

by

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Two mussel culture sites remained in Western Samoa after June 1983 (refer to July 1983 report on this project by the Fisheries Division), namely Safata and Asau.

Spatfall was not apparent in both sites and it was decided to do a partial harvest on the Asau mussels to test the local market and the public's tasting reaction. Prior to the harvest a faecal coliform test (results table 1) on the Asau mussels was done by the Health Department to ensure fitness for consumption. The test results show figures in the recommended hygienic spectrum for molluscan shellfish (FAO/WHO 1978).

HARVEST

Introduction

One of the most important aspects of any farming venture, apart from successful introduction and good growth rates, is the establishment of a market. One needs to be certain whether there are buyers of his product either locally or elsewhere, before committing his time and money into its production. For this reason a partial harvest was done on the Asau mussels (attachment rate was higher in Asau than Safata). Asau raft 1 was completely harvested at the end of September, leaving raft 2 for further growth and meat content data, and especially to see if the mussels are capable of reproducing and settling in this bay.

Harvesting and transportation

Mussel harvesting from the raft simply involved the undoing of the ropes from the raft bamboos and the whole growing rope lifted out of the water onto the boat on which they were transported to Apia. The harvest of twenty growing ropes lasted less than an hour with four workers employed. This took place in the late afternoon.

Transportation was by a 20meter long Japanese pole and line fishing vessel type which was anchoring a Fish Aggregating Device (FAD) out of Asau. The trip to Apia from Asau was about eight hours but the mussels were kept in the boat until the starting working hour in the morning.

Three methods of keeping the mussels were employed simultaneously during the trip: (1) Ropes of mussels were hung in bait wells of the ship with continuous water exchange (most of the harvest was transported this way). (2) Chilling - some mussels (still attached to growing ropes) were packed in a rectangular wooden, well draining box. The mussels were placed in the box after the sides and the bottom were covered with a clean sacking. A good layer of ice was placed (on top side only) on a layer of sacking which covered the mussels. Thus the mussels did not come in direct contact with the ice. The temperature in the box measured between 5 and 7 °C through out the trip. (3) In ice - a few mussels were transported packed in ice in a fish cooler. The ice was in direct contact with the mussels and the cooler was not draining.

On arrival, all the mussels packed in ice in the fish cooler were dead (but still fresh) while those in the bait wells and the box cooled with ice were still alive.

Cleaning and packing

The growing ropes with the mussels still attached were transferred straight into a big box which had a continuous salt water exchange. The mussels were detached from the ropes, in there, by grasping at the typical attachment. Algae and barnacles were cleaned off and then weighed. 2 kg of mussels (shell on) were packed in plastic bags in which they were sold.

Production

At harvest, the mussels measured between 5.4 and 13.3 cm in length, giving a length mean of 8.6cm (table 2). The mean corresponds to an average increment of 7.4cm since their importation from Tahiti in mid-February 1983, thus an overall average growth rate of slightly over 1 centimeter per month.

The meat content is comparable to those obtained in other countries. The wet flesh weight ranges from 4.1 to 19.0 g per mussel and 31-49 % of the whole unopened mussel weight (table 3). A high proportion of 10.6:1 females to male was found (table 3).

The total weight of mussels on each growing rope is given in table 4. The lowest production was from a 2 meter growing rope with 13.7kg of mussels shell on (thus 6.85 kg/meter of rope). The highest production is also from a 2 meter rope with a yield of 29.10kg, a production of 14.55kg/meter of growing rope. The total production from the raft (30 ropes of a total of 17 meters of growing ropes) amounted to 445.30kg of mussels, giving an average yield of 2.62kg/meter. In the Philippines, raft culture of the green mussel has a production range of 5-15 kg of mussels per meter of rope (Kap et al. 1979).

The total market and the public tasting feedback

More than half of the harvest was sold via the new Apia Fish Market in less than an hour. 2kg of mussels (shell on) were packed and sold in plastic bags at the price of \$WS1.50 per bag. The harvest was too small for the number of buyers and orders that came. Furthermore, the Division has been having people enquiring about the next harvest.

Those who were present (locals and expatriates) at the Fisheries where the mussels were detached, cleaned and packed, were given free mussels for tasting test. We also asked a few people who bought some to take home, to come back the following day and tell us how they liked the mussels. All the feedbacks were positive. The common answers given were: "very nice", "they taste better than the mussels grown in the country I've been", "we enjoyed eating them", "wish there were more".

The harvest results indicate that there is a good local market (the level of production to satisfy it is not determined yet) and the product is well accepted.

Table 1.

BACTERIOLOGICAL EXAMINATION OF MUSSELS FROM ASAU. 21 September 1983.

The samples as a whole consist of Twelve (12) live mussels shellfish. Each of which appeared fresh and smell fishy during the time of analysis. The outside adherents of the shells include seaweed and the usual green appearance of the bottom side.

The samples were brought in with two seawater samples from the same location

SHELLFISH MULTIPLE TUBE TECHNIQUE:

| | |
|--|--------------|
| MPN of Presumptive Coliform at 37 °C for 48 hrs. | - 63/100gms |
| MPN of Faecal Coliform at 44.5 °C for 24 hrs. | - 26/100gms. |

Table 2.

mussel length at harvest (cm).

| | | | |
|-----|------|-----|------|
| 1. | 9.2 | 21. | 13.3 |
| 2. | 8.4 | 22. | 8.6 |
| 3. | 10.4 | 23. | 7.7 |
| 4. | 8.7 | 24. | 9.4 |
| 5. | 7.8 | 25. | 9.5 |
| 6. | 9.4 | 26. | 12.0 |
| 7. | 7.4 | 27. | 10.3 |
| 8. | 8.7 | 28. | 9.7 |
| 9. | 9.3 | 29. | 8.3 |
| 10. | 6.4 | 30. | 7.4 |
| 11. | 5.6 | 31. | 6.3 |
| 12. | 6.7 | 32. | 7.2 |
| 13. | 5.4 | 33. | 7.3 |
| 14. | 6.8 | 34. | 7.9 |
| 15. | 7.8 | 35. | 8.9 |
| 16. | 6.4 | 36. | 9.7 |
| 17. | 10.2 | 37. | 9.4 |
| 18. | 9.0 | 38. | 8.5 |
| 19. | 10.3 | 39. | 9.4 |
| 20. | 11.4 | 40. | 8.0 |

Range 5.4-13.3 cm.

Mean 8.6 cm.

Table 3.

Mussel total weight, sex, meat weight, and percent wet meat to the whole mussel weight.

| whole mussel weight (g) | sex | wet meat wt.(g) | % wet meat to whole mussel wt. | whole mussel weight(g) | sex | wet meat wt.(g) | % wet meat to whole mussel wt. | | |
|-------------------------|------|-----------------|--------------------------------|------------------------|-----|-----------------|--------------------------------|-----|----|
| 1. | 27.3 | 0 | 13.1 | 48 | 19. | 19.9 | 0 | 6.9 | 35 |
| 2. | 32.5 | 0 | 16.0 | 49 | 20. | 29.2 | 0 | 9.8 | 34 |
| 3. | 35.0 | 0 | 16.2 | 49 | 21. | 11.7 | 0 | 4.1 | 35 |
| 4. | 35.0 | 0 | 17.0 | 49 | 22. | 19.9 | 0 | 7.6 | 38 |
| 5. | 41.0 | 0 | 19.0 | 46 | 23. | 20.1 | 0 | 6.7 | 33 |
| 6. | 33.0 | 0 | 10.3 | 31 | 24. | 17.3 | 0 | 5.9 | 34 |
| 7. | 32.8 | 0 | 10.6 | 32 | 25. | 20.8 | 0 | 7.8 | 37 |
| 8. | 32.2 | 0 | 10.2 | 32 | 26. | 21.1 | 0 | 7.5 | 35 |
| 9. | 19.2 | ♂ | 6.4 | 33 | 27. | 22.1 | 0 | 7.7 | 35 |
| 10. | 21.6 | 0 | 7.3 | 34 | 28. | 18.4 | 0 | 8.5 | 46 |
| 11. | 18.0 | 0 | 6.0 | 36 | 29. | 19.8 | 0 | 7.8 | 39 |
| 12. | 20.9 | 0 | 8.0 | 38 | 30. | 19.1 | 0 | 6.8 | 36 |
| 13. | 21.6 | 0 | 6.8 | 31 | 31. | 17.9 | 0 | 6.7 | 37 |
| 14. | 18.6 | 0 | 6.3 | 34 | 32. | 20.8 | 0 | 6.6 | 32 |
| 15. | 26.5 | 0 | 8.6 | 32 | 33. | 22.1 | 0 | 7.8 | 35 |
| 16. | 15.7 | 0 | 5.3 | 34 | 34. | 22.2 | 0 | 7.6 | 34 |
| 17. | 22.2 | 0 | 8.3 | 37 | 35. | 26.5 | 0 | 8.2 | 31 |
| 18. | 21.1 | 0 | 7.0 | 33 | | | | | |

Average whole mussel wt = 23.4 g

42.75

i.e. 42.75 mussels to a kilo gram

Table 4.

Harvest production

| <u>Rope No.</u> | <u>Rope length (meter)</u> | <u>Yield (kg)</u> | <u>Production/meter</u> |
|-----------------|--------------------------------|-----------------------|-------------------------|
| 1. | 2 | 23.71 | 11.85 |
| 2. | 2 | 13.70 | 6.85 |
| 3. | 2 | 15.56 | 7.78 |
| 4. | 2 | 29.16 | 14.55 |
| 5. | 2 | 22.90 | 11.45 |
| 6. | 2 | 27.40 | 13.70 |
| 7. | 2 | 20.40 | 10.20 |
| 8. | 3 | 25.30 | 8.43 |
| 9. | 3 | 27.60 | 9.20 |
| 10. | 3 | 23.00 | 7.67 |
| 11. | 3 | 24.60 | 8.20 |
| 12. | 3 | 21.60 | 7.20 |
| 13. | 3 | 27.40 | 13.70 |
| 14. | 3 | 28.50 | 9.50 |
| 15. | 3 | 22.30 | 7.43 |
| 16. | 2 | 14.20 | 7.10 |
| 17. | 2 | 19.40 | 9.70 |
| 18. | 2 | 21.62 | 10.81 |
| 19. | 2 | 17.22 | 8.61 |
| 20. | 2 | 19.28 | 9.64 |

TOTAL: 20 ropes 47
(growing) 445.59

Production range 6.85-14.55kg/m.

Production mean : 9.40kg/m.

References:

- FAO/WHO 1979 Recommended International Code of Hygienic Practice
for Molluscan Shellfish - Joint FAO/WHO Food Standards
Programme - CODEX ALIMENTARIUS Commission CAC/RCP.18-1978
- Yap et al. 1979 Manual of Mussel Farming - Aquaculture Department, Southeast Asian
Fisheries Development Centre, Tigbauan, Iloilo - Philippines 1979.