LATTICE METHOD OF OYSTER CULTURE

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THREE PLATES

Oysters, owing to their high nutritive value and the various uses of their by-products, are the most important bivalves for cultivation. A number of local species suitable for culture are widely distributed throughout the country. Several coastal localities that are potential natural grounds for oysters are awaiting exploitation. They consist of bays, gulfs, lagoons, mouth of rivers, tidal streams, estuaries and inland seas. However, only limited areas in regions thickly populated around Manila Bay and Lingayen Gulf are utilized. There is a great demand for oysters free from pollution and contamination. The methods of culture in existing oyster farms are similar to those practiced abroad. While these methods have their own advantages depending on prevailing local conditions, an improved device adaptable for use in most places here is described in this paper.

Ablan (1949) considers bamboo (*Bambusa spinosa* Roxb.), abundant locally, an ideal material for farming oysters. Considerations for its choice are: Easy to procure, reasonably priced, fairly durable, its workable quality to suit any design or style of spat collecting device adaptable and practical to use on any type of bottom and on either horizontal or vertical plane.

In Japan several methods of oyster culture are employed to make use of every possible area or space available. Observations on these methods reveal that oysters grow faster near the surface where food is more abundant, temperature higher, and water less saline.

TABLE 1.—*Comparative data on age of marketable size of oysters.*

Culture		Locality	Age	
			Years	Months
Bottom	Broadcasting empty shells.	Japan	3	
Vertical	Pendant (1)	do	1-1/2 to 2	
Bottom	Staking	Philippines	1 to 1-1/2	
Vertical	Lattice	do		6 to 10
Floatation		do		

DISCUSSION ON THE LATTICE METHOD OF OYSTER CULTURE

Staking method (usoc, tulus, or darecdec) made out of bamboo trunk splits is employed in Binakayan, Cavite Province; San Fabian, Dagupan and Binmaley, Pangasinan Province; Carlatan Lagoon, San Fernando, La Union Province; and Abucay, Bataan Province. Repeated use of this method causes several difficulties. Hard sandy bottom requires much effort in staking bamboo trunk splits and if these are not stuck firm enough into the sandy soil they are uprooted due to wave action and practically lost. Seeded bamboo trunk splits with oysters cannot support the weight of growing oysters causing them to break. Portion of the stake buried in the soil does not produce any oyster. Harvesting oysters from stakes needs double effort to collect them. To minimize this difficulty, bamboo trunk splits are woven into lattice. Galvanized wire No. 14 is used as a tying material. The splits are spaced from 6 to 12 inches. On the average, a lattice varies from 10 to 16 splits and can easily be handled by an individual.

Bamboo lattice on a horizontal plane consists of the following methods:

1. Fence style, either stuck on the bottom or supported with bamboo trunk posts.
2. Tent formation in rows.
3. Lattice of several pieces can be mounted in racks set either singly or in layers.
4. Lattice with support can be laid on the bottom.

METHODS ON A VERTICAL PLANE

1. Floatation method—Lattice mounted on long bamboos and are reinforced with empty drums.
2. Suspension method—Three pieces of lattice assembled in a triangular form supported with long bamboos and empty drums.
3. Combination method—Floatation and suspension method using strings of empty shells.

ADVANTAGES OF BAMBOO LATTICE

1. A device usable singly or in a multiple series in either vertical or horizontal plane.
2. Eliminates losses of spat collectors and can support weight of growing oysters.
3. A labor-saving device for their layout and harvesting oysters.

4. Oysters raised do not touch the bottom and are protected from bottom enemies.
5. Practical for collecting, growing and fattening oysters.
6. Increases production not only per unit area of ground but in a three dimensional space.
7. Growth of oysters can be accelerated by placing them to suitable water level where food is abundant, temperature favorably high, and water is less saline.

Only four out of 23 species of oysters reported in the Philippines are of commercial importance. *Ostrea iredalei* Faustino, *Ostrea malabonensis* Faustino and *Ostrea palmipes* Sowerby are cultivated. *Ostrea cucullata* Born, growing wild in quantity on the rocky bottoms of Catbalogan, Samar Province, the center of salted "sisi" industry, is also of commercial importance. *Ostrea iredalei* Faustino is the most important as to size and quality. *Ostrea malabonensis* Faustino ranks second and *Ostrea palmipes* Sowerby comes third.

Orton (1937) graphically showed that *Ostrea edulis*, 1½ years old and about an inch in size, gives a 2½ cubic centimeters of meat as compared with the meat of Philippine oysters about 4 months old.

Oysters about 4 months old were raised on floated bamboo lattice set on December 1, 1949 and examined on March 23, 1950. They were detached for measurement of the size and volume of meat and the results are shown in the following table.

TABLE 2.—*Size and volume of meat of cultivated oysters about 4 months old by the lattice method.*

Species	Specimen examined	Average measurement of left valve in inches		Average measurement of meat in inches		Average volume of meat in cc.
		Length	Width	Length	Width	
Ostrea iredalei	25	2-1/4	1-1/4 to 2-1/2	1-1/8 to 2	3-4 to 1-1/2	4 to 7
Do	8	2-3/4	1-1/4 to 2-1/2	1-3/8 to 2	1 to 1-1/4	4 to 6.5
Do	3	3-1/4	1-1/8 to 2-3/8	1-3/4 to 2-1/4	1 to 1/2	5 to 6
Ostrea malabonesis	9	1-1/4 to 1-3/4	7/8 to 1-3/8	1 to 1-1/2	9/16 to 7/8	1 to 3
Do	9	2 to 2-1/4	1-1/4 to 1-3/4	1 to 1-1/2	7/8 to 1-3/8	1 to 3
Ostrea palmipes	20	1 to 2	7/8 to 1-1/2	3/4 to 1-1/4	1/2 to 7/8	1 to 2.5

REMARKS AND RECOMMENDATIONS

Oyster farming offers a lucrative venture in the Philippines as shown in the following:

1. Remarkable rate of growth.
2. Availability of extensive and potential grounds for oyster cultivation.
3. Presence of commercial species ready for exploitation.
4. Increasing demand for them as food and the various uses of their by-products.
5. Procurability of cheap materials for farming them.
6. Reasonable cost of labor prevailing and high yielding capacity of per unit area of space.

As a government agency, the Bureau of Fisheries should be given more appropriations for extension work on oyster culture. With sufficient funds available a well organized extension service may be established to undertake the establishment and supervision of more oyster farms for demonstration purposes, to make necessary survey of all potential oyster grounds in the country and to make a working program of developing them.

REFERENCES

1. ABLAN, GUILLERMO L. The commercial production of oysters in the Philippines. Popular Bull. No. 26 (1949).
2. GLUD, JOHN R. Japanese methods of oyster culture. Commercial Fisheries Review, U. S. Fish and Wildlife Service 2 No. 8 (1949).
3. ORTON, J. H. Oyster Biology and Culture. London, Edward and Co. (1937).

ILLUSTRATIONS

PLATE 1

Diagrammatic sketches of the lattice method.

PLATE 2

FIG. 1. Provincial Demonstration Oyster Farm House-Office and Laboratory.
2. Concrete ladder leading to Oyster Farm House.
3. Strings of oyster from lattice.
4. Bamboo lattice.
5. Bamboo lattice laid out in tent style.
6. Supporting weight of bamboo lattice laid out in tent style.
7. Side view of bamboo lattice laid out in tent style.
8. Several bamboo lattice in layers.

PLATE 3

FIG. 1. Bamboo lattice with strings of empty shells to collect oyster spats.
2. Three pieces of lattice in a triangular formation.
3. Floating bamboo lattice.
4. Floating bamboo lattice mounted to empty drums.
5. Seeded lattice tent formation.
6. Seeded lattice in layers.
7. Underside view of floated lattice with oysters.
8. Side view of floated lattice with oysters.
9. Strings of oysters in loop suspended from lattice.

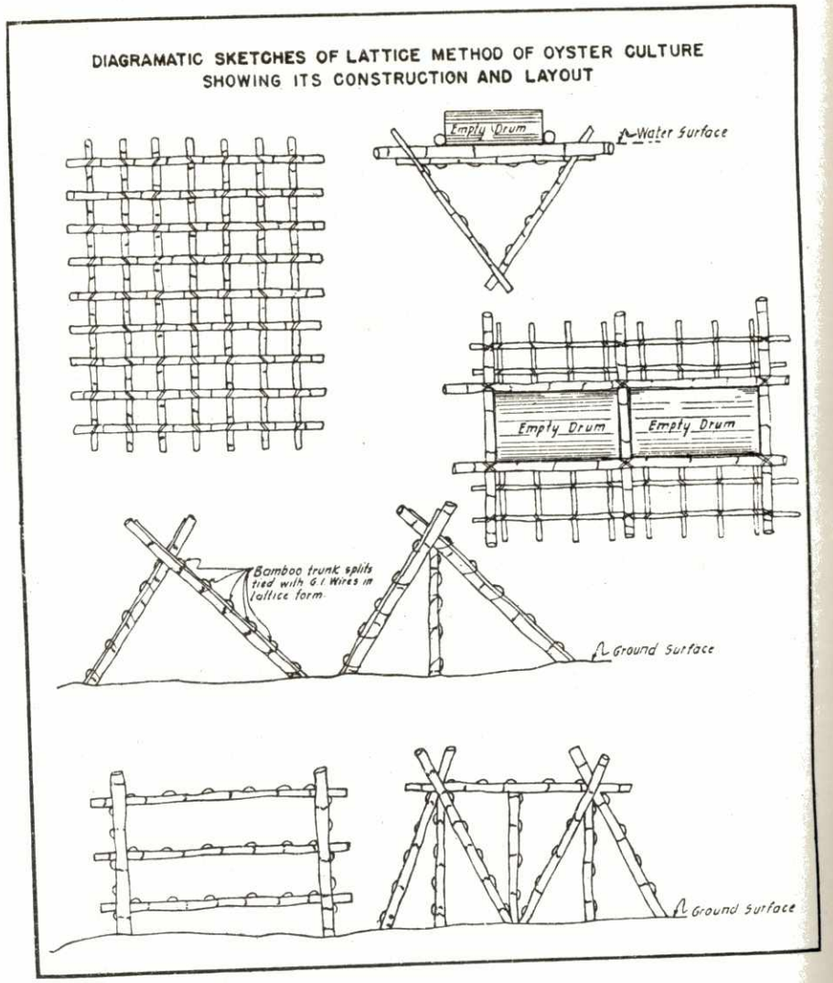


PLATE 1. DIAGRAMMATIC SKETCHES OF THE LATTICE METHOD.

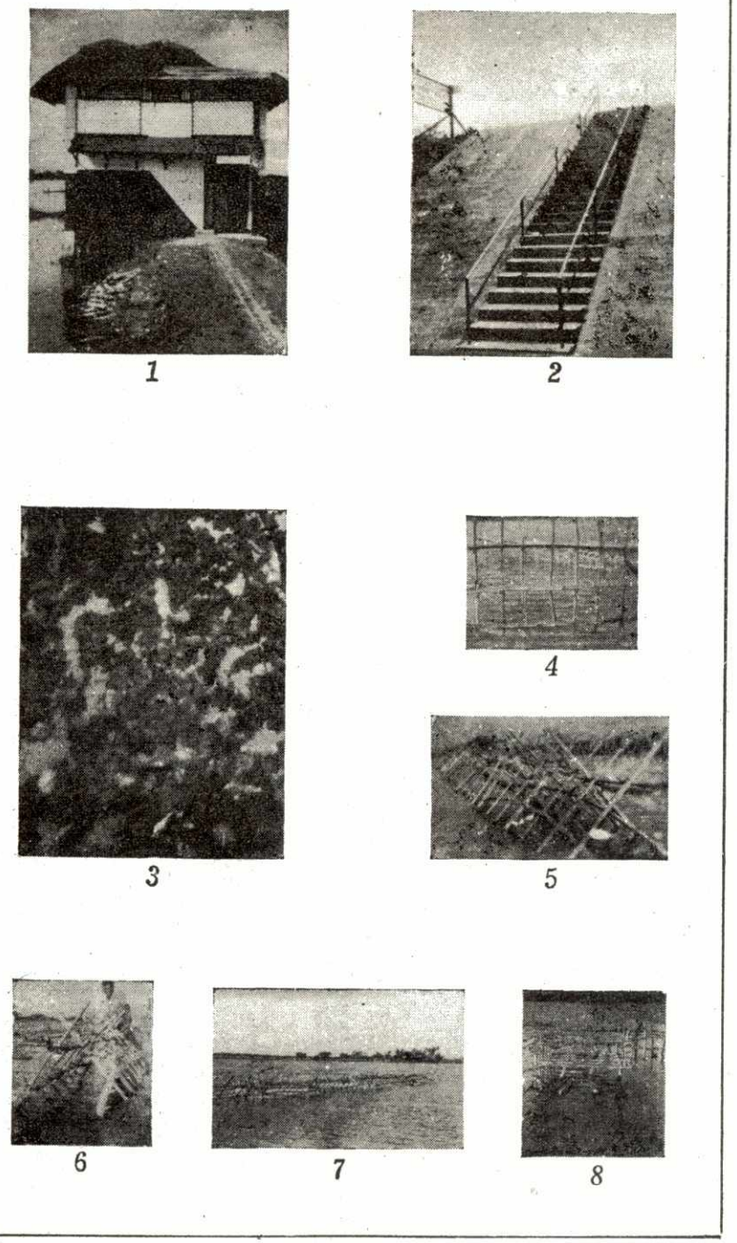
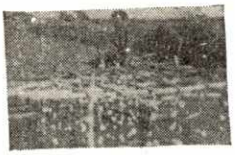


PLATE 2



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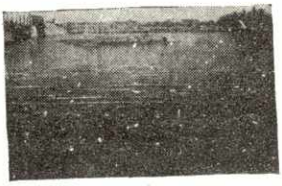

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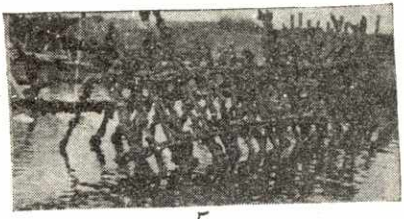

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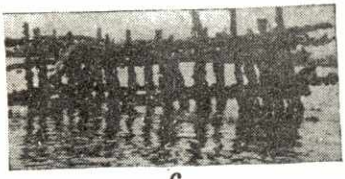

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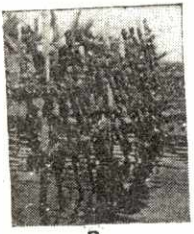

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PLATE 3