Part 2:  Cultural Sites in the Pacific

Unit 5: Papua New Guinea: Kuk Irrigation Ditches

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Figure 5.1. Map of Papua New Guinea

[Map of Papua New Guinea]
This chapter is about early **agriculture** in Papua New Guinea.

Papua New Guinea forms the eastern half of the island of New Guinea, the world’s second largest island. The western half, formerly Dutch New Guinea, now belongs to Indonesia and is called Irian Jaya. There are over 600 islands in PNG. In 1576, a Portuguese sea captain named the north coast *Illpas dos Papuas*, which meant land of frizzy-haired people. Later a Spanish explorer called it New Guinea because he thought the people looked like people he had seen on the Guinea coast of Africa.

### Glossary

<table>
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<th>Term</th>
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<tr>
<td><strong>Agriculture</strong></td>
<td>farming, cultivating land, raising crops, and feeding, breeding, and raising livestock</td>
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<td><strong>Irrigation</strong></td>
<td>To supply (dry land) with water by means of ditches, pipes, or streams; water artificially.</td>
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After reading this chapter you will be able to:

- Describe the location of Kuk
- Describe the agricultural activities found at Kuk
- Understand why sites are important for the study of history and culture
- Appreciate the traditional land use and stages in PNG history

### Historical background

People probably first set foot on New Guinea 50,000 years ago. They were fisher folk, hunters and gatherers, but gradually **agriculture** became the main way of life. Taro, banana, yams and sweet potato became their staple food crops.

The mainland and the larger islands are noted for their rugged mountain ranges. Several mountains are over 4,000 metres. The main island is dominated by a central mountain chain, called a
cordillera. This central cordillera is broken in places by broad river valleys such as the Waghi, Wau and Chimbu Valleys. Erosion is very severe because of the heavy rainfall. The eroded material is carried by the rivers to the swampy lowlands.

**Early agriculture**

People have probably lived in Papua New Guinea for longer than they have lived in many other Asian or Pacific countries. Archaeologists (people who study the material remains of the past) have found a 30,000 year-old stone axe in Morobe Province near Sialum. Near Mt Hagen they have found the remains of skilfully made gardens, which date back 10,000 years.

These earliest settlers had a long time to learn how to survive the environment of Papua New Guinea. Every group of people who lived in Papua New Guinea depended on land resources to produce almost everything they needed. So we can guess that over the centuries people came to know the best places for living and for growing crops.

**The world’s first gardeners**

The main valleys in the Central Highlands seem to have been settled about 10,000 years ago. The oldest evidence for the beginning of agriculture has been found in the Waghi Valley of the Western Highlands Province.

Archaeologists digging at Kuk swamp in the Waghi Valley, found people had selected plants with useful characteristics and planted them in favourable locations. This occurred as soon as it was warm enough after the close of the last Ice Age. Kuk has been dated at 9,000 years ago. The evidence at Kuk indicates that these Pacific Islanders were among the world’s first gardeners.

**Kuk irrigation ditch**

The evidence obtained at Kuk consists of drainage channels, earth mounds and stake holes. It is likely that dry land agriculture was also practised. The evidence indicates that draining of the swamps was not continuous. Different drainage systems operated during six phases from just 100 years ago to as far back as 9000 years ago. The oldest phase of swamp drainage has been found at Kuk near the town of Mt Hagen.

**The phases of swamp use at Kuk**

**Phase 1 (9,000 years ago)**

Plants that grew in water (called moisture-tolerant) and others that needed regular watering (called moisture-sensitive) were being grown. The evidence at Kuk consists of a two metre wide by one metre deep drain, stake holes and drainage basins. No wooden artefacts survive from this phase.
Phase 2 (6,000 – 4,500 years ago)

Both moisture-sensitive and moisture-tolerant crops were being grown. The features consist of large drains and circular mounds one to one and half metres in diameter. These are surrounded by a web of small channels and basins dug in the clay. No wooden artefacts survive from this phase.

Phase 3 (3,500 – 2,300 years ago)

Both moisture-tolerant and moisture-sensitive crops were being grown. The features consist of large drains and chains of small inter-connected basins. The basins were probably for the moisture-tolerant crops. A wooden spade dating to 4,000 years ago has been recovered from a ditch at Tambul and a woman’s digging stick from Warrawou dating to 2,300 years ago. Gourds have been recovered from two sites.

Phase 4 (400 – 250 years ago)

Unlike the previous variety of garden features, the emphasis in Phase 4 appears to be on growing one crop. The features consist of large drains and long parallel, narrow garden drains, deeper than they are wide, with similar drains joining them at right angles. The likely crop is taro. A woman’s digging stick from this period was found in a ditch at Minjigina, part of a Draepi-Minjigina estate. No wooden artefacts survive at Kuk.

Phase 5 (400 – 250 years ago)

Again, the emphasis appears to be on growing one crop. The evidence of Phase 5 consists of large and minor drains (similar to those in Phase 4). The ditches are wider, shallower and flat-bottomed, and the network appears to be less open. Wooden digging sticks and spades are found in ditches at Kuk, Kotna and Kana.

Phase 6 (250 – 100 years ago)

The emphasis continues on growing one crop. The features are large drains and a network of garden ditches which are constructed quite close together. As they become tighter and more grid-like, they resemble the chequer-board pattern of gardens and ditches used in dry-land sweet potato cultivation in the upper Waghi valley today.

These changes reflect the introduction of the sweet potato. The sweet potato is moisture-sensitive and requires intensified drainage.
For the first time houses appear in the Kuk swamp. There are 3 types: one round, another rectangular with rounded ends, and the later with a stall of pigs. Wooden diggings sticks and spades were found at Kuk and elsewhere.

**Figure 5.2 Maximum known extent of swamp drainage Phases 1 – 3.**

**Figure 5.3 Maximum known extent of swamp drainage Phases 4 – 6.**
The current ownership and conservation of Kuk

Kuk station is located some five kilometres to the north east of Mt Hagen city. It can be reached by 10-15 minutes driving from Kagamuga airport. The land around Kuk is owned by a Melpa speaking tribe called Kawelka. The Kuk site has been recently resettled. Population pressure and the wish to earn cash from crops and timber are some of the reasons why the Kawelka tribe decided to settle on this land.

Legislation and protection

Gardening and the felling of gum trees for subsistence and commercial use poses a danger to the site. Some archaeological sites and ancestral places are destroyed by natural forces such as flooding, coastal erosion and landslides. But, gardening, housing and earth works also increase the rate of loss. Quite quickly the remains of early human settlements just disappear from our landscape.

Today the speed, strength and power of the bulldozer are an added danger. Local, provincial and national authorities now need to review and enforce the ‘Natural Cultural Property (preservation) Act’ of 1965. This Act safeguards cultural sites and artefacts in Papua New Guinea.

Attempts are now being made to create appropriate legislation in Parliament to protect Kuk irrigation ditch. If action is not taken quickly, the nation’s oldest agricultural remains will be destroyed, and an important piece of Papua New Guinea’s cultural heritage will be lost forever.

Questions and Activities

1. Write one or two sentences for each question:
   (a) Where in Papua New Guinea is Kuk located?
   (b) What are the main features (or remains) of Kuk?
   (c) Describe the environment at Kuk
2. What evidence was discovered at Kuk that indicated **agriculture** had been practised in the area?

3. How long ago did agricultural activities begin at Kuk?

4. Why were these ditches made?

5. Name two factors that made the Kawelka tribe move to and live in the Kuk area?

6. In your opinion, why is a bulldozer more dangerous to a site than traditional **agriculture**?

7. List the dates of the 6 phases of **agriculture** at Kuk (Put a suitable heading on the list)

8. In 50 words, say why Kuk is important as a world heritage site.

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