Title: Evaluation of Water and Soil Suitability for Farming Freshwater Prawns (Macrobrachium rosenbergii) in the Inland Baining of East New Britain, Papua New Guinea

Introduction:

Freshwater prawn farming is a growing industry in Papua New Guinea, offering opportunities for economic development and food security. The Inland Baining area in East New Britain Province has been identified as a potential site for prawn farming due to its abundant water resources. This study aimed to evaluate the suitability of water and soil in the Inland Baining area for freshwater prawn farming.

Objectives:

The project had two primary objectives:

1. *Water parameter assessment*: To determine the suitability of water parameters, including temperature, dissolved oxygen (DO), and pH, for prawn farming in the Inland Baining area.

2. *Soil clay content evaluation*: To assess the clay content of the soil using the Water Retention Test and the Soil Ball Test, and determine its suitability for pond construction.

Methodology:

Study Area:

The study was conducted in the Inland Baining area of East New Britain Province, covering three rivers: Tavaluai, Milo, and Keravat.

Water Quality Testing:

Water samples were collected along 1 km stretches at each river, with measurements taken at 250m intervals using a DO meter. Lab testing was conducted for pH levels.

Soil Testing:

Clay content was evaluated using two methods:

1. Water Retention Test: Measuring seepage rate from pits to determine soil's water-holding capacity.

2. Soil Ball Test: Assessing soil cohesion and clay content.

Analysis:

Data was compared with standard ranges from relevant literature using descriptive statistics in Excel.

Key Outcomes:

Water Suitability:

Water quality in Tavaluai River was within acceptable ranges for prawn farming, with:

- DO levels around 7 mg/L

- Temperature around 29.6°C

- pH levels around 7.6

Milo and Keravat Rivers also showed suitable water parameters, but with more fluctuations likely due to human activity and environmental factors.

Soil Suitability:

Tavaluai River soil had satisfactory clay content for pond construction, with:

- Seepage rate of 4.94 mm/hr

- Good soil ball test result

Milo and Keravat Rivers had high seepage rates (>8 mm/hr), indicating low clay content and poor pond suitability.

Conclusion:

The study concluded that Tavaluai River is the most suitable site for prawn pond construction. The results provide essential data for local aquaculture planning and can guide future freshwater prawn farming in Papua New Guinea.

Recommendations:

Based on the findings, it is recommended that:

1. Tavaluai River: Be considered for prawn farm development due to its suitable water and soil parameters.

2. Further studies: Be conducted to assess other factors affecting prawn farming, such as feed availability and market demand.

3. Sustainable practices: Be implemented to ensure environmentally friendly and socially responsible aquaculture practices.

This study contributes to the development of sustainable aquaculture practices in Papua New Guinea and provides valuable insights for stakeholders involved in freshwater prawn farming.