge of the *Phytopthora infestans* fungi that caused the blight, and preventative copper-based sprays were available. This is in contrast to the Irish epidemic, when failure of the potato crops was the subject of much debate and was thought by many to be due to 'the cold and cheerless summer of 1845'. Bourke (1993, p. 131) wrote:

> While the majority of the earliest commentators held the weather to be the culpable factor, some argued that blight was merely a further downwards step in the progressive deterioration of the potato. Others [said] that it was due to insects or worms. A small group opted for a poisonous 'miasma' borne on the air, but differing as they did as to its origin, published individual pamphlets in support of industrial pollution, volcanic exhalations, gases from the recently introduced sulphur matches, or some aerial taint originating in outer space.

It was not until 1876 that the German scientist Anton de Bary identified and described the potato late blight fungus, which he named *Phytophthora infestans* — 'the plant destroyer' (Dowley, 1997). In addition, in the 60 years following the Irish crop failures, considerable work had been undertaken in breeding new blight-resistant potato cultivars. Salaman (1985, p. 165) wrote:

> No spectacular development took place in variety raising until after the crisis caused by the pandemic Blight (*Phytopthora infestans*) of 1845 and 1846. The failure of any of the existing varieties to exhibit the least resistance to this new and devastating disease gave both stimulus and directive force to a new era of plant breeding.

Salaman noted that the key breakthrough in developing blight-resistant potato varieties occurred in 1851, when the Rev. Chauncey Goodrich of New York raised seedlings from *Solanum andigenum* potatoes. A selection, which he named 'Rough Purple Chile', was subsequently used by potato breeders for hybridising with existing European stocks.

While knowledge of late blight was considerable by the early twentieth century, the *Sixteenth Report of the Department of Agriculture* (1908, p. 114 — see Appendix 2) conceded:

> There are still many gaps in our knowledge of the full life history of the Irish potato-disease, and the exact pathological processes that obtain in so-called diseased tubers are but imperfectly understood…. The exact manner by which the mycelium of *P. infestans* reaches the tuber has not as yet been satisfactorily ascertained, and for this purpose detailed and careful examination in the field would be necessary.

Sir Peter Buck) of the Department of Public Health, to F. Waldegrave, Undersecretary for Justice (see Appendix 3). Dr Buck reported on his visits to districts where there was 'supposed to be so much destitution' among Māori communities. He wrote that, due to the blight, there was 'a scarcity of potatoes but no starvation … the outcry over starving Maori in the Wanganui region was an exaggeration', and that in the Taranaki district 'the situation was much worse yet there has been no complaint or outcry from there'.

During the 1907 season, some potato crops were again affected by blight, but to a lesser extent. A letter[14] from the Undersecretary of the Native Department (2 September 1907) to the teacher at the native school in Parenga stated:

> It has been decided that the Department will not undertake a distribution of seed potatoes to Natives on the lines followed last year as, since then, the position as regards the potato-crop has in most districts materially changed for the better.

This was confirmed soon after by the *Fifteenth Report of the Department of Agriculture* (1907, p. 159), which stated:

> The fine dry summer that has been experienced in many parts of both Islands has had the effect of greatly lessening the damage caused through the Irish potato blight[15]. Still there were no districts that were quite free, and if we experience a wet muggy summer in the coming season it will be as serious as formerly.

Localised blight infection of potato crops continued into 1908, and a memo[16] from the Native Department (22 October 1908) indicated that the Department was prepared to 'grant a £ for £ subsidy' to Māori communities for the purchase of seed potatoes. In that year, letters[17] from the Māori communities at Tairua and Whitianga reported potato crops being destroyed by blight and drought, and by severe flooding in July. Māori crops in Rotorua were also badly affected by blight, and a memo[18] from the Department of Agriculture (3 October 1908) to the Native Department indicated that 'This department has recently purchased 2 tons of Northern Star seed potatoes and forwarded them to the Reverend Mr. Bennett, Rotorua, for use of the Maoris there'.

Several letters refer to early potato crops having escaped the blight. A letter from John Chase of Wanganui to the Minister of the Native Department (7 August 1907) reported on his visit to the Taupo district in Autumn of 1906 and observed that the potato crops were blighted at that time. He wrote:

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14 MA 21/6 (WN)
15 Late blight of potatoes was usually referred to at this time as 'Irish potato blight'
16 MA 21/4 (WN), file N/200
17 MA 21/4 (WN), docs 230 and 346
18 MA 21/4 (WN)

> The few potatoes that escaped were the early crops that were taken from the ground in the latter part of December. The natives there have resolved to plant very early in future, as past experience has shown that the blight appears not earlier than January.

The teacher at the Native School in Tokomaru Bay (23 July 1906) wrote: 'Our experience of last year was that all early potatoes escaped the blight, but seed planted in October was attacked very badly'.

An old Ngāti Maniapoto saying compared the failure of the potato crops with the extinction of the piopio (native thrush *Turnagra capensis*) in the early twentieth century — 'kua piopio nga riwai — the potatoes have gone like the piopio' (McClintock, K., 2003, pers. comm.).

Failure of the Māori potato crops

During the potato blight epidemic, potato crops throughout most of New Zealand — not only those grown in Māori communities — were infected and destroyed or damaged by blight. Māori were particularly badly affected because:

- they depended more on the potato than other communities
- they generally grew potato cultivars that were not as blight resistant as those grown by Pākehā farmers
- the government initially provided Pākehā farmers and settlers with better assistance and instruction on how to prepare and apply fungicides to their potato crops.

Another key to raising successful crops during the blight epidemic was application of fungicide sprays. Correct preparation of the mixture, and timing of the initial spray and subsequent applications, was important. Wheeler (1969, p. 154) stated that 'to be effective, the first spray should be made when there are only a few plants infected here and there (0.1% infection). The timing of the first sprays is thus all important …'.

The choice of potato cultivars appears to have been of secondary importance. Even so-called blight-resistant potato varieties succumbed if they were not sprayed correctly with fungicide.

Spraying

The *Fourteenth Report of the Department of Agriculture* (1906, p. 351) stated:

> Irish Blight (*Phytophthora infestans*), which has devastated the crops of both islands, has caused immense loss in those districts where spraying has not been carried out in a thorough and systematic manner.

The same document included a report (pp. 456–458) on the potato blight situation by T. W. Kirk, the Government Biologist, who worked closely with local authorities to ensure that 'settlers and farmers were promptly furnished with reliable information in respect to the nature of the disease and correct method of controlling the same'. Mr Kirk and his assistants gave numerous addresses to well-attended groups all around the country. Their talks focused on preparation and application of Bordeaux mixture — a fungicide made by mixing copper sulphate (bluestone) and hydrated lime.

The Department of Agriculture was contracted by the Native Department,[19] at a cost of £148, to undertake a similar programme with Māori communities (Appendix 4). Correspondence[20] indicates that this programme was of limited benefit, and it seems that spraying was generally only undertaken where motivated Native School teachers managed to obtain spraying equipment and mixtures from the Department or borrowed equipment from Pākehā friends.

The teacher at the native school at Tokomaru Bay, in a letter to the Native Department,[21] noted (23 July 1906) that 'the older Maoris did not think much good was done last year by spraying. However, the younger Maoris are inclined to try spraying'. He suggested that sprayers and mixtures, with instructions, should be sent to native school teachers for the use of local Māori. He concluded by offering to demonstrate to Māori in his district how spraying should be done correctly 'in the hope of inducing the natives to go in for spraying extensively in future seasons'.

The Rev. A. O. Williams wrote to the Department of Justice[22] (15 February 1906), reporting on the blight situation in his district (Taranaki and Wanganui). He suggested that 'someone should be appointed to visit the various kaingas to instruct the Maoris how to mix the Bordeaux mixture and also how to apply it to the potatoes'. He wrote: 'Maori need ocular demonstrations as I find that, almost invariably, some mistake has been made either in preparing the mixture or in applying it'.

In a later letter[23] to the Native Department Reverend Williams (6 August 1906) stated:

> Given a suitable spray pump, say the "Rochester" £ 2: 5/-, the best in my opinion on the market, and bare travelling expenses, I am confident I can put fresh heart into the Maoris, and teach them to save their crops next season. It is well known everywhere that I am the only one who has been successful this year. Of course, if a practical man can be found for the work so much the better for me. He must, however, speak Maori in order to explain everything to the natives.

The Native Department published a circular on potato blight titled *Panuitanga — Te Mate Taewa* for distribution to Māori communities (Appendix 5). The pamphlet, which was dated 17 August 1905, provided instructions on how to prepare and apply Bordeaux mixture. It was a translation into *Te Reo Māori* of an earlier circular, published by the Department of Agriculture in

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[19] MA 21/8 (WN), file 209
[20] MA 21/13(WN), file N204/7; 21/14 (WN), file N200/7; 21/16 (WN), file N208 NO6/40
[21] MA 21/4 (WN), file N/200/83
[22] MA 21/14 (WN), file N200/7
[23] MA 21/16 (WN), file N206

February 1905. This advice was obviously followed correctly in some instances. In the census report on potato blight published in the 1906 issue of *AJHR*, the enumerator from the Mangonui region of Northland reported that 'blight has cut down all the patches of potatoes with one exception, Himiona Popeta, who had a beautiful crop of about 3 acres saved from blight through bluestone-spraying'.

Potato cultivars grown in New Zealand in 1905

One of the main potato cultivars grown by Māori at the time of the blight was the variety 'Derwent', of Tasmanian origin. Beattie (1920, p. 462) recorded that 'Katote' and 'Kopara' were names that South Island Māori gave to the 'Derwent' potato.

'Derwent' was reported as being very susceptible to blight. In the special 1906 *AHJR*[24] report on blight, the enumerator reporting on Hutt county noted that: 'The Maoris who are close observers soon found out the result of bitter experience, that the dark-skinned potatoes such as the Derwent were more liable to be attacked than the white or red skinned varieties'. He also reported on 'a progressive half-caste farmer at Pukerua' who had planted two acres of potatoes. The portion planted with 'Derwent' was a total failure due to blight while the remainder of the crop, planted in two other varieties, produced a successful crop.

The enumerator's report from the Taupo district also made reference to 'Derwent' as being one of the 'old' varieties and particularly susceptible to blight. The Rev. A. O. Williams, in a letter to the Native Department, wrote: 'If the Government import seed, urge upon them not to select Derwent of Hobart-town. They simply can't resist the blight'.

The susceptibility of 'Derwent' to blight was confirmed by Taylor (2003, pp. 9-11) who, in commenting on the Tasmanian potato industry (1855–1913), wrote: 'One of the major potato varieties being grown across the state at this time was the Redskin, also known as black potatoes or Derwents'. They were originally grown by a farmer at Browns River near Hobart. She noted: 'Following the New Zealand potato blight epidemic in 1905, Tasmania was on high alert for the appearance of Irish blight'. She wrote: 'These fears were well founded, as the dreaded disease wiped out almost the entire harvest of 1909. It turned out that Redskin [Derwent] was particularly susceptible to the disease'.

At this time, Māori were also growing many of the very old potato cultivars — the so-called 'Māori potatoes', which Harris (2001, p. 125) defined as 'older types of potatoes which have some historic association with Māori families or communities'. Many of these are relicts of potato varieties brought here as early as the late eighteenth century.

[24] AJHR, 1906, H-26A, pp. 24–30

Rooney (1983, p. 15) reported that Dr J. Mitchell of the then *Crop Research Division* of DSIR (New Zealand Department of Scientific and Industrial Research), with reference to the Māori potatoes in their collection, stated:

> The ancient potatoes have an obvious inherent hardiness … without this they could not have survived. Many of them have good resistance to blight and some are resistant to nematodes.

Because 'Māori potatoes' include a wide range of types, with a range of features and characteristics, some would have succumbed to blight more readily than others. A characteristic of many of the Māori potatoes is that they form tubers very late in autumn. Salaman (1985, p. 175) wrote:

> Late maturing varieties display a moderate resistance to blight … late varieties, which commonly have not reached the height of their vigour by the time the blight appears, withstand the attack far better than do earlier ones whose seasonal career is at the time, physiologically speaking, on the downward path.

Harris (2001, p. 97) studied 16 different Māori potato cultivars and found that 'Urenika', a cultivar with a purple skin and flesh, formed tubers significantly later than the others. This potato was commonly grown at the time of the blight epidemic and is likely to have been one that resisted blight infection best. Other 'Māori potato' cultivars were very susceptible to blight.

The Rev. T. G. Hammond wrote to the Native Department on 14 July 1906: 'The blight was very general. The old Maori varieties of potato such as "Rape", "Piakaroa" and "Uwhi" [are] suffering most'. 'Huakaroro', a variety still grown today, appeared to be reasonably resistant to blight. The enumerator for the Hutt County, reporting in the 1906 *AHJR* census of the Māori population noted: 'The other variety was one quite new to me, being what they called a Maori potato known by the name of "Huakaroro" — ie "Sea-gull's Egg". It is, strange to say, a dark skinned potato, with occasional white markings, and is said to be a good cropper. The Maoris who have grown it assert that it is blight-proof'.

A range of more 'modern' potato cultivars were also grown in New Zealand during this period. The main ones were 'Up-to-Date' and 'Northern Star'. It is likely few Māori would have been growing these varieties because of the high cost of seed potatoes. In a circular memorandum[25] to Native School teachers from the Undersecretary of the Native Department (16 August 1906) the cost of seed tubers of the former was listed at £15 a ton and the latter £25 a ton, although these prices may have increased significantly during the year as they were thought to be blight-resistant types.

[25] MA 21/7 (WN)

In this memorandum 'Northern Star' was described as 'strongly blight-resisting' and 'Up-to-Date' as 'a cheaper kind, not so blight-proof'.

However, in the New Zealand Department of Agriculture Fourteenth Report (1906, p. 458) T. W. Kirk, the Government Biologist, sounded a note of caution regarding blight resistance. He warned:

> many varieties of potatoes are overrated as disease resisters. No matter what repute any variety may have as disease-resisting, my observations during the past season led me to the conclusion that there is no variety of potato sufficiently disease-resistant to make it not worthwhile to spray. In damp humid districts like the west coast of the South Island I noticed that where such sorts as Up to Date and Northern Star had been left unsprayed they were completely destroyed by the disease.

It is interesting to consider later evaluations of these two cultivars. Salaman (1987, p. 16) described 'Northern Star' (released in 1900) as 'a variety of little merit which was sold at a fantastic price' and acclaimed at the time as 'the perfect potato, proof against every trouble'. Wilson (1993, p. 47) wrote that it 'traded on the reputation of its raiser[26], rather than on merit. It did not surpass Up to Date in any respect. By the 1930s it had ceased to be grown commercially'. Hadfield (1929, p. 22), in writing of potato varieties grown in New Zealand, noted that this cultivar caused much excitement in Great Britain, being sold for as much as £25 per tuber. It produced large numbers of small tubers and 'its cooking quality is decidedly inferior'. However, he reported that it was distinctly disease resistant, especially to late blight (Appendix 20). Harris (2001, p. 91) wrote that a variant of this cultivar became known as 'Māori Chief', sometimes known as 'Rangatira' and 'Parihaka'. It is still grown by Māori and has become to be regarded as a 'Māori potato'.

Of 'Up-to-Date'[27] (released in 1891 in Britain), Salaman (1987, p. 168) said it was 'one of the finest table varieties that has ever been grown'. Wilson (1993, p. 41) wrote that 'the variety achieved much success, produced high yields and had excellent culinary qualities, however, it became noted for its susceptibility to late blight'. Hadfield (1929, p. 26) described this potato as 'An excellent variety in every respect. To most people Up to Date represents the ideal of what a potato should be'. He noted that in New Zealand it is often grown and sold as 'Suttons Supreme.' He did not mention whether it was susceptible to blight.

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[26] Archibald Findlay (1841–1921), a Scotsman, was the most prolific potato breeder of the Victorian/Edwardian era

[27] 'Up-to-Date was also raised by Findlay

These conditions, combined with the presence of fungal inoculum from a less extensive epidemic in the previous summer, may have provided a suitable environment to initiate the widespread 1905 epidemic. The problem would have been compounded by the widespread production of potato cultivars such as 'Derwent' that were particularly susceptible to blight.

The introduction of late blight to New Zealand

Introduction of potato late blight into New Zealand was discussed in the Sixteenth Report of the New Zealand Department of Agriculture (1908, p. 114). The report written by A. H. Cockayne (Director of the Department of Agriculture Biological Laboratory) stated:

> There are no definite records of when and how *Phytophthora infestans* was first introduced into this country. On the epidemic outbreak of this disease in November 1904, Professor Thomas [Algernon Thomas 1857–1937, University College of Auckland] made the following statement: -
>
> "The same disease (*Phytophthora infestans)* appeared some twelve years ago, but it was not so prevalent as on the present occasion"; further he says, "Moreover, it is no new thing here, having been in the country to my certain knowledge for the past twelve years."
>
> Mr T. W. Kirk, in the report of the Department of Agriculture for 1905 writes: "Years ago there was a mild outbreak in the Auckland Province, but it has not been heard of till last year."
>
> For my part, I consider that the epidemic outbreak in Auckland in 1904 was in no way connected with the sporadic ones that occurred previously. The cause can be attributed to the fresh importation of *Phytophthora* mycelium in imported potatoes.
>
> There are only two ways that *Phytophthora* can possibly have been introduced here — either by resting mycelium in diseased tubers, or by asexual spores or oospores; but, as these latter have never been definitely discovered, its introduction by means of them is unlikely. The asexual spores of *P. infestans* are naturally short-lived, and are in no way provided with any adaptations to withstand the desiccation that they would undergo in passing through the tropics.
>
> Therefore, it is almost certain that the introduction of the disease into New Zealand was by means of dormant mycelium hidden away in the tissues of affected tubers. This view is greatly strengthened by the discovery, on numerous occasions during the past two years, of varieties of imported potatoes in which the presence of *Phytophthora* mycelium was clearly demonstrated.
>
> All potatoes which are imported into New Zealand are carefully examined by the Agriculture Department, and those parcels found to be affected with *Phytophthora* are at once destroyed.

Other weather-related effects on Māori crops

The effects of the destruction of potato crops by blight was further compounded in 1906 by summer frosts that destroyed maize and kūmara crops, and damaged potato crops that had survived the blight. Gilbert Mair reported to the Native Department[35] that 'potato crops in the Piako district (near Matamata) had entirely failed through blight, while the maize was cut down by frosts'.

Census sub-enumerators in the *Special Report Upon the Potato Blight* published in *AJHR*[36] reported that, in 1906, summer frosts had destroyed maize and kūmara crops of the Māori in the Bay of Plenty and maize in the Thames, Wairarapa, Auckland, Waitomo and Waikato districts. Those potato crops in Taranaki, Wanganui and in Auckland that survived the blight were damaged by summer frosts.

In the South Island, an officer of the Department of Agriculture reported:[37]

> During February, several unusually hard frosts severely injured potatoes over a considerable area of country, and immediately inexperienced persons erroneously stated that the cause was due to potato-blight.

In 1907, floods destroyed crops in Whitianga,[38] and more extensive flooding in January the following year again destroyed crops in Whitianga, as well as those in Te Teko and Whakatane, and crops in many districts of the Bay of Islands were also ruined.

[35] MA 21/4 (WN), file N200
[36] AJHR, 1906, H-26A, pp. 24–30
[37] *Fourteenth report of the Department of Agriculture*, 1906, p. 458
[38] MA 21/12 (WN)

Government responses to the plight of Māori

In 1905 there were a number of influential Māori in key positions in Parliament or in the public service. Sir James Carroll was the Minister of the Native Department, and his deputy was Apirana Ngata, the leader of the Young Māori Party, a group that advocated the advancement of Māori through spiritual, health and social policy reforms. Dr Maui Pomare a member of this group and was the Native Health Officer, assisted by Dr Peter Buck (Te Rangihiroa).

These people ensured that assistance reached Māori communities badly affected by the failure of potato crops. Government aid included provision of seed of 'modern' potato varieties which were said to resist blight infection; assistance with spraying potato crops against blight infection; and provision of seedlings of a wide range of vegetable crops, to ensure Māori communities did not rely on a single crop.

At the time of the potato blight epidemic, Judge H. F. Edger was the Undersecretary of the Native Department, which co-ordinated government programmes to assist Māori communities. He was also a judge of the Native Land Court. Correspondence indicates that Judge Edger devoted considerable time and effort to co-ordinating and directing government relief programmes. He was described as 'a culturally minded man' (Butterworth and Young, 1990, p. 64) and was regarded as having considerable empathy with Māori. It was recorded (Gilling, 1994, p. 21) that he intended expanding his department's role in Māori health and farming.[39]

The earliest official letter on file about the blight epidemic and its consequences for Māori is dated 15 January 1905, and was from Dr Peter Buck[40] of the Department of Health to F. Waldegrave, Undersecretary for Justice. Buck described his position as 'health officer to the Maoris'.

Mr Waldegrave had written to Dr Buck on January 10 to ask about the destitution of the natives in the Wanganui River area, after receiving unofficial reports of the destruction of potato crops by blight. A later letter (9 December 1905) from Dr Buck to Mr Waldegrave reported that few potato crops in Wanganui had escaped blight infection. At around this time articles appeared in the *Wanganui Chronicle* with titles such as 'Starving Natives', 'Help Wanted', 'The Foodless Maoris' and 'Natives Practically Starving' (Appendix 6).

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[39] Judge Edger's ideas eventually came into conflict with government policy, and he resigned in 1907
[40] MA 21/16 (WN), File N/206, J1905/1886

On 5 October 1905, C. H. Brown, the teacher at the native school in Whirinaki, Hokianga, wrote to the Secretary for Education[41] asking him to 'bring to the attention of the proper authorities that the Maoris here are likely to suffer great loss and privation through the potato blight'. This letter prompted the Secretary for Education to request that the Inspector of native schools report on the situation at Whirinaki Native School, and on 30 December 1905 the Secretary wrote to the Undersecretary for Justice[42] to inform him of the situation. In his letter he included an extract from the inspector's report which noted that, because of the blight, the children had nothing to eat but bread and that 'I think that something might be done'.

On 15 November 1905 the teacher at Pamapuria Native School in Northland wrote to G. Hogben, the Inspector General of Schools, to inform him of a similar situation in his district.

Involvement of the police

The Native Department appears to have taken on the responsibility of assessing the extent of the problem. George Wilkinson, the Government Native Agent based at the Native Office in Otorohanga, was delegated to liaise with the New Zealand Police and to arrange the despatch of constables to Māori communities to assess the extent and effects of the potato blight.

In a memo[43] to the Police Constable at Taumarunui (10 October 1905), Wilkinson asked that the constable 'make enquiry and report whether there are any really deserving cases amongst the Taumarunui natives who are without seed potatoes and have no means to purchase any for themselves'. In the memo he warned: 'In some parts of Lower Waikato and other places where the natives are nearly destitute, Government is supplying small quantities of seed potatoes to those who have not got any and who are unable to produce same. Natives in other districts have heard of this and are now sending in claims irrespective of whether they are in want or not'.

Reports from police constables at Rawene, Hikurangi, Papakura, Dargaville and Cambridge are on file.[44] Most of these indicated that Māori in their districts were in need of assistance, and suggested that Māori communities should be supplied with seed potatoes. In one contrary report, the constable at Dargaville

[41] MA 21/10 WN
[42] MA 21/10, File N 06/44
[43] MA 21/13 WN, File N/204/2
[44] MA 21/13 WN, MA 21/14 WN

suggested that blight had caused 'temporary inconvenience' and that there was plenty of work available in the area and the natives should 'turn out to work for a wage'. The constable at Papakura suggested that seed potatoes should not be forwarded until planting time, and warned that 'if the natives get the potatoes now they will have them all eaten before spring'.

The constable from Hikurangi, reporting on the Māori community at Purua,[45] noted: 'Their potato crop has been a partial failure this year but it is not that alone that has brought them to the condition they are in. It is chiefly I regret to say the influence of Mormonism that is reducing their means'.

The Native Department

While several government departments, including Justice, Health and the New Zealand Police, were involved in the initial stages of the government initiative to provide assistance to Māori during the blight epidemic, it was the Native Department, under Minister James Carroll, that took the leading role. The Department worked closely with the Department of Agriculture and the Education Department.

In addition to coordinating a programme to assist Māori to spray their potato crops with fungicide, the Native Department decided that seed potatoes and a range of vegetable seeds should be distributed to Māori communities. On 25 June 1906, H. F. Edger, Undersecretary of the Native Department, wrote to the Native Minister[46] suggesting that 100 tons of seed potatoes would be needed, and that it would be necessary to take a special vote of £1,500 (Appendix 7).

Earlier discussions between the undersecretary and certain key individuals about the need for seed potatoes for Māori communities had taken place before the decision was made to proceed with the project. A letter from Elsdon Best[47] (13 June 1906) indicated that such discussions had occurred. He estimated that 16 or 17 tons of seed potatoes would be required by the natives of the Tuhoe and Ngāti Awa tribes (Appendix 8).

On 3 July 1906, the Undersecretary wrote to the Native Minister[48] informing him that he had been in discussion with Mr J. D. Ritchie, Secretary for Agriculture, regarding the purchase and supply of seed potatoes and vegetable

[45] MA 21/11 WN N 06/41
[46] MA 21/3 WN, file N/199, N 1906/40
[47] MA 21/3 WN, file N/199
[48] MA 21/3 WN, file N/199, N06/325

seed for distribution to the natives. He suggested that the native schools would be the best medium of distribution (Appendix 9). On 5 July he sent a memo to the Secretary for Agriculture, informing him that his minister had approved the purchase of vegetable seed (turnip, cabbage, carrots, broad beans and peas) for distribution to the natives. He stated: 'As arranged with you verbally, will you kindly see to the purchase and putting up of these seeds?'

He noted that he would communicate with the native schools to ask them to undertake distribution, and a memo from the Native Department to the teachers at the native schools followed[49] (15 July 1906.) It referred to the distribution of seed potatoes to 'the Maoris of the North Island' asked the teachers to state whether Māori in their district needed assistance and, if so, the quantity of seed potatoes required. It also referred to an earlier communication regarding distribution of vegetable seeds (Appendix 10).

In the meantime, the Department of Agriculture had written on behalf of the Native Department to seedsmen and growers, to obtain quotations for the supply of vegetable seeds, cabbage seedlings and seed potatoes of the varieties 'Up to Date' and 'Northern Star', which were believed to be 'blight resistant'. Replies from these suppliers to the Native Department were dated from 17 to 20 August 1906.[50]

Responses from the native schools to the memo from the Native Department were received promptly. Letters are on file from 22 native schools, dated from 20 to 30 July 1906. Some letters are brief and simply stated the quantity of vegetable seeds and seedlings and seed potatoes required, while others reported in some detail on the effects of the blight in their districts. Some teachers commented on the selection of vegetables to be provided.

The teacher at Maraeroa considered that 'pumpkins and marrows take the first place after potatoes' and 'cabbages are a favourite vegetable'. The teacher at Omarumutu, near Opitiki, commented in a detailed five-page letter, giving his opinions on what should constitute an ideal diet for Māori. He noted: 'I think it is of far greater importance to a Maori boy to know how to manage a cow properly than to know the movements of the earth or the capital of Brazil'.

The teacher at Waiomatatini, near Gisborne, suggested that the natives were 'very conservative in their ideas about food and are not easily induced to try novelties'. He was commenting on Apirana Ngata's suggestion that Māori should be encouraged to grow peas and beans in addition to the more

[49] MA 21/3 WN, file N/199
[50] MA 21/4 WN, file N/200

established vegetable crops. The teacher at Pipiriki, on the Whanganui river, stated: 'May I respectfully suggest that very few Maoris like turnips: would not pumpkin seeds be better?'

To coincide with the distribution of vegetable seeds and seed potatoes, the Department of Agriculture published in the 16 August 1906 edition of *Kahiti o Nui Tireni* (*New Zealand Gazette*) detailed instructions in the Māori language on growing the following plants from seed: turnips, swedes, carrots, cabbage, broad beans, parsnips, peas, onions and kohl rabi.[51] The range of vegetable seeds to be provided was extended from that originally approved by the Minister — perhaps in response to suggestions from the teachers at the native schools (Appendix 11).

Another memo[52] was issued by the Native Department on August 16 to the teachers at the native schools, informing them that a consignment of vegetable seeds and seed potatoes had been despatched for distribution to local Māori families. The number of families was specified on each notice, as well as the amounts and varieties[53] of vegetable seeds despatched (Appendix 12).

Once the distribution of the seed potatoes and vegetable seeds was under way, the Native Department sent a memo[54] to the Secretary for Education (7 September 1906) asking if school inspectors would 'make enquiries regarding the proper use of these seeds and the growth of the crops'. He noted: 'It would be a great point gained if Maoris could be induced to rely less upon one or two crops and extend their attention to a number of the other common kinds of vegetables … I feel the result will depend a good deal upon the encouragement that the Native Schools Teachers may give to the Maoris in their respective districts'.

In response, the Inspector General of Schools, on behalf of the Education Department, issued a circular[55] to teachers of the native schools (1 October 1906) suggesting that school gardens be established to enable children to learn about raising vegetable crops (Appendix 13). The circular noted that 'in such a garden the children can, with instruction say twice a week, be taught to grow vegetables for themselves, and the people will thus gradually learn to appreciate other vegetables than potatoes, and to rely less upon the latter'.

Obtaining and distributing potato and vegetable seeds was a major logistical exercise. Vegetable seeds and seed potatoes were obtained from a variety of

[51] MA 21/5 WN
[52] MA 21/7 WN
[53] Pumpkin seed was added to the range of seeds to be provided
[54] MA 21/6 WN
[55] MA 21/6 WN

sources, including commercial growers and nurserymen, and government agricultural experimental stations. A letter from the Undersecretary of the Native Department to Rev. Hammond and Rev. Williams in Taranaki (14 August 1906) stated:

> I am sending you a ton of Northern Star seed potatoes and two tons of Up-to-Date potatoes. The Northern Star will be forwarded to you from Feilding and the Up-to-Date from Wellington and Auckland. These potatoes have all been dipped and the Maoris should be informed that they are not fit to eat. [The dipping mixture was not specified.]

Getting seed potatoes to their destination was often complicated. For example, a Native Department distribution list (Appendix 21) shows that, to get 10 cwt (508 kg) of seed potatoes to Tokaanu involved 'Rail to Wellington. United Steam Ship Company to Auckland. Rail to Rotorua. Coach (Robertson and Co) to Taupo, Launch (Ryan's) to Tokaanu'. Once the potatoes arrived at Tokaanu, the teacher at the local native school would then have ensured that each family received their individual quota.

It appears that in most cases the seed potatoes were received in time for planting, although a letter from Henare Mareroa of Waihi (30 September 1907) noted that 'Some potato seed was sent last year but it arrived after the planting season was over'. On the other hand, some of those involved in allocating consignments of potato seed had concerns about distributing it too early. As already noted, the police constable at Papakura warned: 'They should not be forwarded until the season for planting, because if the natives get the potatoes now [June] they will have them all eaten before spring'.

Payment for seed potatoes

The circular issued by the Native Department to teachers at native schools stated that vegetable seeds were free of charge, while the seed potatoes were to be charged at the rate of 10 shillings (10/-) per cwt (50.8 kg) for 'Northern Star' and 7 shillings and sixpence (7/6) for 'Up to Date'. Letters and receipts on file indicate that most Māori communities were willing to pay the requested sum. However, the question of payment promoted considerable comment and discussion. As the following correspondence indicates, teachers were allowed to exercise discretion in accepting partial payment, or even distributing potatoes free of charge in worthy cases.

The undersecretary wrote to the Native Minister (25 June 1906): 'It might be best to make a charge of say 5/- to 7/6 per cwt for any quantities over one cwt supplied to one man, leaving it to the discretion of the distributor to give out

in quantities of less than one cwt, free to those who cannot afford to pay'. The Minister's reply in a telegram sent on 25 July was: 'Re purchase of potatoes — exercise your own judgement in the matter'.

In a letter[56] sent to the Rev. Williams at Putiki, Whanganui, the undersecretary noted he had sent sufficient seed potatoes for 100 families. In a postscript to his letter he said 'please obtain partial payment as per circular enclosed, except where the recipient is unable to pay'. In a further letter to Rev. Williams dated August 20, the undersecretary wrote: 'You will remember that my letter says that they can be given without payment if the recipient is unable to pay. I think the fact that the Natives of Putiki are wrath at being asked to pay shows that they are not really in great necessity'.

In another letter to Rev. Williams (23 August) the undersecretary wrote: 'I may again repeat that it is within your own discretion whether you will distribute free where the recipient is unable to pay, but I think that the seed is likely to be valued more and better care taken of if the Maoris have to pay a part of the cost. I think you will agree with me in this'.

Several requests[57] for seed potatoes were received from Māori communities in Hawkes Bay and on the East Coast. However, in a letter to the Minister, the undersecretary stated: 'The natives on the East Coast are not as badly off as in other parts. No seed potatoes can be spared for this district'.

In response, Apirana Ngata, the Member of Parliament for the district wrote:

> The Department seems to have proceeded on the assumption that the Hawkes Bay natives could afford better than those elsewhere to buy seed at their own expense. This may be true of certain parts of Hawkes Bay but it must be remembered that the ravages of the potato blight were more destructive in Hawkes Bay than elsewhere … (Appendix 14.)

In reply to the teacher at Puroui Native School, near Whangarei, the undersecretary wrote: 'Those who are able to pay and will not do so can go without' (2 October 1906). The teacher at Omarumutu Native School sent a telegram to the undersecretary (20 September): 'Maoris have money for whiskey none for potatoes — object to paying — saying I pocket the money — what shall I do?' The reply from the undersecretary (25 September) was: 'You can distribute potatoes free among the poorest and most deserving families.'

[56] MA 21/6 WN
[57] MA 21/7 WN

Some native school teachers found it somewhat difficult to decide who was able to pay for seed potatoes, and how to collect the money. The teacher at Rakaumaunga Native School, near Huntly, wrote to the Native Department (3 September 1906):

> This matter of payment for potato seed is in some ways a delicate matter. It is impossible to tell exactly who have enough to pay for it. I have been asked by several natives if the Govt. would trust them for payment once they received the return of their crops. I lay it before you for what it is worth. Personally I would not care to have anything to do with making collection; but if it was thought worthwhile to let them have credit a small printed IOU form might result in some payments being collected.

The majority of the consignments of seed potatoes were distributed to Māori communities from early September to early October, in time for planting and, in most instances, payment was made promptly. However, some payments were made as late as April the following year, as indicated by the letters and telegrams to the Native Department that accompanied cheques and money orders.

Influences of religion

Some Māori placed a biblical interpretation on the destruction of their potato crops by the blight. A kaumatua from Kinohaku kainga near Kawhia stated in a letter (24 August 1906) to 'The Honourable Premier of the Parliament of New Zealand':

> Now harken, this calamity never happened in the days of our forefathers and parents, only now has it affected the people of this island. Look now at God's manifestation to Joseph by which he interpreted the dream of Pharoah King of Egypt — that there would be seven years of plenty and seven years of famine, now it has befallen me and my family suddenly, that is us and other people living on the southern side of Kawhia harbour …

A correspondent from Whakatane, writing to the Undersecretary of the Native Department (18 July 1906), wrote that natives of his district were anxious to obtain seed potatoes. He warned: 'The prophet Rua[58] tells them there will be no blight this year! This man's influence has done an immense amount of injury to this district. Most of the draught horses have been sold at Rua's insistence … to raise money to follow the "Prophet".' The teacher at Te Teko Native School also referred to Rua, and wrote: 'Some of the Natives here are forwarding an

[58] Rua Kenana Hepetipa was a messianic prophet who led a separatist Māori community at Maungapohatu in the Urewera country

application to you for seed potatoes and food for their children's dinners. These natives did not go to "Ohui" at Rua's instigation but remained at work and kept their children at school'.

Comments on the influence of the prophets Te Whiti o Rongomai and Tohu Kakahi on the community at Parihaka were more positive. In the 1906 census of the Māori population (*AJHR*), the enumerator for the Taranaki district wrote:

> The influence of Parihaka is still very strong among certain of the Natives on this coast … It is generally understood that there is a reserve fund of cash at Parihaka, and when in conversation with the Natives there, it did not seem to me that there was any anxiety amongst them on account of the failure of the potato crop. They remarked, "There was plenty of flour and rice to be bought," and the *atua*[59] would see they did not starve.

Stenson and Olssen (1997, p. 96) considered that Te Whiti was one of the most dynamic of the regional leaders. They noted that he was a charismatic religious and secular leader of the Ngāti Ruanui tribe. He had been educated at a Lutheran mission school and claimed God's special protection for Māori people. With Tohu Kakahi he developed a community at the South Taranaki settlement of Parihaka. Stenson and Olssen noted that it was a model village, built on hard work, enterprise and communal responsibility, and the energies of the people were directed into developing large-scale cultivations of maize, potatoes, tobacco and vegetables.

Purapura kūmara — kūmaras from America

In a memorandum[60] for the Hon. Native Minister, the Undersecretary H. F. Edger reported: 'Kumaras are being imported from America, as it is thought that a change of seed would be beneficial and that the cultivation of the kumara should, to a large extent, take the place of the potato'.

Discussions about importing fresh kūmara (sweet potato) stocks had taken place earlier, and on 11 July 1906, in a memo to the Native Minister, the Undersecretary wrote: 'Kumera seed can be obtained from America at £10 per ton. Dr Pomare has suggested that kumeras[61] could also be got from Rarotonga. This would be an improved kind. Mr Ritchie[62] proposes to get say five tons from Rarotonga and considers that if seed is to be got from America it should be cabled for immediately. Probably ten tons from America and five tons from

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[59] God or deity
[60] *AJHR* session II 1906. H 26A. Census of the Maori Population (papers relating to)
[61] The spelling of kumara is 'kumera' in all documents on file
[62] J. D. Ritchie was the Secretary for the Agriculture Department

Rarotonga would suffice for seed purposes.' In a further memo (24 July), the undersecretary noted that Mr T. W. Kirk, the Agriculture Department Biologist, had made enquiries about obtaining kūmara from the islands and had advised against it.

The government decided to go ahead with purchasing sweet potato from America. A file[63] in the National Archives (Wellington) headed: *Kumara. Re order from America etc* includes documentation including letters, memos, invoices and other papers relating to their purchase and supply. It also includes letters of request from, or on behalf of Māori, for kūmara seed,[64] and lists of Māori communities and individuals to whom seed was to be distributed.

It appears that the proposed purchase and supply of kūmara seed was advertised in newspapers. In a letter to the Secretary of Agriculture (11 September 1906) a Mr A. Matthews from Auckland wrote:

> I saw it stated in one of the newspapers that the Government were getting some Kumeras for seed to be distributed among the moaries [sic], from America. Would you kindly inform me if this is so, and if it would be permissible for a white man to have some by paying for them and where should I apply … I have been a very successful grower of kumeras but they seem to have run out of late years.

Mr Kirk, the Department of Agriculture Biologist, wrote to the Undersecretary of the Native Department on 20 September informing him: 'The kumeras are being obtained from Messrs Mamer & Co. of San Francisco … Messrs Mamer & Co ask that a letter of credit for the amount be sent to them at San Francisco' (Appendix 15).[65] The next day the Native Department issued a purchase order/ treasury voucher that stated: 'To 20 tons of kumeras purchased by the Agent of the Agricultural Department for distribution to Maoris. 20 tons@ £10 per ton' (Appendix 16).

On 29 September Mr Kirk received a telegram from Hammer & Co informing him that 'kumeras will be shipped on 25th October if good quality'. However, in a memo to the Native Minister on October 1, the undersecretary, in referring to the telegram, stated:

> It will thus be the end of November before they will reach the Maoris in the different districts for planting. Under the circumstances, I recommend the order be cancelled, or if this cannot be done — that the kumeras be re-sold in San Francisco to the best advantage through the Agricultural Department. The money £200 has been forwarded through the Post Office by last week's mail, but can be stopped, by cable. (Appendix 17.)

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[63] MA 21/8 WN

[64] Kūmara 'seed' refers to tuberous roots which are planted to establish the crop, or from which rooted shoots (tipu) are obtained for planting

[65] The correct name of the company was Hammer & Co, Shipping and Commission agents

The same day he sent a memo titled 'kumeras' to Mr Kirk at the Department of Agriculture saying:

> I have now to inform you that the Hon. the Native Minister wishes the order countermanded as there is no possibility of getting the seed to the Natives in time for planting this season. I shall be glad if you will kindly communicate with Mess'rs [sic] Mamer & Co of San Francisco explaining the circumstances and making the best arrangements possible should any expenses have occurred.

After 1906

The blight epidemic appears to have been at its worst in 1906. The following year its effects were much less severe, and by 1908 there were only a few localised outbreaks. The *Fifteenth Report of the Department of Agriculture* (1907) reported that:

> the fine dry summer that has been experienced in many parts of both Islands has had the effect of greatly lessening the damage caused through the Irish potato blight. Still, there were no districts that were quite free, and if we experience a wet muggy summer in the coming season it will be as serious a menace as formerly.

The *Sixteenth Report of the Department of Agriculture* (1908) noted: 'Irish blight as has been mentioned before, was not so much in evidence, owing to the climatic conditions being unfavourable for its rapid spread'.

Requests for seed potatoes continued, however, to be received by the Native Department in 1907, mainly from Māori communities who had lost their potato crops from blight the previous year, or from those who had either not received an allocation of seed potatoes from the Native Department or had received their seed too late to plant. Some of these requests were from Māori communities in the Bay of Plenty region, where many potato crops were destroyed by floods during heavy rain in January.

In January 1907, Judge H. F. Edger resigned as undersecretary for the Department and was replaced by T. W. Fisher, who Butterfield and Young (1990, p. 64) described as 'very much the public servant whose job was to carry out the wishes of the Minister of the day, his principal concern was to account carefully for all Government expenditure so as to avoid any major scandals'.

This description of the new undersecretary was reflected in the formal nature of his correspondence regarding assistance to those Māori affected by the blight epidemic. In a memorandum to the teacher at the native school at Hapua (2 September 1907) he wrote:

> I have to inform you that it has been decided that the Department will not undertake a distribution of seed potatoes to Natives on the lines followed last year as since then the position as regards the potato crop has in most districts materially changed for the better. If however, the natives of your district wish to obtain a supply of new seed, and will make all arrangements regarding purchase and delivery, I am prepared to assist them to the extent of a subsidy of £ for £ up to three pound (£3), on the understanding that only the poorer class of natives shall participate in the grant; those able to buy seed for themselves should do so. On the seed being delivered, and on receipts being produced showing that the natives have defrayed half the expense, I am prepared to authorise payment of an equal amount.

In 1907, elementary agriculture training, including crop production and vegetable gardening, was formally established as part of the syllabus of the native schools. The programme had been proposed in the previous year as a cooperative initiative between the Education and Native Departments (Appendix 13). In a memorandum (8 July 1907) the Secretary for Education informed the Undersecretary of the Native Department:

> A scheme for giving instruction in Elementary Practical Agriculture [in Native Schools] has been arranged and I shall be glad to know whether your department is still prepared to assist in the direction indicated. [supply of vegetable seeds] I enclose a circular [Appendix 22] showing what the proposed course involves. I may add that this instruction is to be made part of the syllabus in Native Schools, and it should in time prove of considerable benefit to the Maoris.

Following this inter-departmental initiative, agricultural training, including gardening, became an important part of the syllabus of the native schools. It became well established in subsequent years, although the standard of instruction seems to have varied between schools. Simon and Smith (2001, p. 102) noted:

> It was also clear from the pupils' testimonies that a great deal of time was given to gardening, especially by the boys. With a few exceptions, it would appear from the pupils' or teachers' accounts that this did not involve much teaching or learning of new skills. Several teachers mentioned, however, that the vegetable crops grown were taken home by the pupils to supplement their home food supply.

Some comments from former pupils of native schools from 1922–1953, reported in Simon and Smith (2001), indicated how gardening instruction was perceived:

> The schoolteacher we had … she was a great one. She started us off with gardening. She got the school garden going. The Maori children, and us … all in together. We learned how to prepare the land and what to use in it and what to plant and all that sort of thing — most interesting.
>
> And we seemed to be forever working at the school in the vegetable garden. Not only that but gathering horse manure from the paddocks for fertiliser.
>
> Our lesson for horticulture was do it — and that's it! We didn't ever sit down to say, carrot is a root crop and spinach is a leafy crop. We just got the seed … and put it in the ground and that was it. The hardest part was the digging. We dug it all up and of course we had to do all the fencing ourselves …
>
> We had the agriculture instructors and they urged us to have gardens. We had sweet pea growing and sweet pea exhibitions.

The effectiveness of these programmes, and whether too much emphasis was placed on agricultural education and school gardening, is debatable. However, the programmes had the effect of encouraging Māori throughout the first half

of the twentieth century to establish extensive home and communal gardens, which produced a wide range of vegetable crops for the family and often for the local Māori community. Although potatoes were grown extensively in these gardens, Māori no longer depended on the potato as their primary source of food.

With increasing Māori urbanisation[66] throughout the 1960s and 1970s, large-scale or communal vegetable gardening became impractical for those Māori living on small sections in cities and towns. In rural areas, many Māori still have extensive vegetable gardens producing a range of crops.

Fig. 15 *Boys working in a garden at Te Araroa Native District High School (1942).*

[66] In 1945 three-quarters of the Māori population lived in rural areas. By the mid-1970s the reverse was true, with three-quarters of Māori living in urban areas, increasing to four-fifths by 1981 (*New Zealand Official Yearbook*, 1988)

Conclusion

It is now 100 years since the potato blight epidemic caused by the fungus *Phytophthora infestans* destroyed potato crops throughout New Zealand. The only areas not badly affected were Nelson, Marlborough and Stewart Island.

The disease struck potato crops in 1905 but reached its peak in 1906. While the disease was first recorded about 1896, on that occasion its effects were relatively mild. There are also reports of epidemic outbreaks of the disease in 1904, but these appear to have been confined to the Auckland, Taranaki and Wanganui districts.

The volume of letters and other documents relating to the 1905/1906 epidemic, and the extent to which the government of the day provided resources to alleviate the situation, indicate that this was a significant and serious event. It was particularly devastating for Māori communities, many of whom relied on the potato as their main food source. Some 60 years earlier Māori agriculture had been flourishing, with large areas of fertile land in commercial production of potatoes and cereal crops, as well as a wide range of other vegetable crops.

Although the blight affected potato crops over most of the country, Māori were particularly badly affected because of their widespread reliance on the crop as their main food source. Many Pākehā farmers were growing 'modern' potato cultivars such as 'Up to Date' and 'Northern Star', which had some degree of blight resistance, whereas Māori were often growing cultivars like 'Derwent', which was particularly susceptible to blight. Some of the 'traditional' cultivars or 'Māori potatoes', such as 'Huakaroro', had been grown by Māori for generations, and appeared to have some resistance to the disease.

The Department of Agriculture campaign to assist farmers to spray potato crops with fungicides, to prevent or control blight, did not include Māori growers but targeted 'settlers and farmers'. Māori growers did receive some assistance with spraying their crops, as the Department of Agriculture was contracted by the Native Department to undertake a similar programme with Māori communities.

However the programme was of limited benefit, because spraying was generally only undertaken where motivated local Native School teachers managed to obtain spraying equipment and mixtures from the Department of Agriculture, or borrowed equipment from Pākehā growers. Often sprays were applied at the wrong time, or too infrequently, to be effective. Application of fungicidal sprays was the key factor in protecting potato crops from late blight. Even those cultivars which were said to be blight resistant usually succumbed to the disease if fungicides were not applied correctly.

When ‘modern’ blight-resisting potato cultivars were supplied to Māori communities, reliable spray programmes were not generally followed after they were planted. One longer-term benefit of the seed potato programme was to give Māori possession of cultivars that were higher yielding than those previously grown. In subsequent years, after blight infection subsided, their value would have become apparent. The cultivar ‘Northern Star’ became one of the traditional Māori potatoes, known as ‘Māori Chief’ and ‘Rangatira’ and, in Taranaki, ‘Parihaka’. It is likely that ‘Up to Date’ was similarly adopted and given a Māori name.

The attempt to import a new sweet potato cultivar from California to complement those already grown by Māori was abandoned for logistical reasons. There is no archival record of which cultivar was selected or if the New Zealand government was given any choice. Fortunately, Māori were already in possession of several high-yielding varieties such as ‘Waina’ (introduced some 50 years earlier), as well as their traditional cultivars. Some of the ‘modern’ kūmara cultivars we see in the supermarkets today, such as ‘Owairaka Red’, were developed from ‘Waina’.

The distribution of a range of vegetable seeds to Māori, together with instructions on their use, was very successful. Many people continued to grow vegetables in large community or family gardens right up until the 1960s, when Māori began to move away from their rural communities into towns and cities. This seed programme was, in effect, a re-introduction programme, since Māori had already produced a wide range of vegetables on a commercial scale many years earlier.

Te Paraiti can be compared to the potato blight epidemic that occurred in Europe in the mid-nineteenth century, causing widespread famine in Ireland. The New Zealand event took place some 60 years later, by which time the cause of potato late blight was known and fungicides had been developed to prevent or control the disease. In addition, new potato cultivars with some resistance to blight had been developed.

While Māori in many areas were reliant on the potato as a primary food source, they were not usually totally dependent on it as the Irish were. In Ireland, the British government of the day did little to alleviate the situation. In self-governed New Zealand, the government did provide considerable assistance to Māori.

Pākehā-grown potato crops suffered similarly to those grown by Māori during the New Zealand epidemic. However, most Pākehā were not reliant on the potato to the same extent as Māori. In Ireland, over a million people died of

starvation during the potato blight epidemic and many more emigrated. In New Zealand there are no records of deaths attributable to the local epidemic, nor are there records of communities failing or being abandoned, as happened in Ireland. However while the effects of the New Zealand epidemic were not as catastrophic that which devastated Ireland, 60 years earlier, it was nevertheless a significant event in New Zealand's history.

He Tangata (biographies of key people)

There are many letters, documents and reports about the potato blight epidemic on file in New Zealand's National Archives. Many of these were written or signed by people who are well known in history, such as the soldier and interpreter Gilbert Mair, ethnographer and author Elsdon Best, and Gordon Coates, who was to become the Prime Minister of New Zealand in 1925.

There are many letters from Māori, some of whom are well known while others are ordinary members of communities. Some of these letters are written in Māori while others have been translated into English. There are letters from police constables, teachers at native schools, headmasters of high schools, businessmen, public servants and ministers of religion.

The following brief biographies are of people who played a major role during the blight episode:

Buck, Sir Peter (Te Rangi Hiroa, 1877–1951)

Of Ngāti Mutunga descent from Taranaki, Buck was a pioneering and internationally renowned anthropologist, a medical doctor, a politician, administrator, soldier and sportsman. Like Ngata, he attended Te Aute College. He attended Otago University medical school with the intention of waging a health and sanitation campaign against the high mortality rate of Māori. He completed his medical degree in 1904, and in 1905 he was appointed as a 'Medical Officer to the Maoris'. With his colleague Dr Maui Pomare, he made a major contribution to improving the health of Māori.

During the blight epidemic he was one of the first to bring the plight of Māori to the attention of the government. Later, during the First World War, he served as medical officer and received a DSO at Gallipoli. After the war he became an anthropologist and was Director of the Bishop Museum in Honolulu until his death.

Source: *Dictionary of New Zealand Biography*
www.dnzb.govt.nz

Carroll, Sir James (1857–1926)

James Carroll was of Ngāti Kahungunu descent. He was the first Māori to win a general rather than a Māori seat; no other Māori MP would do this until 1975. Carroll's central place in the Liberal party in the twentieth century was recognised when he became acting Prime Minister in 1909 and 1911, the first Māori to hold that position. In 1892 he was appointed as a member of the Executive Council, representing Māori, and from 1899 to 1912 he was Minister of Native Affairs.

His basic philosophy was to empower Māori within modern economic life and to secure their equality with Pākehā. Carroll saw the need for compromise in dealings between Māori and Pākehā, although he could never hold at bay the continual demands of government and Pākehā settlers for Māori land. During the potato blight epidemic, in his position as Minister of Native Affairs, he played a leading role in providing assistance to Māori.

Source: *Dictionary of New Zealand Biography*
www.dnzb.govt.nz

Edger, Herbert Frank (1854–1909)

Judge Herbert Frank Edger entered the Native Department as a clerk in 1879 at the age of 25. While in this position he studied law, and in 1889 he was admitted to the bar. In 1891 he became Registrar of the Court in Auckland and in 1893 transferred to Wellington. He was appointed as a judge in 1894, and in 1905 he was appointed as head of the Native Department as Undersecretary while still retaining his position as a judge.

He worked closely with Māori leaders and had ideas of expanding the Department's role in Māori health and farming. His ideas were often in conflict with those of the government. He resigned in January 1907 and died soon after. Judge Edger was the undersecretary at the height of the potato blight epidemic and was responsible for a range of programmes and initiatives to provide assistance to Māori whose crops were affected.

Butterworth (1990, p. 64) described him as a 'culturally minded man' who proposed a range of initiatives to assist Māori, such as consolidating scattered land interests into manageable farming units, special protection for older Māori unable to adopt European habits and customs, and simplified legal systems to enable Māori to obtain capital for farming.

Source: Butterworth, G. V., & Young, H. R. (1990). *Maori Affairs: A department and the people who made it*. Wellington, New Zealand: GP Books.

Gilling, B. D. (1994). *The nineteenth-century Native Land Court judges: An introductory report* (WAI 64). Wellington, New Zealand: The Waitangi Tribunal.

Fisher, Thomas William (n.d.)

T. W. Fisher succeeded Judge Edger as Undersecretary of the Native Department, and held the post until his retirement in 1916. Butterworth (1990, p. 65) wrote that he was very much the efficient public servant whose job was to carry out the wishes of the minister of the day, his principal concern being to account for all government expenditure to avoid any major scandals. His correspondence indicates he showed much less empathy in his dealings with Māori than his predecessor. He later served as a judge of the Māori Land Court.

Source: Butterworth, G. V., & Young, H. R. (1990). *Maori Affairs: A department and the people who made it*. Wellington, New Zealand: GP Books.

Hammond, Rev. Thomas Godfrey (1846–1926)

Thomas Hammond was born in Nelson in 1846, and entered the Wesleyan ministry in 1874. In 1887 he was appointed to revive the West Coast Māori Mission, based at Patea. Apart from a few exceptions, the local Māori were hostile to him, so he opened a church at Hukutere. He eventually established a good relationship with Te Whiti and Tohu, and was welcomed on to Parihaka. He had a wide knowledge of Māori history and tikanga and published a number of books on the history of Taranaki. He was known throughout Taranaki by Māori as 'Te Hamua'.

In 1917 he was appointed superintendent of Māori missions. During the potato blight epidemic he assisted the Native Department to distribute seed potatoes and vegetable seeds to Māori communities, and provided many useful suggestions and practical assistance. His correspondence with the Minister and the Undersecretary of the Native Department indicated he had a good working knowledge of agriculture.

Source: Morley, W. M. (1900). *The history of Methodism in New Zealand.* Wellington, New Zealand: McKee.

Kirk, Thomas William (1856–1936)

The study of plant pathology in New Zealand was begun in 1893 with the appointment of T. W. Kirk as biologist to the newly formed Department of Agriculture. Apart from undertaking a considerable amount of work on the identification of diseases, Kirk did much to educate farmers and fruitgrowers to appreciate what diseases were and how they could best be controlled. In 1911 Kirk became Director of the Horticulture Division of the Department of Agriculture. Kirk's scientific knowledge and administrative skills were instrumental in establishing a viable fruit export industry in New Zealand.

During the potato blight epidemic, Kirk wrote numerous reports and was in regular contact with the Undersecretary of the Native Department regarding initiatives and programmes to assist Māori.

Sources: *An Encyclopaedia of New Zealand 1866 — History of Plant Pathology*
Dictionary of New Zealand Biography
www.dnzb.govt.nz

Ngata, Sir Apirana (1874–1950)

Apirana Ngata was perhaps the most prominent member of the group of dynamic Māori MPs who emerged in the early 1900s. He had a profound effect on Māori society and politics for years to come. The 'Young Māori Party' was a loose association of like-minded individuals who were committed to working within the system to improve Māori health, develop Māori land with state assistance, and foster Māori arts and crafts. Ngata, like most of this group, had been educated at Te Aute College.

He was elected as the member of Parliament for Eastern Māori in 1905 and promoted to Cabinet in 1909 as Minister for the Public Trust Office. He continued to promote Māori land development and, on becoming Native Minister in 1928, initiated many land schemes. He was knighted in 1927, but had to resign from Cabinet in 1934 because of irregularities in the administration of the schemes. He retained his seat until 1943, by which time he was 'Father of the House', the title given to the longest-serving politician. As a member of Parliament at the time of the blight epidemic, he advocated strongly of behalf of Māori communities within his electorate.

Source: *Dictionary of New Zealand Biography*
www.dnzb.govt.nz

Pomare, Sir Maui (1875–1930)

Of Ngāti Mutunga and Ngāti Toa descent, Maui Pomare was one of the generation of leaders educated at Te Aute College. In 1893, Pomare left New Zealand to study medicine at the Seventh Day Adventist College in Battle Creek, Michigan, USA. He completed his medical studies at the American Medical Missionary College in Chicago, graduating in 1899. He returned to New Zealand in 1900, after spending time at Cook County Hospital in Chicago.

In 1901, Pomare was appointed Māori Health Officer and he embarked on a programme of visiting villages to inspect sanitary arrangements and to help the sick. He believed in radical modernisation of Māori society and considered that Māori should adopt a European lifestyle and become self-reliant. In 1911, Pomare was elected to Parliament as the member for Western Māori, and in 1923 he was appointed as Minister of Health. One of his major campaigns during this period was to improve the maternity process. His initiatives led to a significant decrease in maternal and infant mortality rates. In 1928, he became ill with tuberculosis and died in 1930. At the time of the blight epidemic, Pomare was the Māori Health Officer and he played a significant role in supporting and advising the Minister of the Native Department, and was in involved in initiatives such as the attempt to import new sweet potato cultivars from California.

Source: *Dictionary of New Zealand Biography*
www.dnzb.govt.nz

Williams, Rev. Alfred Owen (1856–1923)

Rev. Williams was a son of Judge Williams of the Native Land Court. He was appointed superintendent of the Māori missions for the Wellington Diocese in 1885. He was based at Putiki, across the river from Wanganui, until 1914 and developed a close relationship with Māori in the district. Rev. Williams was one of the founders of the Wanganui Museum, for which he obtained many valuable exhibits.

He was active in horticultural circles and his knowledge in this field was evident from his correspondence with the minister and Undersecretary of the Native Department on matters relating to the blight epidemic. He provided advice to the Department on matters such as spraying potato crops with fungicide, and suitable potato cultivars and alternative vegetable crops to provide to Māori. He was a fluent speaker of the Māori language. His obituary

in the *Wanganui Herald* (October 31, 1923) stated: 'His death will be deeply deplored among the natives throughout the North Island, who looked to him with the utmost confidence for help and guidance'.

Source: Obituary. (31 October 1923). *The Wanganui Herald.*

Māori glossary

aniana	onion
atua	deity or god
huanga kai	crop
Kahiti o Nui Tireni	*Gazette of New Zealand*
kaanga	corn
kamokamo	a kind of vegetable marrow
kara-rapi	kohl rabi
kareti	carrot
kāuta	cooking house
kete riwai	basket for holding potatoes
kūmara	sweet potato
pahinepa	parsnip
panuitanga	announcement or publication
paukena	pumpkin
pī	pea
piini whanui	broad bean
Pākehā	generally New Zealander of European descent
purapura	seed
purapura kapeti	cabbage seed
purapura kumara	kūmara seed (root tubers)
purapura rīwai	potato seed (tubers)
purutone	bluestone (copper sulphate)
rīwai/taewa/parareka	potato

take kapeti	cabbage plants
tanapu	turnip
tapu	under religious restriction, superstitious or sacred
te mate rīwai/taewa	the potato sickness (potato blight)
te paraiti	the blight
tuwiiti tanapu	swede
waina	a kūmara introduced in the 19th century

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Appendix 1:

Biology of late blight of potatoes (Phytophthora infestans)

The development of a potato blight epidemic is dependent on certain weather criteria of temperature and humidity being achieved. This is measured as a Smith Period, and occurs when two consecutive days have recorded temperatures of not less than 10°C and relative humidity above 90%. This must be for at least 11 hours of each day. Once a Smith Period is registered, potato growers are advised to begin their potato blight fungicide programmes.

The potato blight fungus can only survive in living plant material. This includes potato tubers in storage, infected potatoes missed during harvest and remaining unfrozen over winter (groundkeepers and volunteer potatoes), and infected potato dumps. Transmission from infected plants to new foliage is primarily by airborne spores. Potato blight development is favoured by continual periods of high moisture and moderate temperature. Night temperatures of 10–15°C and day temperatures of 15–25°C are most conducive. Rain, dew or irrigation, and keeping the relative humidity of the microclimate within the crop canopy above 90%, accelerate disease development. Potato blight spores require water to germinate and penetrate the plant tissue.

Lesions on leaves and stems become visible as small flecks within a few days of infection. These lesions expand and appear as water-soaked, grey-green areas on infected leaves. The affected tissue becomes grey/tan in colour and very dry. Death follows within a few days. Lesions are often surrounded by a halo of lighter green tissue. Disease symptoms can also develop on leaf petioles and stem tissue.

Conditions must remain moist for a minimum of 7 to 10 hours for spore production to occur. This is why spores or lesions are most apparent after wet nights or periods of rainfall. There is often a white mildew-like growth at the edge of the lesion, normally on the underside of the leaf. Spores are carried by wind and rain to healthy plant tissue, where the disease cycle begins again. The potato blight pathogen can complete many reproductive cycles in a season, accounting for the rapid increase in disease once it becomes established in a field. Tubers are infected by spores washed from lesions to the soil. Tuber blight infections are characterised by patches of brown to purple discolouration on the tuber skin. Cutting just below the skin reveals a dark, reddish-brown area of tissue that is dry and cork-like.

Information extracted from Dow AgroSciences website 'More about blight'
http://www.dowagro.com/uk/potato/more.htm

Appendix 2

The Department of Agriculture (1908).

New Zealand Department of Agriculture.

JOHN D. RITCHIE, Secretary.

THE

SIXTEENTH REPORT

OF THE

DEPARTMENT OF AGRICULTURE,

1908.

HON. ROBERT McNAB, MINISTER FOR AGRICULTURE.

WELLINGTON.
BY AUTHORITY: JOHN MACKAY, GOVERNMENT PRINTER.
1908.

PEACH-CURL, BLISTER, LEAF-CURL, OR FRENCHING (*Exoascus deformans*).

Tip of branch of peach, showing diseased and distorted leaves. From nature.

DISEASES OF POTATOES.

Irish Blight (Phytophthora infestans).

Irish blight, as has been mentioned before, was not so much in evidence, owing to the climatic conditions being unfavourable for its rapid spread. The following notes on the life-history of this fungus have been prepared by Mr. Cockayne :—

HIBERNATING MYCELIUM OF PHYTOPHTHORA INFESTANS.

The behaviour of a well-known plant-disease under changed environment, or in localities where the disease has not previously existed, is a matter of the most vital importance to the student of plant-pathology. Here in New Zealand we have an exceptionally rich field for the study of the biology of many plant-parasites, for in this country the great majority of our most dangerous plant-diseases are aliens, having been in the first place imported on one or other of their hosts. The wide expanse of ocean which separates these Islands from other lands forms a barrier which precluded the supposition that they could have been introduced by spores or other reproductive bodies blown hither by the wind. Once introduced, the ecological factors for many of these diseases being pre-eminently suitable for their requirements, they have thriven here as well as, if not better than, in their original homes. Others, which in

other countries are justly looked upon as dangerous plant-parasites, have, on acclimatisation here, been quite unable to cause sufficient damage to rank them as markedly injurious. Others, again, which in their native country appear to live more or less in equilibrium with their hosts, have, since their introduction here, become virulently epidemic, and are the cause of much annual loss to both the farmer and the fruit-grower.

In these notes I shall confine myself to some observations on the ecology of the Irish potato-disease (*Phytophthora infestans*).

Introduction into New Zealand.

There are no definite records of when and how *Phytophthora infestans* was first introduced into this country. On the epidemic outbreak of this disease in November, 1904, Professor Thomas made the following statement:—

"The same disease (*Phytophthora infestans*) appeared some twelve years ago, but it was not so prevalent as on the present occasion"; further, he says, "Moreover, it is no new thing here, having been in the country to my certain knowledge for the past twelve years."

Mr. T. W. Kirk, in the report of the Department of Agriculture for 1905, writes, "Years ago there was a mild outbreak in the Auckland Province, but it has not been heard of since till last year."

For my part I consider that the epidemic outbreak in Auckland in 1904 was in no way connected with the sporadic ones which occurred previously. The cause can be attributed to the fresh importation of *Phytophthora* mycelium in imported potatoes. There are only two ways that *Phytophthora* can possibly have been introduced here—either by resting mycelium in diseased tubers, or by asexual spores or oospores; but, as these latter have never been definitely discovered, its introduction by means of them is unlikely. The asexual spores of *P. infestans* are naturally short-lived, and are in no way provided with any adaptations to withstand the desiccation that they would undergo in passing through the tropics. Therefore, it is almost certain that the introduction of this disease into New Zealand was by means of dormant mycelium hidden away in the tissues of affected tubers. This view is greatly strengthened by the discovery on numerous occasions during the past two years of varieties of imported potatoes in which the presence of *Phytophthora* mycelium was clearly demonstrated.

All potatoes which are now imported into New Zealand are carefully examined by the Agricultural Department, and those parcels found to be affected with *Phytophthora* are at once destroyed.

Action of *Phytophthora* on Potato-tubers.

There are still many gaps in our knowledge of the full life-history of the Irish potato-disease, and the exact pathological processes that obtain in so-called diseased tubers are but imperfectly understood. That the disease is transmitted from season to season by means of mycelium perennating in the tissues of the tubers themselves has been now abundantly proved. Massee has given the name "hibernating mycelium" to that portion of the vegetable body of a fungus which has the power of remaining quiescent during the dormant period of the host's existence, and which can return to normal development as soon as the host commences to develop. It follows naturally that those fungi which are able to develop hibernating mycelium do not require the same amount of varied spore-formation as those which are not so equipped. The forma-

tion of winter spores would be decidedly superfluous, and such fungi can be more specialised in the direction of producing summer and generally short-lived spores, whose object is to rapidly infect large masses of their hosts provided the environment is suitable.

The finest example of hibernating mycelium is found, as Freeman has shown, in the fungus affecting the various species of *Lolium*, especially *L. tremulentum*. In over 70 per cent. of the seed of this weed that I have examined masses of resting mycelium have been found in the tissue interior to the aleurone layer. This mycelium remains inactive until the *Lolium* seed begins to germinate, when it develops and keeps pace with the growth of the host, and finally re-forms resting mycelium in the developing seed. No mode of spore-formation, either sexual or asexual, has ever been noted, and the fungus appears to live in perfect harmony with its host. This almost symbiotic union between the fungus and host is of the utmost biologic importance in the economy of hibernating mycelium, for it is at once apparent that if the fungus can live on its host throughout the dormant season without causing any marked injury, there is all the more chance of the host developing in a normal and more or less healthy manner during the next season, and thus allow the perpetuation of the fungus; whereas if the resting mycelium caused serious pathological changes in the host, the latter would probably be killed outright, and the resting mycelium would die at the same time.

A considerable mass of material has been examined during the past three years, showing both the ordinary and hibernating mycelium of *Phytophthora infestans*, and a certain amount of interesting information on the perpetuation of this fungus has thus been gathered together.

The exact manner by which the mycelium of *P. infestans* reaches the tuber has not been as yet satisfactorily ascertained, and for this purpose detailed and careful examination in the field would be necessary. Two methods have been suggested: firstly, that the mycelium spreads from the leaf downwards through the stem until it enters the tuber; and, secondly, that spores developed on the conidiophores fall to the ground and are washed by rain or carried by other agencies directly on to the surface of the tubers.

I am inclined to think that both these processes occur in nature, and that which enters the tubers alone forms hibernating mycelium; while the spores which reach the tubers by mechanical and other means do not develop into resting mycelium, but are more or less directly responsible for the rapid rotting that so often occurs with *Phytophthora* attack. This view gains great weight from the fact that healthy tubers on the surface of which *Phytophthora* spores are scattered rapidly develop a rot, but in which resting mycelium has not been observed by me. Recently Matruchot and Molliard have declared that *Phytophthora* does not of itself cause a rot in potato-tubers, but that after the tubers become affected the rot that sets in is due to microbes that become associated with the *P. infestans*. This view, notwithstanding the high authorities from whence it originated, I am inclined to combat, although I must admit that in the majority of cases which I have examined secondary infection by bacteria and other fungi, notably *Fusarium oxysporum*, plays an important part in the rotting that occurs in tubers which have been primarily attacked by *P. infestans*.

It is a well-known fact that tubers bearing the characteristic marks associated with *Phytophthora* attack often remain during the whole winter without any trace of rot setting in. When they are examined under a magnification of about a hundred diameters, large amounts of

dormant mycelium will be seen in those portions of the tissues of the tubers that abut on the darkened and discoloured areas, which are said to be caused by *Phytophthora*, and in such cases no other fungi or bacteria will be found associated with the *Phytophthora* mycelium. This observation gains considerably in significance when it is stated that in those tubers on which an active rot is present resting mycelium can hardly ever be discovered, although there will be an abundance of bacteria and other fungi, both parasitic and saprophytic. If slices of potato showing resting mycelium of *Phytophthora infestans* are placed in petri dishes and kept moist in a temperature of about 60° Fahr., the mycelium will rapidly become active, and in a few days an abundant crop of spores will be developed. This shows that the mycelium is not in a very dormant condition, but is really on the border-line between active and hibernating mycelium. This is a very important point, inasmuch as it shows the liability, under certain conditions, of the mycelium to become active even when no growth on the part of the host takes place, and in this particular distinguishes it sharply from the more specialised resting stages in the life-history of other fungi, such as many of the *Astilagineæ*. When tubers with the resting mycelium of *P. infestans* are planted, the fungus develops rapidly through the tissues of the developing plant, and if the weather is humid and warm the mycelium becomes markedly negatively geotropic, and if the conditions remain favourable for its development it quickly makes its way into the leaves, on the under-surfaces of which it soon produces an abundant supply of spores, which, blown by the wind, can soon spread infection far and wide. If, however, the weather-conditions remain unfavourable for *Phytophthora* development, no spores at all may be produced, and to all outward appearance the potato-plants remain quite healthy. In such a case it is not known whether the fungus can again form resting mycelium without the intervention of a spore-producing stage, as is done in the case of *Lolium tremulentum*, but I am inclined to consider that such can and often does occur.

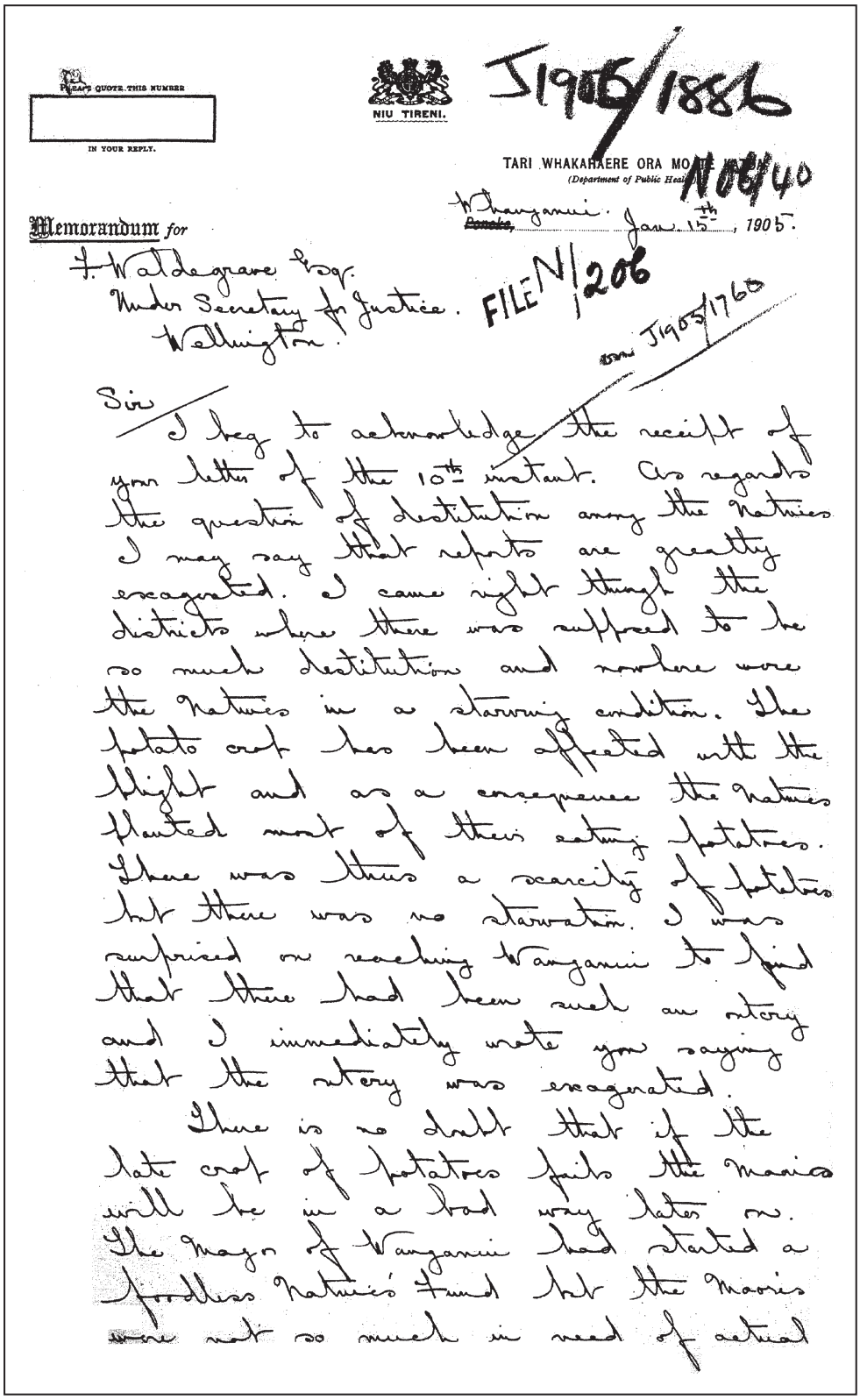
The Tropic Movements of *Phytophthora* Mycelium.

A peculiar feature of the biology of the mycelium of *Phytophthora infestans* is that, after primary infection has taken place on the leaf or stem, it is markedly positively geotropic. On the other hand, as has been mentioned previously, the mycelium developing from the dormant portion becomes negatively geotropic. For my part, I attribute this, not to the action of gravity, but to the result of chemotactic stimulus, and that the mycelium in all cases follows the direction in which food-materials are stored. This would account for the apparently contradictory influence which gravity has up to the present been considered to produce.

An important point, and one which appears to have been lost sight of, is the fact that in tomatoes attacked by *Phytophthora* the direction of the mycelium is in general negatively geotropic, or, as I take it, the mycelium is chemotactically attracted by the food-material stored in the fruit; whereas in the potato the mycelium is positively geotropic, being attracted downwards by the chemotactic stimulus of the tubers.

Appendix 3

Memo from Dr Peter Buck to Undersecretary for Justice re effects of blight on Māori in Taranaki and Wanganui.



PLEASE QUOTE THIS NUMBER
IN YOUR REPLY.

NIU TIRENI.

J1905/1886

TARI WHAKAHAERE ORA MO
(Department of Public Hea

N06/40

Memorandum for

Wanganui. Jan. 15th, 1905.

The Waldegrave Esqr.
Under Secretary for Justice.
Wellington.

FILE N/206

see J1905/1760

Sir

I beg to acknowledge the receipt of your letter of the 10th instant. As regards the question of destitution among the natives I may say that reports are greatly exaggerated. I came right through the districts where there was supposed to be so much destitution and nowhere were the natives in a starving condition. The potato crop has been affected with the blight and as a consequence the natives planted most of their eating potatoes. There was thus a scarcity of potatoes but there was no starvation. I was surprised on reaching Wanganui to find that there had been such an outcry and I immediately wrote you saying that the story was exaggerated.

There is no doubt that if the late crop of potatoes fails the Maoris will be in a bad way later on. The Mayor of Wanganui had started a Foodless Natives Fund but the Maoris were not so much in need of actual

PLEASE QUOTE THIS NUMBER

IN YOUR REPLY.

NIU TIRENI.

FILE N/206

TARI WHAKAHAERE ORA MO TE KATOA
(Department of Public Health),

Memorandum for

Poneke, ..., 190

food as spraying machines to save their crops. I was at Koriniti, when they asked that spraying machines be sent instead of some of the food, and I wrote to Mr Bignell the Mayor of Wanganui, that the Maoris of Koriniti would prefer spraying machines to food.

I have recently been through the Taranaki district and there the potato crop is in a worse condition than up the Wanganui River; for spraying is unknown amongst the Natives of that district. The Wanganui Natives have bush right at their doors full of wild pigs and native food such as mamaku, mouku etc whereas in Taranaki the bush is far back. The Taranaki Maoris are in a far worse condition than the Wanganuis and yet there has been no complaint or story from there. Therefore I can only repeat that the outcry as to the condition of the up river Natives has been very much exaggerated. I nowhere observed any signs of destitution much less starvation. They have been busy spraying their crops with the pumps supplied them so it is to be hoped that most of the crops will be saved

I remain etc.

– P. H. Buck. –

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: M21/6.]

Appendix 4

Letter from T. W. Kirk, Department of Agriculture, to Undersecretary, Native Department, re cost of spraying potatoes (26 September 1906).

J. D. RITCHIE,
SECRETARY FOR AGRICULTURE.
T. W. KIRK, F.L.S.,
BIOLOGIST.
P.O. Box 484.
Telegraph Address:
BIOLOGY,
WELLINGTON.

NATIVE 209 3

NEW ZEALAND.

NATIVE DEPARTMENT.
28 SEP. 1906

Department of Agriculture.

DIVISIONS OF BIOLOGY, HORTICULTURE, AND PUBLICATIONS,
H.M. CUSTOMS BUILDING,

Wellington, ~~26th September~~, *190*6.

H.F.Edgar Esq.,
Under-Secretary Native Dept.,
W E L L I N G T O N

Dear Sir,-

Last year the cost of giving instruction to Natives in the spraying of potatoes was £148. We have on hand 10 Knapsack Pumps, 6 sets of Scales, eighteen 5 gallon and eight 10 gallon kegs, and 14 buckets. These were purchased by our Department but could be ~~sent~~ transferred to yours. I believe that we could arrange to let you have two men to give instruction, you, of course, undertaking to pay their wages, &c., and we could very likely obtain the services of two other men who are at present in private employment. The matter would probably cost you about Three hundred Pounds (£300).

Yours faithfully,

T. W. Kirk

Biologist

Hon. Native Minister
Will you authorise this expenditure.?
H. F. Edger

no action
[illegible] 25.10.06

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives reference: MA21/2.]

Appendix 5

Panuitanga. Instructions in Māori on how to prepare fungicide mixtures and apply to potato crops to prevent blight (17 August 1905).

FILE N/ 1

[He mea tango mai i roto i *Kahiti* Nama 39 i taia nei i te 17 o Akuhata, 1905.]

PANUITANGA.

TE MATE TAEWA.

Nga Purapura Taewa.—Mehemea ka taea me tuku nga purapura ki te rongoa e kiia nei he *Bordeaux mixture*, i mua mai i te whakatokanga (mehemea ra kaore i peratia i te hauhakenga) he mea penei me tenei e whai ake nei te mahi, ara:

Kia 6 nga pauna purutone (*bluestone*).
Kia 4 nga pauna raima tahu hou (*quicklime*).
Kia 5 nga pauna houra horoi (*washing-soda ranei*).
Kia 40 nga karani wai.

He kaaho te mea pai hai whakaranunga mo te rongoa nei, me kohi nga purapura ki roto ki tetahi kete, he mea hanga ki te waea, mea pera ranei, ka tuku ai ki roto ki te rongoa i te kaaho, kia kaua e roa atu i e rima mineti e ngaro ana i te wai, ka tango ake ka hora ai kia maroke. Otiia, he rite tonu te hanga i te rongoa nei me te hanganga o te rongoa mo te mahi mapu.

Te Mahi Mapu ina ka Tupu te Taewa.— He nui te mate i pa ki nga taewa i Niu Tireni nei, a koi nei te rongoa e kiia nei he *Bordeaux mixture* hei patu i taua mate, ara:—

Kia 4 nga pauna purutone (*bluestone*).
Kia 4 nga pauna raima tahu hou (*quicklime*).
Kia 5 nga pauna hora horoi (*washing-soda ranei*).
Kia 40 nga karani wai.

Tukua nga purutone ki roto ki te kaaho, tetahi mea hanga ki te papa ranei, kaua rawa ki te mea haeana, ringihia ki runga kia 5 nga karani wai, ka waiho ai kia rewa katoa nga purutone, ko te mea pai me kohi nga purutone ki roto ki tetahi peeke he mea tatahi te raranga, ka whakairi ai ki tetahi rakau i whakahipaetia ki runga ki te kaaho kia tautau ai nga purutone ki roto i te wai; mehemea e hiahiatia ana kia hohoro te rewa he pai noa atu te whakarewa ki te wai wera. Ko te raima me tuku ki roto i te taapu, pakete ranei, ka hoatu he wai kia iti, engari kia maku katoa nga raima kia hu ai nga raima, kia rewa katoa nga purutone hei reira ka hoatu te wai purutone ki roto ki te kaaho, me korori raua kia tino ranu rawa, katahi ka hoatu te toenga o te 40 karani wai ki roto, waiho ai kia tu ana kia tatu ki raro nga para o te raima.

Ko te mea tika hei ringihanga i te rongoa nei ki runga ki nga taewa he papu mapu (*spray-pump*) whai *cyclone, Bordeaux nozzle ranei* (ara he mea whakapiko nga puta rerenga mai o te rongoa kia taea ai a raro o nga rau); me timata te mapu i te mea ka 6 nga iniihi te roroa o nga tupu o te taewa tae atu ki te 9 nga iniihi, kia tekau nga ra i muri mai me mapu ano kia toru nga mapunga. Me tino kaha te mapu i raro i nga rau tatemea e hua mai ana te mate i reira.

Kua kitea e pangia ana nga taewa e te mate me mapu ano.

A te rua me te toru o nga mapunga, me te mapunga i nga taewa kua nunui nga tupu, a kua ahua maro hoki nga rau me hanga te rongoa nei kia ahua kaha ake—ara kia 6 nga pauna purutone (*bluestone*), kia 4 nga pauna raima tahu hou (*quicklime*), kia 5 nga pauna houra horoi (*washing-soda ranei*).

Mehemea ka ua i roto i nga haora e toru e wha ranei i muri i te mapunga, i te mea kahore ano kia maroke noa nga rongoa i runga i nga rau me mapu ano ina ka pai te rangi.

Ki te pangia kinotia he taewa i te mate nei me keri tonu, engari i mua i te keringa me tapahi nga rau ka tahu ai ki te ahi, ma tenei hoki e whakamate te miriona o nga heeki o te mate nei, e kore ai e pa atu ki nga taewa ora, e heke atu ranei ki nga taewa. Me tupato rawa te mahi kowhiri i nga taewa; ki te kitea he taewa e ahua mate ana me tahu tonu ki te ahi, tatemea ki te uru he taewa mate ki roto ki te rua ka pirau katoa nga taewa o roto o taua rua.

Mehemea ka tino whakahaerea tikatia nga kupu tohutohu nei, e kore te mate nei e hora haere, ma te mahi mapu nei e arai. Ki te kore e mahia, heoi ano ka mate nga maara taewa i te aitua nei.

He nui nga maara taewa kua whakaorangia i te rongoa nei, ara i te *Bordeaux mixture*, a e tino tau ana kia mapua nga taewa ahakoa kaore ano kia pangia e te mate, e rite ana hoki tenei ki te mahi inihua, e arai ana hoki i te mate aitua nei.

E taea ana a raro o nga rau o nga tata te mapu ki te papu whai *cyclone*, *Bordeaux nozzle*, *side-delivery cyclone nozzle ranei*, ara he mea whakapiko nga puta rerenga mai o te rongoa kia taea ai a raro o nga rau. A te wa e hauhakea ai nga taewa i te ngahuru e haere ake nei, me tuku nga purapura ki te *Bordeaux mixture*, me taugo ake, me hora kia maroke, a me waiho i roto i tetahi whare e puta nei te hau ki roto, kaua rawa e kohia ki roto ki te rua.

He tikanga pai te rui raima tahu hou ki runga ki nga taewa, i kawea atu ki roto ki nga whare takoto ai hei kai hei purapura ranei, ma reira hoki e mau ai te pakari me te ora o te taewa.

Kupu Whakatupato. — He paitini te purutone, na reira kia tupato rawa kaua te waiho o te kaaho kei hoatu he wai inu, he kai ranei ki roto tu ai, a mate iho te tangata.

Ko nga purutone tika ko nga mea e kaha rawa ana te puru. Ke nga raima hei nga mea hou (ara *quicklime*). Kaua rawa e whakarewangia te purutone ki roto ki nga mea haeana.

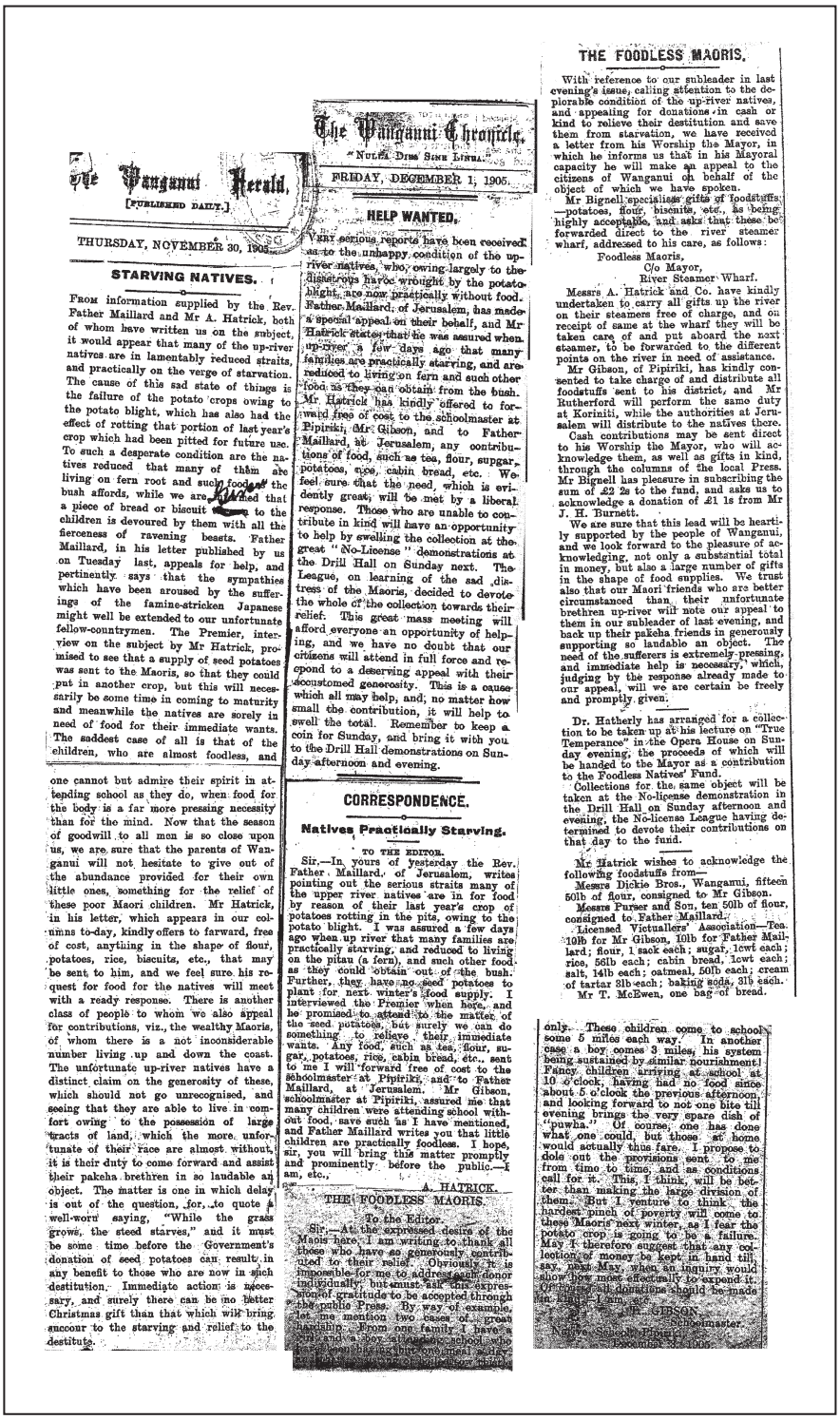
Me riringi te rongoa ki nga taewa i muri tonu iho i te whakaranunga i nga rongoa e rua, mehemea ka roa e tu ana, ara, ka uuku atu i te rua-tekau-ma-wha nga haora e tu ana te rongoa, ka heke te kaha. Ka oti te eka kotahi te riringi ki te 75 karani o te rongoa nei.

I taia i runga i te Mana o te Kawanatanga o Niu Tireni, o HOANI MAKAE, Kai-ta a te Kawanatanga, Poneke.

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: MA21/5.]

Appendix 6

Articles in *Wanganui Chronicle* re 'Starving Natives', 'Foodless Maoris', (30 November 1905; 1 December 1905).



The Wanganui Herald,
[PUBLISHED DAILY.]
THURSDAY, NOVEMBER 30, 1905.

STARVING NATIVES.

FROM information supplied by the Rev. Father Maillard and Mr A. Hatrick, both of whom have written us on the subject, it would appear that many of the up-river natives are in lamentably reduced straits, and practically on the verge of starvation. The cause of this sad state of things is the failure of the potato crops owing to the potato blight, which has also had the effect of rotting that portion of last year's crop which had been pitted for future use. To such a desperate condition are the natives reduced that many of them are living on fern root and such foods as the bush affords, while we are assured that a piece of bread or biscuit is a treat to the children is devoured by them with all the fierceness of ravening beasts. Father Maillard, in his letter published by us on Tuesday last, appeals for help, and pertinently says that the sympathies which have been aroused by the sufferings of the famine-stricken Japanese might well be extended to our unfortunate fellow-countrymen. The Premier, interview on the subject by Mr Hatrick, promised to see that a supply of seed potatoes was sent to the Maoris, so that they could put in another crop, but this will necessarily be some time in coming to maturity and meanwhile the natives are sorely in need of food for their immediate wants. The saddest case of all is that of the children, who are almost foodless, and one cannot but admire their spirit in attending school as they do, when food for the body is a far more pressing necessity than for the mind. Now that the season of goodwill to all men is so close upon us, we are sure that the parents of Wanganui will not hesitate to give out of the abundance provided for their own little ones, something for the relief of these poor Maori children. Mr Hatrick, in his letter, which appears in our columns to-day, kindly offers to forward, free of cost, anything in the shape of flour, potatoes, rice, biscuits, etc., that may be sent to him, and we feel sure his request for food for the natives will meet with a ready response. There is another class of people to whom we also appeal for contributions, viz., the wealthy Maoris, of whom there is a not inconsiderable number living up and down the coast. The unfortunate up-river natives have a distinct claim on the generosity of these, which should not go unrecognised, and seeing that they are able to live in comfort owing to the possession of large tracts of land, which the more unfortunate of their race are almost without, it is their duty to come forward and assist their pakeha brethren in so laudable an object. The matter is one in which delay is out of the question, for, to quote a well-worn saying, "While the grass grows, the steed starves," and it must be some time before the Government's donation of seed potatoes can result in any benefit to those who are now in such destitution. Immediate action is necessary, and surely there can be no better Christmas gift than that which will bring succour to the starving and relief to the destitute.

The Wanganui Chronicle.
"NULLA DIES SINE LINEA."
FRIDAY, DECEMBER 1, 1905.

HELP WANTED.

VERY serious reports have been received as to the unhappy condition of the up-river natives, who, owing largely to the disastrous havoc wrought by the potato blight, are now practically without food. Father Maillard, of Jerusalem, has made a special appeal on their behalf, and Mr Hatrick states that he was assured when up-river a few days ago that many families are practically starving, and are reduced to living on fern and such other food as they can obtain from the bush. Mr Hatrick has kindly offered to forward free of cost to the schoolmaster at Pipiriki, Mr Gibson, and to Father Maillard, at Jerusalem, any contributions of food, such as tea, flour, sugar, potatoes, rice, cabin bread, etc. We feel sure that the need, which is evidently great, will be met by a liberal response. Those who are unable to contribute in kind will have an opportunity to help by swelling the collection at the great "No-License" demonstrations at the Drill Hall on Sunday next. The League, on learning of the sad distress of the Maoris, decided to devote the whole of the collection towards their relief. This great mass meeting will afford everyone an opportunity of helping, and we have no doubt that our citizens will attend in full force and respond to a deserving appeal with their accustomed generosity. This is a cause which all may help, and, no matter how small the contribution, it will help to swell the total. Remember to keep a coin for Sunday, and bring it with you to the Drill Hall demonstrations on Sunday afternoon and evening.

CORRESPONDENCE.

Natives Practically Starving.

TO THE EDITOR.

Sir,—In yours of yesterday the Rev. Father Maillard, of Jerusalem, writes pointing out the serious straits many of the upper river natives are in for food by reason of their last year's crop of potatoes rotting in the pits, owing to the potato blight. I was assured a few days ago when up river that many families are practically starving, and reduced to living on the pitau (a fern), and such other food as they could obtain out of the bush. Further, they have no seed potatoes to plant for next winter's food supply. I interviewed the Premier when here, and he promised to attend to the matter of the seed potatoes, but surely we can do something to relieve their immediate wants. Any food, such as tea, flour, sugar, potatoes, rice, cabin bread, etc., sent to me I will forward free of cost to the schoolmaster at Pipiriki, and to Father Maillard, at Jerusalem. Mr Gibson, schoolmaster at Pipiriki, assured me that many children were attending school without food, save such as I have mentioned, and Father Maillard writes you that little children are practically foodless. I hope, sir, you will bring this matter promptly and prominently before the public.—I am, etc.,

A. HATRICK.

THE FOODLESS MAORIS.

To the Editor.

Sir,—At the expressed desire of the Maoris here, I am writing to thank all those who have so generously contributed to their relief. Obviously it is impossible for me to address each donor individually, but must ask this expression of gratitude to be accepted through the public Press. By way of example, let me mention two cases of great hardship. From one family I have a girl and a boy at school who [illegible] only one meal a day [illegible] only. These children come to school some 5 miles each way. In another case a boy comes 3 miles, his system being sustained by similar nourishment! Fancy children arriving at school at 10 o'clock, having had no food since about 5 o'clock the previous afternoon, and looking forward to not one bite till evening brings the very spare dish of "puwha." Of course, one has done what one could, but those at home would actually thin fare. I propose to dole out the provisions sent to me from time to time, and as conditions call for it. This, I think, will be better than making the large division of them. But I venture to think the hardest pinch of poverty will come to these Maoris next winter, as I fear the potato crop is going to be a failure. May I therefore suggest that any collection of money be kept in hand till, say, next May, when an inquiry would show how most effectually to expend it. Of course, all donations should be made [illegible]—I am, etc.,

[illegible] GIBSON,
Native School, Pipiriki, schoolmaster.
December 30, 1905.

THE FOODLESS MAORIS.

With reference to our subleader in last evening's issue, calling attention to the deplorable condition of the up-river natives, and appealing for donations in cash or kind to relieve their destitution and save them from starvation, we have received a letter from his Worship the Mayor, in which he informs us that in his Mayoral capacity he will make an appeal to the citizens of Wanganui on behalf of the object of which we have spoken.

Mr Bignell specialises gifts of foodstuffs—potatoes, flour, biscuits, etc., as being highly acceptable, and asks that these be forwarded direct to the river steamer wharf, addressed to his care, as follows:

Foodless Maoris,
C/o Mayor,
River Steamer Wharf.

Messrs A. Hatrick and Co. have kindly undertaken to carry all gifts up the river on their steamers free of charge, and on receipt of same at the wharf they will be taken care of and put aboard the next steamer, to be forwarded to the different points on the river in need of assistance.

Mr Gibson, of Pipiriki, has kindly consented to take charge of and distribute all foodstuffs sent to his district, and Mr Rutherford will perform the same duty at Koriniti, while the authorities at Jerusalem will distribute to the natives there.

Cash contributions may be sent direct to his Worship the Mayor, who will acknowledge them, as well as gifts in kind, through the columns of the local Press. Mr Bignell has pleasure in subscribing the sum of £2 2s to the fund, and asks us to acknowledge a donation of £1 1s from Mr J. H. Burnett.

We are sure that this lead will be heartily supported by the people of Wanganui, and we look forward to the pleasure of acknowledging, not only a substantial total in money, but also a large number of gifts in the shape of food supplies. We trust also that our Maori friends who are better circumstanced than their unfortunate brethren up-river will note our appeal to them in our subleader of last evening, and back up their pakeha friends in generously supporting so laudable an object. The need of the sufferers is extremely pressing, and immediate help is necessary,' which, judging by the response already made to our appeal, will we are certain be freely and promptly given.

Dr. Hatherly has arranged for a collection to be taken up at his lecture on "True Temperance" in the Opera House on Sunday evening, the proceeds of which will be handed to the Mayor as a contribution to the Foodless Natives' Fund.

Collections for the same object will be taken at the No-license demonstration in the Drill Hall on Sunday afternoon and evening, the No-license League having determined to devote their contributions on that day to the fund.

Mr Hatrick wishes to acknowledge the following foodstuffs from—

Messrs Dickie Bros., Wanganui, fifteen 50lb of flour, consigned to Mr Gibson.

Messrs Purser and Son, ten 50lb of flour, consigned to Father Maillard.

Licensed Victuallers' Association—Tea, 10lb for Mr Gibson, 10lb for Father Maillard; flour, 1 sack each; sugar, 1cwt each; rice, 56lb each; cabin bread, 1cwt each; salt, 14lb each; oatmeal, 50lb each; cream of tartar 3lb each; baking soda, 3lb each.

Mr T. McEwen, one bag of bread.

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: M21/16.]

Appendix 7

Letter from Undersecretary Native Department, to Minister re 'Seed potatoes for Maoris' (25 June 1906).

57

N. 1906/40

FILE N/199

SEED POTATOS FOR MAORIS.

Hon. Native Minister.

A number of applications for seed potatos for Maoris for the ensuing season ,are waiting action. And as the planting season is approaching, there is no time to lose.

As far as I can judge, about 100 tons will be needed. for the several districts in the North Island.

Rev. A.O.Williams,of Whanganui, has been specially interesting himself in the matter.(See his letter within).

I suggest that the leading merchants in Wellington be asked to quote prices,for seed to be imported from Australia, as imported seed would be more likely to be free from blight.

The varieties should be (1) Up to date, (2) Northern Star, (3). Early Rose. This is Rev Mr Williams' recommendation.

I think also a circular should be drawn up,and printed (in Maori) for distribution along with the seed.

It might be best to make a charge ,of say 5/. to 7/6 per cwt for any quantites over one cwt supplied to one man. Leaving it to the discretion of the distributor to give out in quantities of less than one cwt ,free, to those who cannot afford to pay.

Rev. Mr Williams considers that it is necessary for the Maoris to receive personal instruction during the period of spraying ; he offers to do this,in his own district,for bare travelling expenses, say £10.

The first thing is to get quotations of price. Shall I obtain these. ?

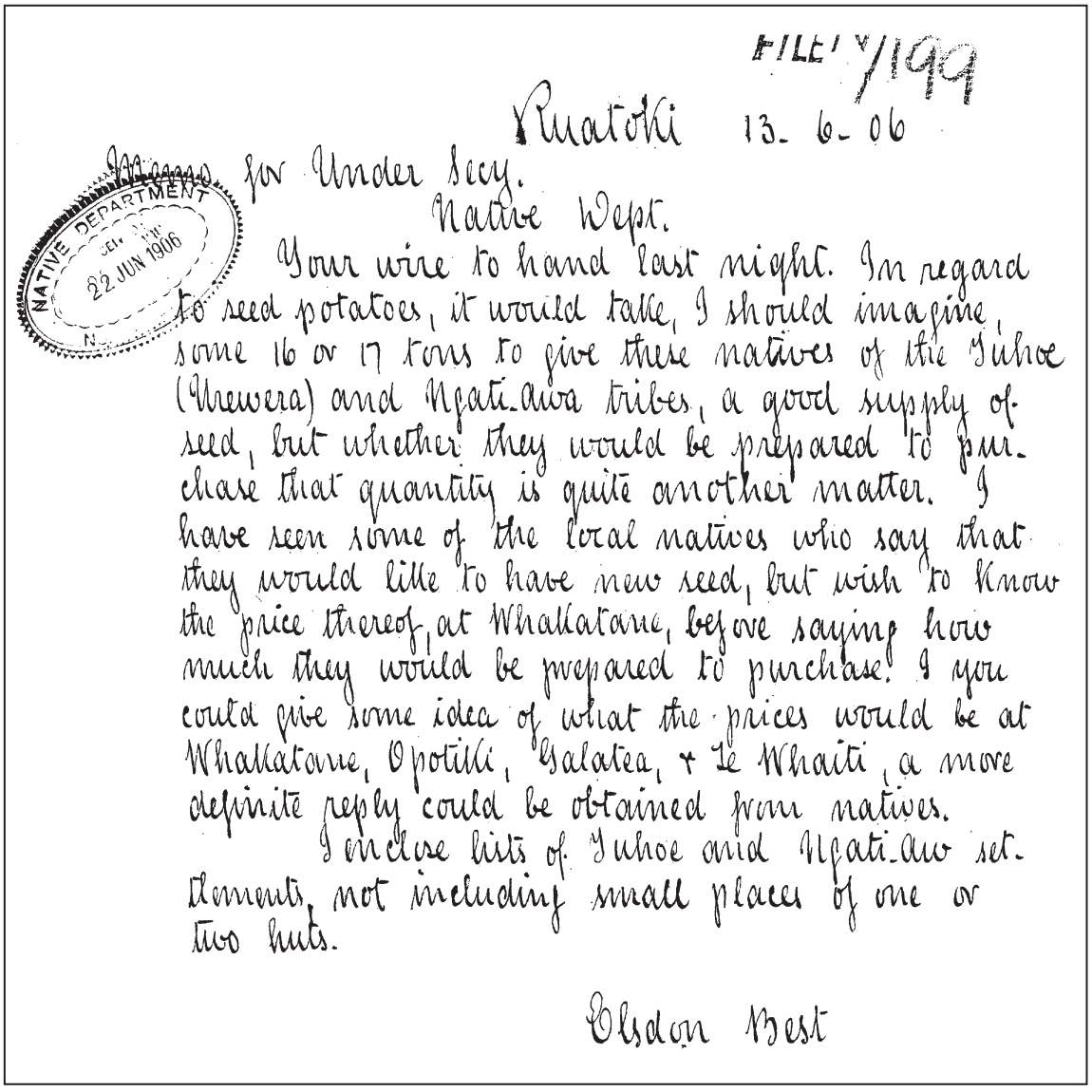
It will be necessary,I think, to take a special vote,of say £1,500.

H.F. Edger
U.S.
25.6.06.

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: MA21/3.]

Appendix 8

Memo to Undersecretary, Native Department, from Elsdon Best re 16 or 17 tons of seed potatoes required by Ngāti Awa and Tuhoe (13 June 1906).



FILE 1/194

Ruatoki 13. 6. 06

NATIVE DEPARTMENT 22 JUN 1906

for Under Secy.
Native Dept.

Your wire to hand last night. In regard to seed potatoes, it would take, I should imagine, some 16 or 17 tons to give these natives of the Tuhoe (Urewera) and Ngati-Awa tribes, a good supply of seed, but whether they would be prepared to purchase that quantity is quite another matter. I have seen some of the local natives who say that they would like to have new seed, but wish to know the price thereof, at Whakatane, before saying how much they would be prepared to purchase. If you could give some idea of what the prices would be at Whakatane, Opotiki, Galatea, & Te Whaiti, a more definite reply could be obtained from natives.

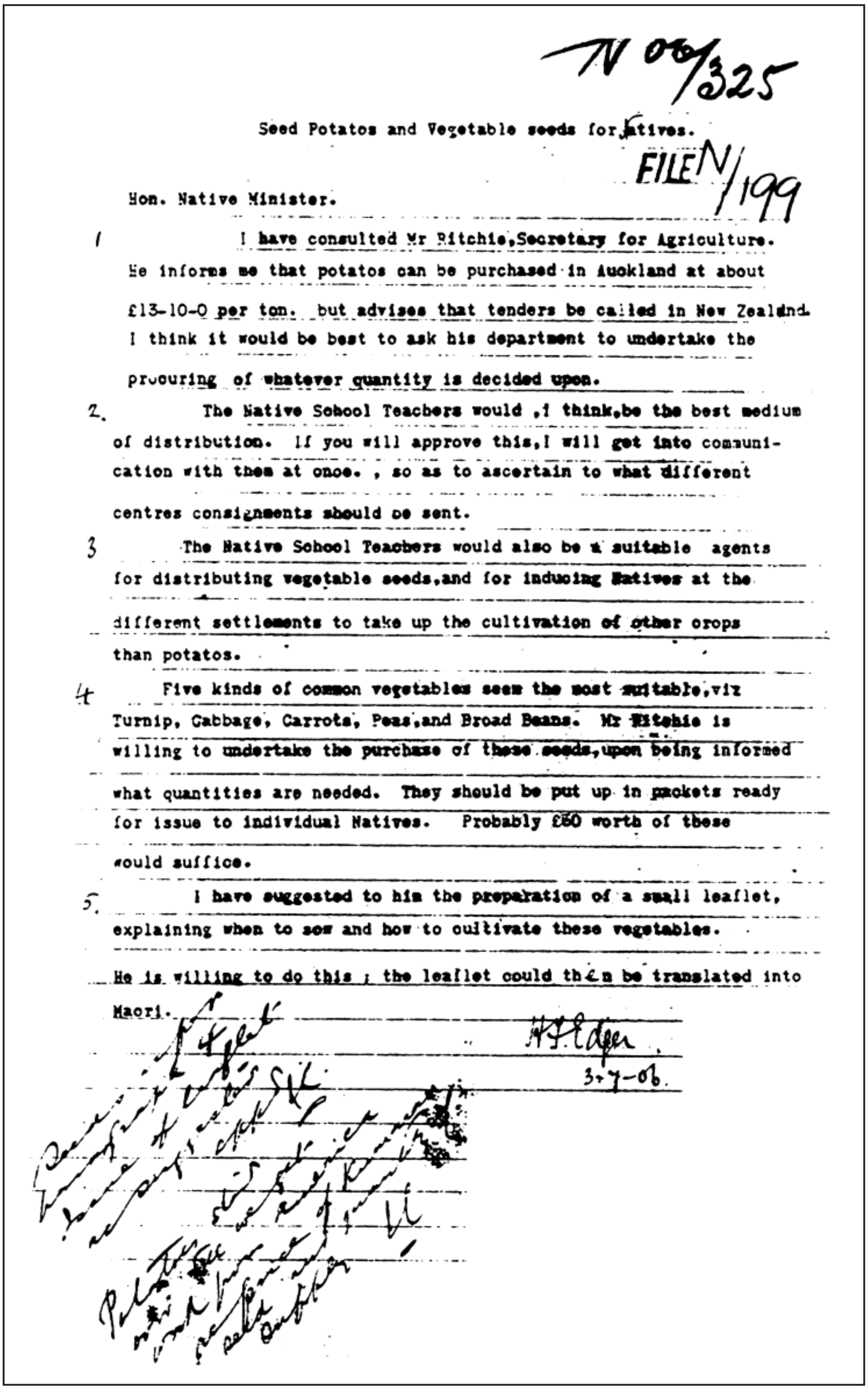
I enclose lists of Tuhoe and Ngati-Awa settlements, not including small places of one or two huts.

Elsdon Best

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: M21/3, NO6/43 (N204/5).]

Appendix 9

Letter from Undersecretary, Native Department, to Minister re purchase of seed potatoes and vegetable seed. Native schools best medium for distribution (3 July 1906).



N 06/325

Seed Potatos and Vegetable seeds for Natives.

FILE N/199

Hon. Native Minister.

1 I have consulted Mr Ritchie, Secretary for Agriculture. He informs me that potatos can be purchased in Auckland at about £13-10-0 per ton. but advises that tenders be called in New Zealand. I think it would be best to ask his department to undertake the procuring of whatever quantity is decided upon.

2. The Native School Teachers would, I think, be the best medium of distribution. If you will approve this, I will get into communication with them at once., so as to ascertain to what different centres consignments should be sent.

3 The Native School Teachers would also be a suitable agents for distributing vegetable seeds, and for inducing Natives at the different settlements to take up the cultivation of other crops than potatos.

4 Five kinds of common vegetables seem the most suitable, viz Turnip, Cabbage, Carrots, Peas, and Broad Beans. Mr Ritchie is willing to undertake the purchase of these seeds, upon being informed what quantities are needed. They should be put up in packets ready for issue to individual Natives. Probably £50 worth of these would suffice.

5. I have suggested to him the preparation of a small leaflet, explaining when to sow and how to cultivate these vegetables. He is willing to do this; the leaflet could then be translated into Maori.

H. F. Edger.
3-7-06.

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: MA21/3.]

Appendix 10

Memo from Native Department to teachers at native schools re need for seed potatoes in their districts.

FILE IV/ 199 3

CIRCULAR.

Native Department,

WELLINGTON, 15TH JULY, 1906.

MEMORANDUM for the Teacher of the Native School,

A FEW days ago I addressed to you a circular requesting you to undertake the distribution of vegetable seeds to the Maoris of your district, and to inform me what probable number of persons you could distribute to.

I have now to consult you regarding seed-potatoes. The Hon. Native Minister proposes to supply a certain quantity of seed-potatoes to the Maoris of the North Island—of blight-proof varieties, if possible; also seed-kumeras in some districts. Would you kindly state whether the Maoris of your district need assistance in this direction; and, if so, what quantity would be required for distribution through you. Of course, economy will need to be observed; seed will not be given free to those Maoris who are sufficiently well off to be able to pay. The arrangements will probably be that quantities exceeding 1 cwt. to one person will have to be partly paid for, say at the rate of 5s. to 7s. 6d. per cwt., which will be about half cost. Smaller quantities to be distributed at the discretion of the local agents.

I shall be glad of **a prompt reply** stating the quantity needed in your district.

H. F. EDGER,
Under-Secretary.

120/7/1906—6226]

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: MA21/4.]

Appendix 11

Kahui o Nui Tireni. Instructions to Māori on growing vegetables (16 August 1906).

KO TE

KAHITI O NIU TIRENI.

HE MEA TA I RUNGA I TE MANA O TE KAWANATANGA.

PONEKE, TAITE AKUHATA 16, 1906.

TARI WHAKAHAERE I NGA MAHI AHU WHENUA O NIU TIRENI.

(JOHN D. RITCHIE, Hekeretari.)

KUPU TOHUTOHU MO TE WHAKATO I NGA KAI E WHAI AKE NEI.

Tanapu (Turnips), ara, nga tu ahua e pai ana hei whakato ki roto ki nga kaari. Ko te wa hei ruinga i nga purapura, me timata i Akuhata tae noa ki a Maehe. Ka oti te karikari o te maara me rakaraka kia kore rawa he pokurukuru. Hei te rangi paki ka mahi i nga raina (drills) ka rui i nga purapura, kia kore ai te oneone e piri ki te rakaraka. Me hanga nga raina (drills) kia rua inihi te hohonu a kia tekau ma rima inihi te tatahi. Kia tatahi te rui i nga purapura kei puputu rawa te tupu ake. Ki te puputu rawa ka uaua te hutihuti kia tatahi a he maha nga mea e kino. Ka rarahi nga tupu ara ka taea te nanao e te ringa me hutihuti etahi, ko nga mea e waiho kia tupu kia ono kia waru ranei inihi te tatahi.

Kaua e ruia kia nui rawa i te ruinga kotahi, notemea ina hutia hei kai kaore e taea te rongoa mo te wa roa. Ruia kia iti te maara, a kia pau nga wiki e ono ka rui atu ano kia pera ano te rahi, me pera tonu te rahi o te mahi ia ono wiki a taea noatia nga ra o Maehe, a hei taua marama ka rui kia rahi noa atu te maara hei kai mo te hotoke, notemea kei te hotoke ka taea te rongoa nga tanapu, e kore e pirau wawe.

Tuwiiti Tanapu (Swede Turnips).—Ko nga ra hei ruinga, ko nga ra whakamutunga o Oketopa tae noa ki te mutunga o Noema. Me karikari te maara ka rakaraka kia kore he pokurukuru, a hei te ra paki ka rui. Kia tekau ma rima inihi te tatahi o nga raina (drills), a kia rua inihi te hohonu. Ka tupu ake, ka rarahi, ara, kia taea e te ringa te nanao, me hutihuti etahi; ko nga mea e waiho kia tekau ma rua inihi te tatahi. Me rui kia rahi te maara, notemea ka mau tonu e kore e pirau a pau noa te hotoke.

Kareti (Carrots).—Ko nga wa hei ruinga ko Akuhata, ko Hepetema, ko Oketopa ranei, kia ai ai hei kai mo te raumati tae atu ki te hotoke. Kia rua inihi te hohonu o nga raina (drills). Me karikari te maara kia ngawari, kaua he pokurukuru kaua he taru. Kia tatahi te rui i nga purapura notemea he uaua rawa te hutihuti kareti kia tatahi ina puputu te tupu ake.

Purapura Kapeti (Cabbage seed).—Hei kai mo te raumati me te ngahuru, me rui nga purapura i Akuhata i nga ra tuatahi ranei o Hepetema. Hei kai mo te hotoke, me rui i te whakamutunga o Noema i te timatanga ranei o Tihema. Me rui nga purapura ki te maara iti, mama te oneone, taru kore. Kaua e puputu rawa te rui. Ka mutu te rui me rakaraka te maara. Ki te haere te manu ki te kai i nga purapura me huhi atu ki te rarauhe, kia tupu ake ka tango atu. Me rangaranga nga kapeti e rite ana mo te pera. Me kowhiti ko nga kapeti rarahi ka rangaranga ko era. Me rarangi te whakatō kia toru tekau inihi te tatahi, a kia pera ano hoki te tatahi i roto i nga raina. Kia rarahi ake etahi ka rangaranga atu ano, a me pera haere tonu. Kaua e tukuna kia nunui rawa nga kapeti ka rangaranga ai, kei ngehe kei tokoroa te tupu.

Take Kapeti (Cabbage plants.)—Me whakato ki te whenua motomoto, ki te whenua makuku. He pai kia tata te maara ki te awa wai kia taea ai te ringiringi ki te wai i nga rangi kaha te ra. Ko nga whenua pai mo te taewa ka pai hoki mo te kapeti. Ki te taea te hoatu he maniua mo te maara katahi ka pai rawa. Me poupou haere ki te rakau nga rua hei tiringa mo ia kapeti, ka peehi i ia take ki nga ringaringa kia u nga take. Ka ahua roa nga kapeti e tupu ana me tapuke. Me ngaki tonu te maara ki te ho kia ngawari tonu ai kia kore ai he taru.

Piini Whanui (Broad Beans).—Te wa hei tiringa ko Hune tae noa ki a Tihema. Ko nga mea i tiria wawetia ko nga mea era e nui te hua. Ko nga raina (drills) me hanga ki te mata o te ho, kia whanui, a ka whakato kia rua rarangi ki roto ki ia raina. Kia ono inihi te tatahi o ia piini. Tetahi mahi me poupou haere ki te rakau puhuki kia toru inihi te hohunu o nga rua kia ono inihi te tatahi ka hoatu kia kotahi piini ki roto ki ia rua. Kia ono inihi te teitei o ia piini ka tapuke ki te oneone. Ka tekau ma rua inihi te teitei me poro atu nga tihi, kia kore ai e teitei rawa te tupu, kia maha ai nga peka kia nui ai te hua.

Pahinepa (Parsnips).—Te wa hei ruinga. Mehemea hei kai mo te hotoke me rui i a Noema, mehemea hei kai mo te ngahuru hei Hepetema rui ai. Me hohonu te karikari i te maara ka rakaraka kia kore he pokurukuru he taru ranei. Kia rua inihi te hohunu o nga raina (drills) a kia tekau ma rima inihi te tatahi. Me takirua me takitoru ranei te whakato, kia waru inihi te tatahi. Kia tupu ake ka hutihuti etahi ka waiho kia waru inihi te tatahi o nga tupu. Me ngaki tonu te whenua ki te ho kia kore ai he taru a pau noa te raumati.

Pi (Peas).—Kia pai te oneone mo enei, kaua e tino maroke kaua e tino makuku pera me nga whenua pai mo te taewa. Hanga he raina (drills) kia wha inihi te hohonu kia toru tekau inihi te tatahi. Kia kotahi koata purapura pi mo nga tiini e toru. Kia tupu kia wha inihi te teitei ka tapuke kei whatiwhati i te hau. Kaore e roa e pai ana te pi hei kai koipi, na reira kia iti te maara i ia ruinga, a kia taka te toru wiki ka rui atu ano, pera tonu a tae noa ki a Hanuere. Mehemea e meatia ana kia pakari ra ano nga pi ka kohi ai, me rui i te marama o Hepetema kia rite te nui o te maara ki ta te whakaaro i pai ai. Ka tae ki te wa e murua ai, kia tupato rawa, ara, i mua mai o te maroketanga o nga kopaki me hutihuti nga take o nga pi ka waiho i waenga, ki te kore e peratia ka ngaheru katoa nga pi ki te whenua. He kai pai te pi mo te hotoke, engari me matua tuku ki te wai mo nga haora torutoru nei i mua o te kohuatanga.

Aniana (Onions).—Te taima hei ruinga kei nga ra timatanga o te wha, ara kia pai te maroke o te oneone. Me karikari te whenua, me parau ranei ka rakaraka, ka waiho kia rua kia toru ranei nga ra kia maroke a runga ka rui ai. Me huri te maara ki te roora, me takatakahi ranei kia ahua maro. He mea nui tenei, engari mehemea he whenua one matua kaore he tikanga e whakamarotia ai te maara. Me hanga nga raina (drills) ki te rakau puhuki, kia kotahi inihi te hohonu, kia tekau ma rua inihi te tatahi. Kia tatahi rawa te rui i nga purapura. Te tikanga pai e ngaro ai nga purapura, me hikoi haere e te tangata i nga raina, ki tetahi taha o te raina tetahi waewae ki tetahi taha tetahi, ka hikoi ka hakuku haere i to muri waewae a ma te rekareke e huri atu nga oneone e ngaro ai nga purapura. Kia rarahi nga tupu ara, kia pai mo te hutihuti, me hutihuti kia ono inihi te tatahi o nga mea e waiho kia tupu. Me ngaki tonu a waenganui o nga raina, me hutihuti nga taru katoa. Ka maroke nga rau me hutihuti nga aniana, ka waiho kia takoto kia ngaua e te ra mo etahi rangi torutoru nei ka whakairi ki roto i te whare ki te wahi maroke hei kai mo te hotoke.

Kara-Rapi (Kohl Rabi).—Te taima hei ruinga, ko Akuhata ko Hepetema, ko Oketopa ranei. Me parau te whenua, me mahi ranei ki te ho kia watea i te taru. Me habae nga raina kia tekau ma waru inihi te tatahi, a kia tatahi hoki te rui i nga purapura. Kia tupu nga purapura me hutihuti etahi, kia tekau ma rua inihi te tatahi o nga mea e waiho. Me watea te maara i te taru.

Tari Maori,
Poneke, Akuhata, 1906.

T. W. KIRK, F.L.S.,
Government Biologist.

PANUITANGA KOOTI WHENUA MAORI.

Kooti Whenua Maori ki Opotiki a te 28 o nga ra o Akuhata, 1906.

Tari Kooti Whenua Maori, Akarana.

HE panuitanga tenei kia mohiotia ai ka tu te Kooti Whenua Maori ki Opotiki a te 28 o nga ra o Akuhata, 1906, ki te whakawa ki te uiui hoki i nga tikanga o nga tono e mau i te Kupu Apiti i raro iho nei, he mea tuku mai ki te Kai-Rehita, ki te uiui hoki i nga tikanga o etahi atu mea e whakatakotoria tikatia mai ki te aroaro o te Kooti.

I tuhia i tenei te 7 o nga ra o Akuhata, 1906. Na A. H. HORANA, Tepuni Kai-Rehita.

[Akarana, 1906–26.]

KUPU APITI.

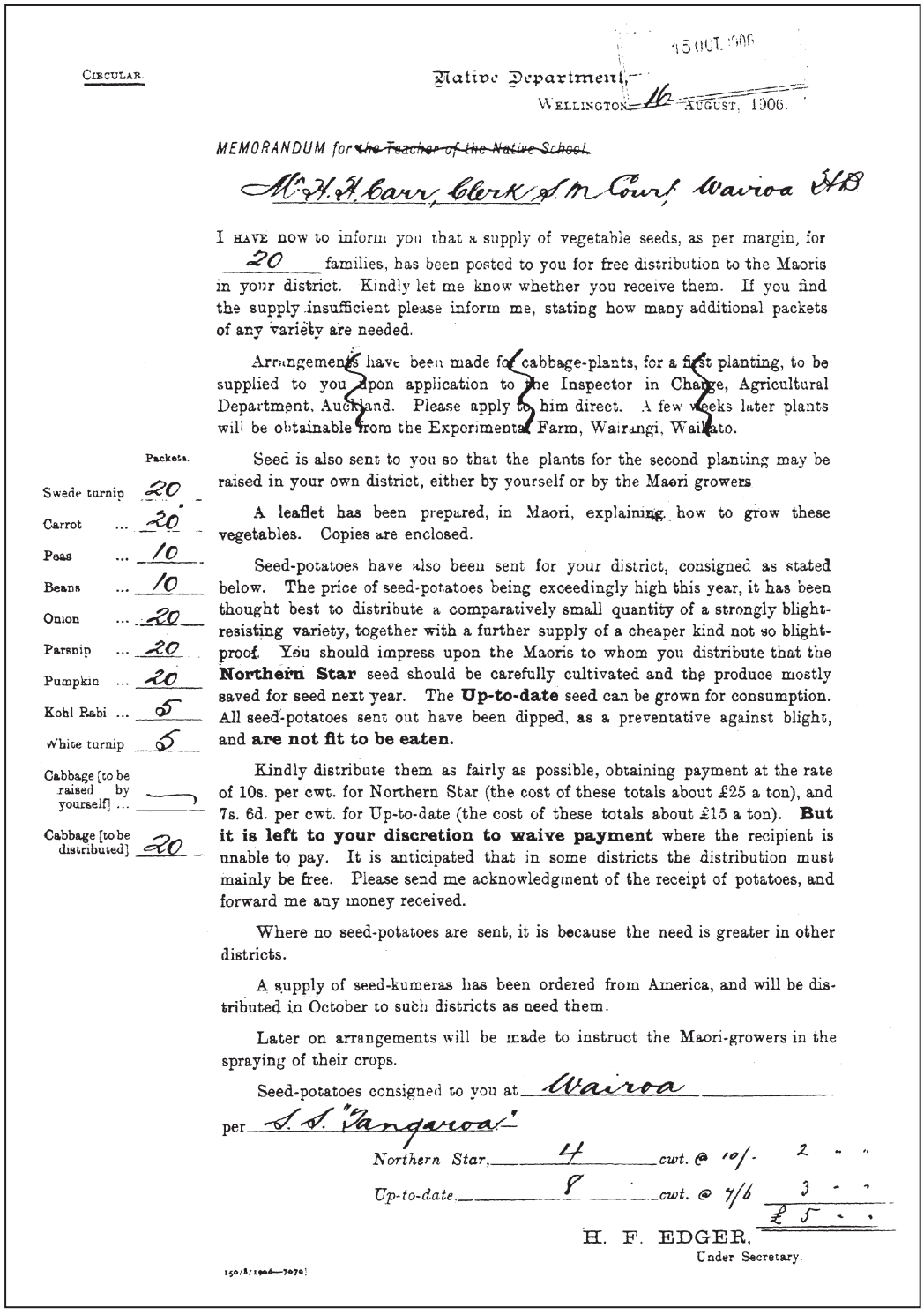
He Tono kia Whakatoputia i raro i nga tikanga o nga Tekiona 122, 123, me 124, o "Te Ture Kooti Whenua Maori, 1894," nga tangata no ratou te Whenua e Whakahuatia ana i raro iho nei, kia noho ratou hei Kaporeihana, a kia Whakaturia hoki he Komiti mo taua Whenua.

Nama	Te ingoa o te Kai-tono.	Te ingoa o te whenua.	Nga eka.	Takiwa.
			E. R. P.	
1	Tepaea Kingi, Hoera Katipo, Keraama Tautuhi, Patata Himikare, Riuimona Rehua, Kereti Taungahuru, me Ritihia Rewharewha (862–17, 4/12)	Kapuarangi Nama 1 West ..	11,474 2 0	Pei o Pereti.
2	Hemi te Rua, Te Ranapi Hinu, Honatana Tarahaere, Rewharewha Putiki, Hunia te Urukaiata, Hami Kingi, me Patihana Hohepa (862–18, 4/13)	Kapuarangi Nama 1 West ..	11,474 2 0	Pei o Pereti.
3	Ngaronui Makiwhara, Te Naki, Otene te Rangai, Matenga Taua, Mahu Peka, Hakipene Hakabaka, me Mio Tupe (862–19, 4/14)	Kapuarangi Nama 1 West ..	11,474 2 0	Pei o Pereti.

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: MA21/5.]

Appendix 12

Native Department memo to teachers of native schools re distribution of vegetable seeds and seed potatoes (August 1906).



CIRCULAR.

Native Department,
WELLINGTON, 16 AUGUST, 1906.

MEMORANDUM for ~~the Teacher of the Native School~~
Mr H. H. Carr, Clerk S.M. Court, Wairoa H.B.

I HAVE now to inform you that a supply of vegetable seeds, as per margin, for 20 families, has been posted to you for free distribution to the Maoris in your district. Kindly let me know whether you receive them. If you find the supply insufficient please inform me, stating how many additional packets of any variety are needed.

Arrangements have been made for cabbage-plants, for a first planting, to be supplied to you upon application to the Inspector in Charge, Agricultural Department, Auckland. Please apply to him direct. A few weeks later plants will be obtainable from the Experimental Farm, Wairangi, Waikato.

	Packets.
Swede turnip	20
Carrot ...	20
Peas ...	10
Beans ...	10
Onion ...	20
Parsnip ...	20
Pumpkin ...	20
Kohl Rabi ...	5
White turnip	5
Cabbage [to be raised by yourself] ...	—
Cabbage [to be distributed]	20

Seed is also sent to you so that the plants for the second planting may be raised in your own district, either by yourself or by the Maori growers

A leaflet has been prepared, in Maori, explaining how to grow these vegetables. Copies are enclosed.

Seed-potatoes have also been sent for your district, consigned as stated below. The price of seed-potatoes being exceedingly high this year, it has been thought best to distribute a comparatively small quantity of a strongly blight-resisting variety, together with a further supply of a cheaper kind not so blight-proof. You should impress upon the Maoris to whom you distribute that the **Northern Star** seed should be carefully cultivated and the produce mostly saved for seed next year. The **Up-to-date** seed can be grown for consumption. All seed-potatoes sent out have been dipped, as a preventative against blight, and **are not fit to be eaten.**

Kindly distribute them as fairly as possible, obtaining payment at the rate of 10s. per cwt. for Northern Star (the cost of these totals about £25 a ton), and 7s. 6d. per cwt. for Up-to-date (the cost of these totals about £15 a ton). **But it is left to your discretion to waive payment** where the recipient is unable to pay. It is anticipated that in some districts the distribution must mainly be free. Please send me acknowledgment of the receipt of potatoes, and forward me any money received.

Where no seed-potatoes are sent, it is because the need is greater in other districts.

A supply of seed-kumeras has been ordered from America, and will be distributed in October to such districts as need them.

Later on arrangements will be made to instruct the Maori-growers in the spraying of their crops.

Seed-potatoes consigned to you at Wairoa
per S.S. "Tangaroa"

Northern Star,	4	*cwt. @ 10/-*	2 - -
Up-to-date.	8	*cwt. @ 7/6*	3 - -
			£5 - -

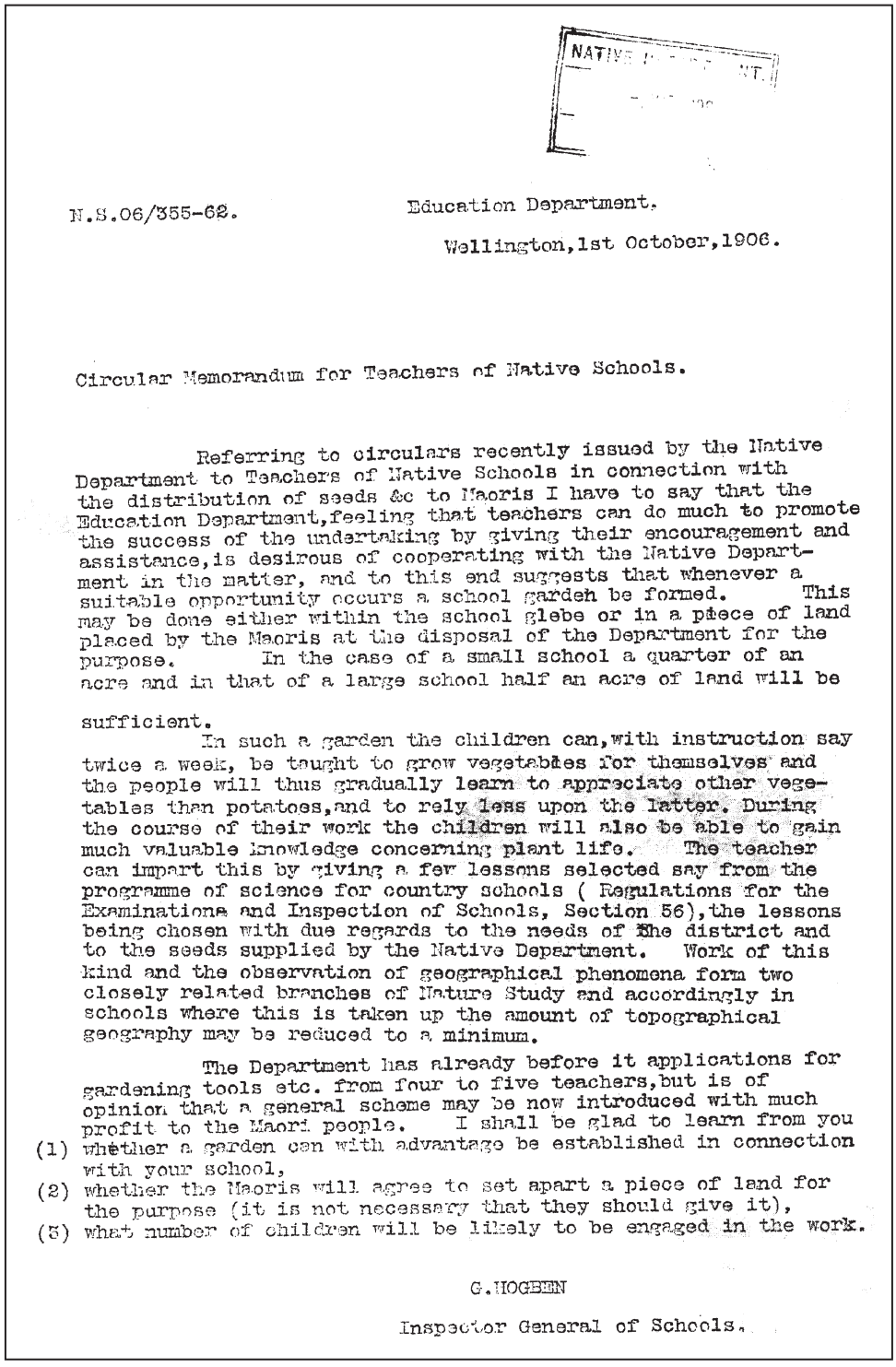
H. F. EDGER,
Under Secretary.

150/8/1906—7070]

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: MA21/7.]

Appendix 13

Memo from Inspector General of Schools for teachers of native schools re distribution of seeds and establishment of school vegetable gardens (1 October 1906).



N.S.06/355-62. Education Department.

Wellington,1st October,1906.

Circular Memorandum for Teachers of Native Schools.

Referring to circulars recently issued by the Native Department to Teachers of Native Schools in connection with the distribution of seeds &c to Maoris I have to say that the Education Department,feeling that teachers can do much to promote the success of the undertaking by giving their encouragement and assistance,is desirous of cooperating with the Native Department in the matter, and to this end suggests that whenever a suitable opportunity occurs a school garden be formed. This may be done either within the school glebe or in a piece of land placed by the Maoris at the disposal of the Department for the purpose. In the case of a small school a quarter of an acre and in that of a large school half an acre of land will be sufficient.

In such a garden the children can,with instruction say twice a week, be taught to grow vegetables for themselves and the people will thus gradually learn to appreciate other vegetables than potatoes,and to rely less upon the latter. During the course of their work the children will also be able to gain much valuable knowledge concerning plant life. The teacher can impart this by giving a few lessons selected say from the programme of science for country schools (Regulations for the Examinations and Inspection of Schools, Section 56),the lessons being chosen with due regards to the needs of the district and to the seeds supplied by the Native Department. Work of this kind and the observation of geographical phenomena form two closely related branches of Nature Study and accordingly in schools where this is taken up the amount of topographical geography may be reduced to a minimum.

The Department has already before it applications for gardening tools etc. from four to five teachers,but is of opinion that a general scheme may be now introduced with much profit to the Maori people. I shall be glad to learn from you

(1) whether a garden can with advantage be established in connection with your school,
(2) whether the Maoris will agree to set apart a piece of land for the purpose (it is not necessary that they should give it),
(3) what number of children will be likely to be engaged in the work.

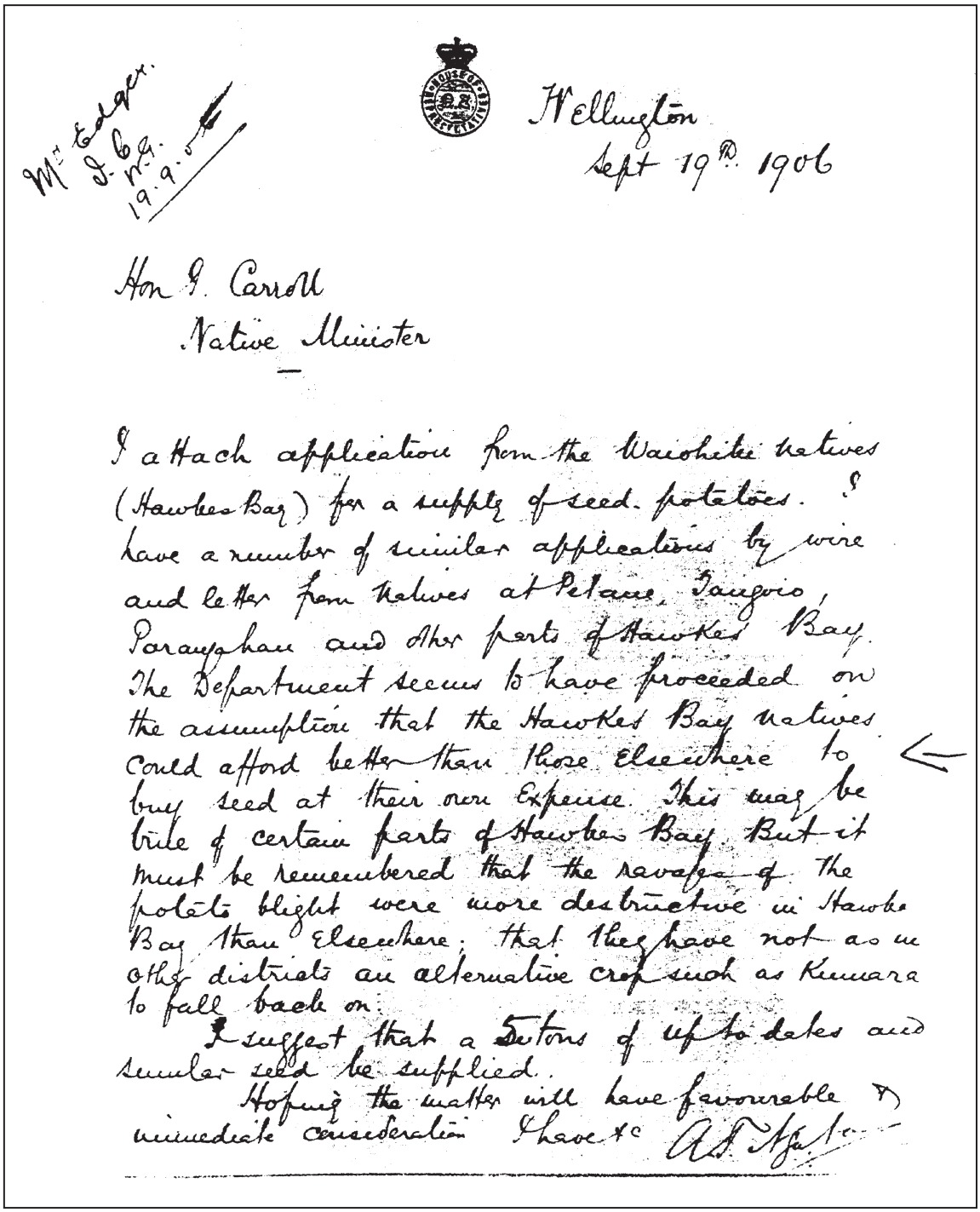
G.HOGBEN

Inspector General of Schools.

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: MA21/6.]

Appendix 14

Letter from Apirana Ngata to Hon J. Carroll, Native Minister, re need of Hawkes Bay natives for seed potatoes despite reports indicating they were relatively well off (19 September 1906).



Mr Edger
J. C.
19.9.06

Wellington
Sept 19th 1906

Hon J. Carroll
Native Minister

I attach application from the Waiohiki natives (Hawkes Bay) for a supply of seed potatoes. I have a number of similar applications by wire and letter from natives at Petane, Tangoio, Paraupahau and other parts of Hawkes Bay. The Department seems to have proceeded on the assumption that the Hawkes Bay natives could afford better than those elsewhere to buy seed at their own Expense. This may be true of certain parts of Hawkes Bay. But it must be remembered that the ravages of the potato blight were more destructive in Hawkes Bay than Elsewhere; that they have not as in other districts an alternative crop such as Kumara to fall back on.

I suggest that a 5 tons of up to date and similar seed be supplied.

Hoping the matter will have favourable & immediate consideration I have &c A. T. Ngata

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. Archives Reference: MA21/6.]

Appendix 15

Letter from government biologist to the Native Department re quotation for supply of kūmara from America (20 September 1906).

J. D. RITCHIE.
SECRETARY FOR AGRICULTURE.
T. W. KIRK, F.L.S.
BIOLOGIST.
P.O. BOX 464.
TELEGRAPHIC ADDRESS:
"SOIL, DEV,"
WELLINGTON.

NEW ZEALAND.

Department of Agriculture.

DIVISIONS OF BIOLOGY, HORTICULTURE, AND PUBLICATIONS,
H.M. CUSTOMS BUILDING,

Wellington, 20th September, 1906.

The Secretary,
Native Department.

Kumeras.

Adverting to our conversation re the above.

The kumeras are being obtained from Messrs Mamer & Co. of San Francisco, whose New Zealand Agent is Mr J. C. Spedding of Auckland.

The quotation is £10 (ten pounds) per ton c.i.f.: the American ton of two thousands pounds being meant.

Messrs Mamer & Co. ask that a letter of credit for the amount be sent to them at San Francisco. I would suggest that the money be forwarded through the New Zealand Government Agent at that place.

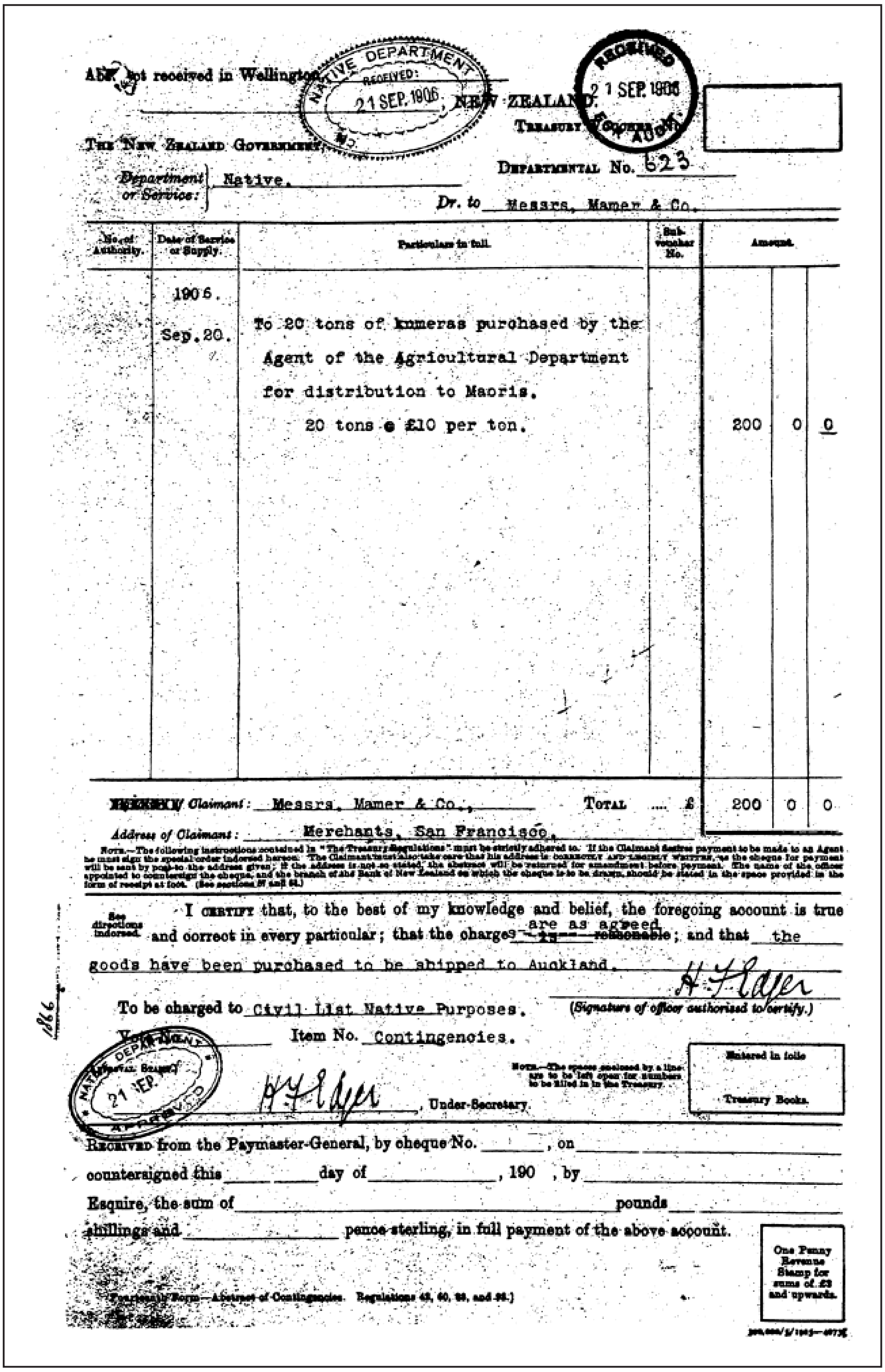
T. W. Kirk

Biologist.

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: MA21/8.]

Appendix 16

Purchase order/Treasury voucher for purchase of kūmara from America.



ABF. not received in Wellington NATIVE DEPARTMENT RECEIVED: 21 SEP. 1906 NEW ZEALAND. RECEIVED 21 SEP. 1906 FOR AUDIT

TREASURY VOUCHER

THE NEW ZEALAND GOVERNMENT

Department or Service: Native.

DEPARTMENTAL No. 623

Dr. to Messrs. Mamer & Co.

No. of Authority.	Date of Service or Supply.	Particulars in full.	Sub-voucher No.	Amount.		
	1906. Sep. 20.	To 20 tons of kumeras purchased by the Agent of the Agricultural Department for distribution to Maoris. 20 tons @ £10 per ton.		200	0	0
			TOTAL .... £	200	0	0

Claimant: Messrs. Mamer & Co.,

Address of Claimant: Merchants, San Francisco.

NOTE.—The following instructions contained in "The Treasury Regulations" must be strictly adhered to. If the Claimant desires payment to be made to an Agent he must sign the special order indorsed hereon. The Claimant must also take care that his address is correctly and legibly written, as the cheque for payment will be sent by post to the address given; if the address is not so stated, the abstract will be returned for amendment before payment. The name of the officer appointed to countersign the cheque, and the branch of the Bank of New Zealand on which the cheque is to be drawn, should be stated in the space provided in the form of receipt at foot. (See sections 57 and 58.)

See directions indorsed. I CERTIFY that, to the best of my knowledge and belief, the foregoing account is true and correct in every particular; that the charges are as agreed; and that the goods have been purchased to be shipped to Auckland.

H. F. Edger (Signature of officer authorised to certify.)

To be charged to Civil List Native Purposes.

Vote Native Item No. Contingencies.

NATIVE DEPARTMENT 21 SEP. APPROVED

H. F. Edger, Under-Secretary.

NOTE.—The spaces enclosed by a line are to be left open for numbers to be filled in in the Treasury.

Entered in folio Treasury Books.

RECEIVED from the Paymaster-General, by cheque No. ______, on ______ countersigned this ______ day of ______, 190 , by ______ Esquire, the sum of ______ pounds ______ shillings and ______ pence sterling, in full payment of the above account.

One Penny Revenue Stamp for sums of £2 and upwards.

Treasury Form—Abstract of Contingencies. Regulations 43, 60, 88, and 98.)

1866

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: MA21/8.]

Appendix 17

Letter to Minister, Native Department, from Undersecretary informing him the purchase order for kūmara cancelled.

PLEASE QUOTE THIS NUMBER

IN YOUR REPLY.

NEW ZEALAND

NATIVE DEPARTMENT,

Wellington, 1st October, 1906

Memorandum for Hon. Native Minister

A reply by cable has now been received from San Francisco, that "Kumeras will be shipped on 25th October, if good quality."

It will thus be the end of November before they will reach the Maoris in the different districts for planting. Under these circumstances I recommend that the order be cancelled, or – if this cannot be done – that the Kumeras be re-sold in San Francisco to the best advantage, through the Agricultural Department.

The money £200 has been forwarded through the Post Office, by last week's mail, but can be stopped, by cable.

H.F. Edger

1-10-06

Countermand order – too late for planting. [illegible] 1-10-06

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: MA21/8.]

Appendix 18

Letters (3) to Hon. Mr Carroll, Native Minister, from Māori requesting seed potatoes.

TRANSLATION

To the Hon. Mr Carroll Minister for Native Affairs,

Friend, greetings to you and your Government in the death of our matua the Right Hon. R.J.Seddon, P.C., who has departed from us to his Great Father in Heaven. Sufficient greetings.

Friend; this is a prayer from us the people of Oraka and Nga-whakaputaputa (asking) whether your Government will not support our application for potatoes: (We ask for) ten tons, for seed, with which to plant our cultivations.

The reason why we make this application is that we have the misfortune to have no potatoes in our cultivations, and because all our potatoes have been destroyed by the disease called the "Blight".

Therefore we pray your Government so kindly grant our request for potatoes in(this)our misfortune.

Sufficient friend; From us your very loving friends.

(sgd') HAPETA WINIATA,
and five others.

P. S.- And others also,men and women,numbering forty in all, at these two kaingas.

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: MA21/12.]

N 06/43

Pipiriki,

October 16th 1905.

FILE N/204/5

The Honourable Mr Carroll,

Minister for Native Affairs.

Greetings.

This is an application from your tribe the Whanganui requesting your Government to consider about giving your tribe some seed potatoes for our maintenance and that of our children, because last season our potatoes and seed were attacked with the potato disease and we have no seed potatoes now.

Therefore your people appeal to you to quickly send some seed this being the time for getting ready (for planting). this is the reason why we ask that the Whanganui cases be adjourned to March 1906 so that the people may be free to seek some means of support.

Your notice of the remedy for the potato blight that appeared in the Kahiti has been received, but not having any seed the remedy has not been tried yet, we therefore apply to you and your Government to show your aroha for your Maori people.

That is all.

From

Reone te Maungaroa,

and 49 others.

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: MA21/13, NO6/43, (N204/5).]

Seed potatoes N.1906/461

TRANSLATION.

FILE N/200

NATIVE DEPARTMENT.
17 JUL 1906
RECEIVED.

Peria, Mangonui;
2nd July, 1906.

To the Native Minister.

Friend Greeting.

This is a letter from me to you asking what does the Governor think about sending some seed potatoes for the (Maori) children attending the School at Peria ?.

This is one of the districts where the potato crop has failed. There are just a few kumaras. Some peoples supply of kumaras will be exhausted in August; and they will have to go with their children to look for a means of subsistence. The month after that other people will have to go away with their children.

I am greatly distressed about this position of affairs. They have been very diligent at working, but the potato disease has been so very disastrous(that)we shall probably not be able to punish the parents of the children if they take them away to search for sustenance for them.

Will you apply to the Governor that he consider over this matter ?.

Sufficient.

From MORE APERAHAMA.

Member of the Peria School Committee.

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: MA21/4.]

Appendix 19

Letter from Native Minister re supply and distribution of vegetable seeds and seed potatoes to Māori (9 August 1906).

NEW ZEALAND.

FILE N/201

Native Department, (Minister's Office)

Wellington, 9th August 1906

Sir,

I have the honour to acknowledge the receipt of your letter of the 30th ultimo, transmitting application from Hare Reweti Rongorongo for a supply of potatoes for Ngatiparewahawaha people and in reply to inform you that arrangements are being made to distribute seed potatoes and vegetable seeds to the Maoris whereever needed. As regards the West Coast Districts I have arranged that the distribution shall be attended to by the Reverends A. O. Williams and T. G. Hammond and Mr T. W. Fisher who will see that no Native settlements are overlooked.

I have the honour to be

Sir,

Your obedient servant

(Sd.) J Carroll.

John Stevens Esq.

M. H. R.

Bulls

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: MA21/16.]

Appendix 20

Northern Star. Page 22 from Hadfield, J. W., (1929). Potato culture: the maintenance of pure and vigorous crops; descriptions of the more important varieties. *New Zealand Department of Agriculture Bulletin 142*, 1–34.

Northern Star, Gamekeeper, Maori Chief, and Britain's Best.

The mixture which goes under the name of either Northern Star or Gamekeeper has not yet received much investigation. J. Beverley records (this *Journal*, Vol. X, p. 357) that there is a distinction between these two varieties in the flower, and considers it a mistake to deal with them as synonymous. He states that Gamekeeper, which is of New Zealand origin, is a selection from Northern Star. Maori Chief, another New Zealand variety, is also stated to be a selection from Northern Star, and appears similar in all respects, except that the tubers are white splashed with purple.

Britain's Best, a third New Zealand selection, may be classed as a Northern Star, from which it differs very little if at all.

The following description is adapted from British authorities. The writer has failed to obtain a type description constant in all respects, due, no doubt, to the presence of several varieties.

NORTHERN STAR (GAMEKEEPER, BRITAIN'S BEST, AND MAORI CHIEF).

Origin.—Not known, but was introduced to commerce by Findlay in 1900 or 1902, and caused much excitement in Great Britain, being sold for as much as £25 per tuber.

Habit.—Strong, upright, tall, and dense foliage.

Stem.—Wings waved. Colour 0–1, and extending to the midribs of the young leaves.

Leaf.—Dark grey-green. Leaflets small and pointed.

Inflorescence.—Short and inconspicuous. Flowers small, white, and rare; mostly drop before opening. Flower-buds markedly green.

Tuber.—Round. Skin white, moderately rough. Flesh white. Sprouts pink. Eyes medium and deep at rose end. There is a single spot of pink in the eye, most noticeable in the terminal buds, and some pink at the heel end of an immature tuber. Produces numerous long runners and small tubers.

Maturity.—Late main crop.

NOTES.—An undesirable variety for light land owing to the very large number of seed-size tubers produced. On heavy land its cooking-quality is decidedly inferior. It is distinctly disease-resistant, especially to late blight, and is therefore of considerable commercial value in certain parts of the North Island. Northern Star is the most common rogue in the commercial crops of white potatoes in this country.

Maori Chief is a white potato splashed with purple. See separate notes dealing with this group.

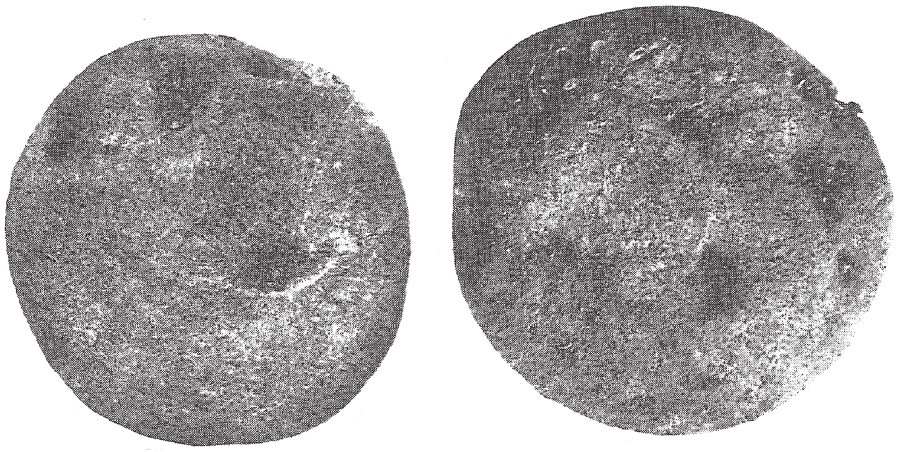
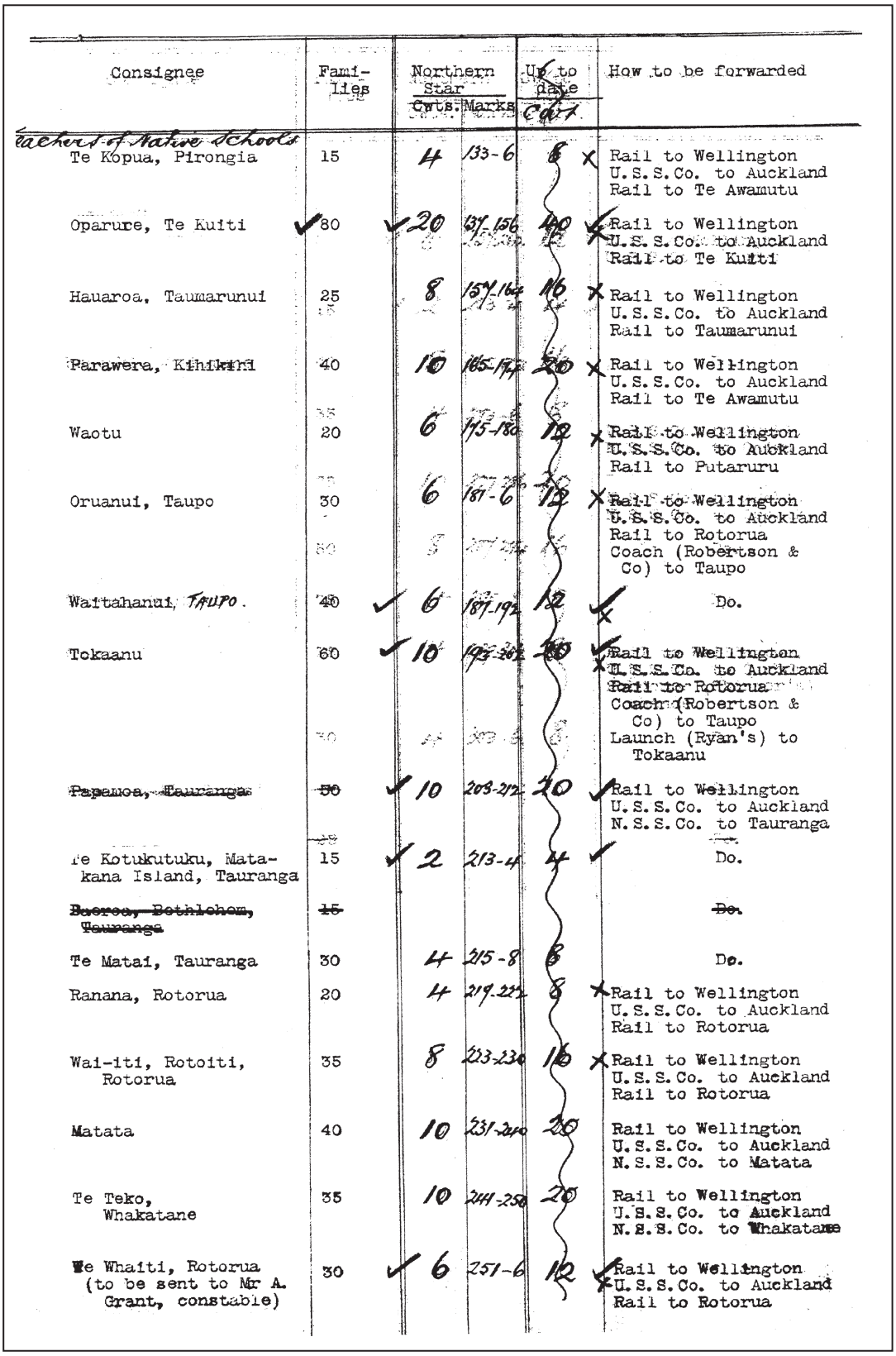


FIG. 9. NORTHERN STAR (LEFT) AND BRITAIN'S BEST.

Appendix 21

A distribution list for seed potatoes.



Consignee	Families	Northern Star Cwts.	Marks	Up to date Cwt.	How to be forwarded
Teachers of Native Schools					
Te Kopua, Pirongia	15	4	133-6	8	Rail to Wellington U. S. S. Co. to Auckland Rail to Te Awamutu
Oparure, Te Kuiti	80	20	137-156	40	Rail to Wellington U. S. S. Co. to Auckland Rail to Te Kuiti
Hauaroa, Taumarunui	25	8	157-164	16	Rail to Wellington U. S. S. Co. to Auckland Rail to Taumarunui
~~Parawera, Kihikihi~~	~~40~~	10	165-174	~~20~~	Rail to Wellington U. S. S. Co. to Auckland Rail to Te Awamutu
Waotu	20	6	175-180	12	~~Rail to Wellington~~ ~~U. S. S. Co. to Auckland~~ Rail to Putaruru
Oruanui, Taupo	30	6	181-6	12	~~Rail to Wellington~~ ~~U. S. S. Co. to Auckland~~ Rail to Rotorua Coach (Robertson & Co) to Taupo
Waitahanui, TAUPO.	~~40~~	6	187-192	12	Do.
Tokaanu	60	10	193-202	~~20~~	~~Rail to Wellington~~ ~~U. S. S. Co. to Auckland~~ ~~Rail to Rotorua~~ Coach (Robertson & Co) to Taupo Launch (Ryan's) to Tokaanu
~~Papamoa, Tauranga~~	~~50~~	10	203-212	20	Rail to Wellington U. S. S. Co. to Auckland N. S. S. Co. to Tauranga
Te Kotukutuku, Matakana Island, Tauranga	15	2	213-4	4	Do.
~~Bacroa, Bethlehem, Tauranga~~	~~15~~				~~Do.~~
Te Matai, Tauranga	30	4	215-8	8	Do.
Ranana, Rotorua	20	4	219-222	8	Rail to Wellington U. S. S. Co. to Auckland Rail to Rotorua
Wai-iti, Rotoiti, Rotorua	35	8	223-230	16	Rail to Wellington U. S. S. Co. to Auckland Rail to Rotorua
Matata	40	10	231-240	20	Rail to Wellington U. S. S. Co. to Auckland N. S. S. Co. to Matata
Te Teko, Whakatane	35	10	241-250	20	Rail to Wellington U. S. S. Co. to Auckland N. S. S. Co. to Whakatane
Te Whaiti, Rotorua (to be sent to Mr A. Grant, constable)	30	6	251-6	12	Rail to Wellington U. S. S. Co. to Auckland Rail to Rotorua

Appendix 22

Education Department circular on elementary practical agriculture for native schools.

N.S. '06/346/154

Education Department,
WELLINGTON, 24TH APRIL, 1907.

CIRCULAR MEMORANDUM

For the information and direction of TEACHERS OF NATIVE SCHOOLS.

ELEMENTARY PRACTICAL AGRICULTURE.

WHEREVER a suitable opportunity occurs a school garden should be formed. Except in a few cases, this should be done within the school glebe, a part of which may be set apart for the purpose, the area of the piece varying with the number of children to whom instruction is to be given. As the lessons are intended to be given on not more than two afternoons a week, the plots should not be too large. It will probably be found that a piece of land 20 ft. long by 10 ft. broad will be quite sufficient for two pupils to manage. Teachers should select the most suitable site, having due regard to aspect, shelter, and quality of the soil. The plots should be arranged so that the width extends north and south, in order to facilitate the cropping, and the vegetables should be planted in rows running across the plots from north to south, in order to get the best chance of thriving. Even where the soil is poor, the teacher can show how much may be done by careful cultivation. There should also be a plot left for flowers, and one for demonstration purposes and seed-beds.

The plots should be marked off by pegs firmly driven into the ground at the corners; each plot should be numbered, the numbers being written on the pegs. The tools should then be marked with corresponding numbers. Children should be encouraged to vie with each other in keeping their plots in good order. It is very important also that they should be encouraged to take proper care of their tools, keeping them clean and bright, and putting them away carefully after use.

Records should be kept by the children in charge of each plot, giving the operations of each day's work, dates of planting seeds, the names of varieties, &c. Observations of the weather, temperature, rainfall, &c., should also be carefully taken and recorded.

The produce of the plot may be disposed of at nominal charges to the pupils or their parents. The money thus received should be credited to the pupils in charge of the particular plot and devoted to the purchase of new seeds or prizes for the best results. Where this cannot be done, the various vegetables may be distributed free to the parents. The initial work of subdividing the ground, preparing it, and cultivating some of the common garden crops, will probably be sufficient for the first year.

The work in the garden should comprise :—

1. Preparation of the land; digging and trenching; thoroughly working the soil; the proper use of tools.
2. Drawing drills for reception of seeds; preparing seed-beds; methods of sowing seeds of various descriptions; depth at which to bury them; distances apart for the rows.
3. Raising and transplanting seedlings; importance of thinning early.
4. Experiments with various manures—*e.g.*, dung, bone-dust, superphosphate, blood manure, sulphate of potash, sulphate of ammonia.
5. Rotation and succession of crops.
6. Watering, feeding, cultivation, and management of crops—*e.g.*, peas, beans, turnips, carrots, parsnips, potatoes, kumaras, cabbages, onions, vegetable marrows, pumpkins, tomatoes.
7. Prevention of diseases—spraying potatoes.
8. Insect pests and their destruction.
9. Importance of keeping land free from weeds.
10. Gathering and storing crops.
11. Cultivation of flowering plants.

Where circumstances make the instruction convenient, the care of fruit trees and their methods of propagation may also be included.

Lessons in the first principles of agriculture must be given during the year. In all cases experiments and observation should precede the explanation, so that the pupils may have the opportunity of drawing their own conclusions.

Drawing will be found useful in all stages of the work—systematic exercises under this heading are accordingly recommended in connection with the instruction in practical agriculture, and will be accepted as part of the usual requirements in drawing.

Teachers will find a number of experiments suggested in the extract from the Regulations for the Inspection and Examination of Public Schools contained in the Department's Special Report on Educational Subjects No. 6, "Rural Science and Nature Study," a copy of which is being supplied to all Native schools.

The following are the tools which are usually required for each pair of pupils in charge of a plot: One Dutch hoe, one draw hoe, one fork, one spade, one rake.

In view of the desirability of minimising expense as far as possible, teachers are requested to apply only for such tools as they find to be absolutely necessary. Other necessaries such as lines, kits for carrying away weeds, &c., will most likely be procurable without difficulty, while for watering and other purposes kerosene-tins will no doubt be available.

W. J. ANDERSON,
for Inspector-General of Schools.

300/4/1907—4138]

Source: *Archives New Zealand/Te Rua Mahara o te Kāwanatanga*. Wellington Office. [Archives Reference: MA21/3.]