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LESSON NOTES

School: Ba Sangam College
Subject: Agricultural Science

Year/ Name: 13 _____
Worksheet: 21

Strand	AS 13.4 Livestock Production
Sub Strand	AS13.4.1.3 Challenges and Suggested Solutions
Content Learning Outcome	At the end of this lesson student should be able to identify the classification, species and the major groupings of Prawns in Fiji.

LESSON: SUMMARIZED NOTES ON PRAWN

Lesson Outcome: at the end of this lesson the student will:

- i. Discuss confidently the prawn culture systems.
- ii. discuss the process and consideration of prawn pond stocking, various care and management practices carried out in prawn farming, diseases that could affect prawns and how to control them, importance of proper harvesting methods, post-harvest management of Prawn, various marketing methods of prawns, uses of prawns and it's by-products.

Notes:

Prawn Culture Systems	Continuous system involves regular stocking of PL and the culling (selective harvesting) of market sized prawns, batch system consists of stocking each pond once, allowing the animals to grow until prawns achieve the average market size, and then totally draining and harvesting it.
Pond Stocking	Pond stocking is very important and there are factors to be considered. The lower stocking rates will tend to result in prawns of a larger average size. Higher stocking rates tend to result in greater total productivity (mt/ha/crop) but smaller average prawn size. The stocking rate you choose should therefore be adjusted according to the previous experience in the farm or locality, and the size of marketable animals desired.
Care And Management	Benthic fauna are very important features in the ecosystem of freshwater prawn ponds, forming part of the food chain for prawns. Fertilization to encourage the development of benthic fauna is therefore recommended. Animal manures is not encouraged can be substituted by other organic materials, such as distillery by-products or other plant residues. Whether the feeds are pelleted mixtures or individual ingredients (such as distillery or brewery by-products), they actually act as both feeds and fertilizers. At the beginning their primary use may be as an organic fertilizer that enhances the availability of natural feeds in the rearing ponds. Later, as the prawns grow, the feeds become more and more directly consumed by the prawns. The application of feeds/fertilizers from the beginning of the rearing period

	not only increases the availability of natural food but also decreases the transparency of the water, therefore reducing the growth of weeds
Diseases And Control	<p>Diseases Name: Muscle necrosis Control: Follow the good management practices to prevent the occurrence of this disease.</p> <p>Diseases Name: Parasites Control: Follow the good management practices to prevent the occurrence of this disease.</p> <p>Diseases Name: Fouling Control: Moulting temporarily frees prawns from these fouling micro-organisms.</p> <ul style="list-style-type: none"> • encouraging lower water transparency through feed management. • good management, especially the correct treatment of incoming water, the proper cleaning of tank bottoms, and the treatment of Artemia cysts. • In both hatcheries and ponds the avoidance of over-feeding and increased water exchange help to minimize the fouling of animals.
Harvesting Methods	<p>Two methods of harvesting:</p> <ol style="list-style-type: none"> 1. Culling (sometimes called cull-harvesting) - is used to harvest market-sized animals from the pond at intervals and removes the faster growing prawns. The rest of the prawns are caught when the ponds are drained at the end of the grow-out cycle. 2. Draining (drain-harvesting)- Partially draw down the pond water level during the night before harvesting commences.
Post - Harvest Management	<p>Sold Fresh:</p> <ul style="list-style-type: none"> • Live prawns should be placed straight onto ice; this results in a slow decline in body temperature, causes stress, and accelerates the deterioration process which occurs after death. <p>Sold Frozen:</p> <ul style="list-style-type: none"> • Freezing at temperatures below 10°C is essential; storage at -20°C or below is recommended; storage at -30°C is ideal. • To avoid physical damage to the muscle structure of the prawns, it is recommended that the freezing temperature passes from -1°C to -5°C as rapidly as possible (not more than 2 hours). <p>Live Sales:</p> <ul style="list-style-type: none"> • Prawns to be transported live should be washed in non-chlorinated clean water and then brought to the same temperature that can be maintained during transport to prevent thermal shock through sudden transfer into water of a totally different temperature. • It is recommended that you keep the transport temperature at about 20-22°C. Use small amounts of ice, if necessary, to keep this temperature constant.
Marketing Methods	<p>Prawn for the market must strictly follow the post -harvest process to ensure product safety and prolonged self-life. It should also be displayed in clean and hygienic conditions. Those selling the prawns must be clean and properly dressed. This will allow customer attraction and loyalty.</p> <p>There are three ways of marketing prawns:</p> <ul style="list-style-type: none"> • Marketing of freshwater prawns alive • Marketing of freshwater prawns fresh or frozen • Marketing of freshwater prawns at the farm gate
Uses Of Prawns and It's By-Products.	<p>Uses of prawns:</p> <ul style="list-style-type: none"> • Knorr Shrimp Seasoning • Jumbo Prawn crackers

- Performer-tourist attraction

Uses of by-product:

- The wastewater from ponds containing prawns being reared in monoculture or polyculture with fish can be used for the irrigation of crops.
- by-product of the shrimp industry –used as Shrimp meal used for livestock feed.
- Uses of Prawn Shell Waste (Chitin/Chitosan)
 - Biomedical: wound healing; cholesterol reduction; dental adhesive; drug release.
 2. -Food: Clarifying agent for fruit juice and wine.

Activity worksheet 21:

1. Differentiate between Intensive cultures, extensive culture, and semi-intensive culture.

(3 marks)

2. Discuss the differences between the continuous system, batch system, combined and the modern culture

(3 marks)

3. Discuss the different system used to raise prawns, state their advantages and disadvantages.

(5 marks)

4. Explain some causes of mortalities in PL during the stocking process and discuss ways to overcome these factors.

5. Give one reason for floating the PL inside a transparent bag in the pond before slowly releasing them. **(2 marks)**

6. Discuss 2 reasons why organic matter is not recommended in the pond. **(1 mark)**

7. Discuss any 2 practices you can carry out to prevent theft in your prawn farm. **(2 marks)**

8. Discuss the importance of record keeping **(2 marks)**

9. Discuss the effect of diseases on farm production **(2 marks)**

10. Differentiate between cull methods and drain method of harvesting. **(2 marks)**

11. Choose any two marine or aquatic livestock of high demand in your locality. Discuss how the chosen livestock can help your community with income generation **(2 marks)**

12. Discuss some other uses of prawn and its by-products which are not mentioned in this lesson. **(2 marks)**

(2 marks)