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# Improvements of traditional floating gardens for vegetable production in Bangladesh

## SUMMARY:

Floating garden agriculture (locally known as vasoman/dhap chash) is a local innovative crop production technology for the submerged ecosystems of the southern region of Bangladesh. Traditionally, farmers of Gopalganj, Pirojpur and Barisal districts have been practicing the farming technology for about two centuries as an adaptation to the flooded/submerged conditions. To improve the traditional floating garden agriculture practices for successfully growing cucurbits or other creeper type of vegetable crops, research programmes were undertaken. This technology describes how the improved practice for vegetable production is implemented and managed.

## KEYWORDS:

[flooded land](#) [1]

[Vegetables](#) [2]

[Agricultural research](#) [3]

[labour saving technology](#) [4]

## CATEGORY:

[Crop production](#) [5]

## COUNTRIES:

Bangladesh

## DESCRIPTION:

### 1. Introduction

Floating garden agriculture (locally known as vasoman/dhap chash) is a local innovative crop production technology for the submerged ecosystems of the southern region of Bangladesh. Traditionally, farmers of Gopalganj, Pirojpur and Barisal districts have been practicing the farming technology for about two centuries as an adaptation to the flooded/submerged conditions.

*For a detailed description about the traditional practice please refer to:* <http://teca.fao.org/read/8867>[6]

In the traditional system, farmers generally cultivate only a limited number of crops like red amaranth, Indian spinach, okra, turmeric and aroid crops on floating beds during monsoon season (generally from June to November month). The traditional floating beds are not suitable for cultivating cucurbits or different creeper type of vegetable crops because it is not wide enough but rather narrow shaped (breadth 1.1-1.3 m). Vegetables, particularly cucurbits and creeper/vine type of vegetable crops, generally need sufficient space due to their large canopy size and vigorous growth habit. The crops grown on the traditional floating beds do not have required space for their proper growth and development. Hence, only a few numbers of plants can be grown on the bed due to lack of required space on the floating bed.

In addition, the fruits grown next to the floating bed often become fade in colour but the opposite side remains green due to uneven absorption of sunlight. This also deteriorates the market value of the agro-products. Moreover, there is more rat infestation in cucurbits or creeper vegetables grown on floating bed

which damages the flowers as well as fruits of the crops severely.

Considering the above facts, research programmes were undertaken at Regional Agricultural Research Station, Rahmatpur, Barisal of Bangladesh Agricultural Research Institute (BARI) to improve the traditional floating garden agriculture practices for growing cucurbits or creeper type of vegetable crops successfully. Recently improved, technology based, floating garden practices for cultivating cucurbits or different types of creeper vegetable crops are termed as **Floating Bed cum Trellis (FBT)**.

The FBT system constructs alternate floating beds and trellis. With the FBT method, cucurbits or creeper vegetables can be planted on the floating beds but they grow and develop on wide trellis (width 3-6 meter) constructed just next to the floating beds (Fig.1, Fig.2). Therefore, as per requirement for the optimum crop growth, 3-6 meter distance are kept between two floating bed for making the trellis. This ultimately also reduces the usage of water hyacinth for floating garden practices. The trellis is generally made with bamboo, nylon net and dhaincha (*Sesbania* sp.).



[7]

*Fig. 1: Bottle guard cultivation on Floating Bed cum Trellis (FBT) in the research area for Floating Agriculture.*



[8]

*Fig. 2: Fruits of cucumber (a), bottle gourd (b), and pumpkin (c) hanging under trellis.*

## **2. Improvements**

### **2.1. Increased production and higher yields**

Under this system, it is possible to grow more number of plants on the floating bed which increases the yield of the crops. Besides, fruits of vegetable plants get uniform shape and color due to an adequate supply of nutrients and sunlight.

In an experiment, hybrid cucumber gave the fruit yield of about 45-50 t/ha under FBT method, while the same crop generally gives the yield of about 25-35 t/ha under normal land condition indicating that hybrid cucumber cultivated through FBT technology provided about double yield as compared to that of normal land condition.

### **2.2. Increased land use efficiency**

In FBT method, different short duration vegetables like red amaranth, spinach, radish, coriander leaf can be grown on floating bed at the early stage of the cucurbits (Fig. 3), which increases the production of vegetables as well as cropping intensity over the traditional practices.



[9]

*Fig. 3: Cultivation of red amaranth (a) and spinach (b) at early stage of bottle gourd cultivation.*

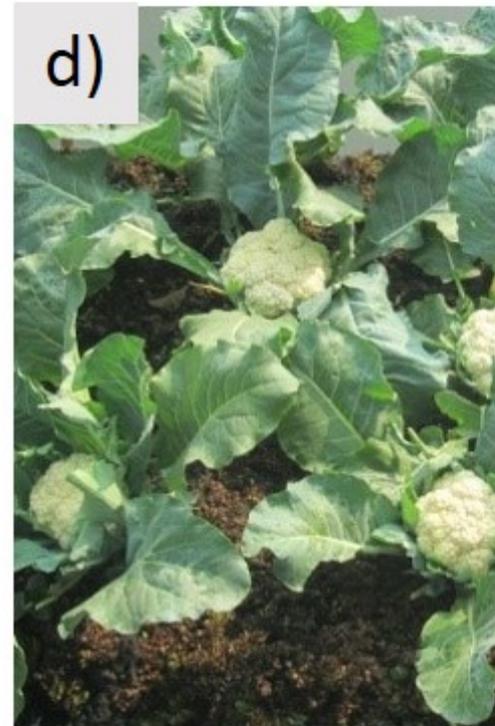
### **2.3. Reduced amount of water hyacinth**

The availability of water hyacinth is decreasing day by day in Bangladesh due to various reasons (salinity, lack of conservation etc.). However, the improved FBT technology utilized 50-60% less amount of water hyacinth as compared to the traditional floating garden system.

### **2.4. Contribution to food and nutritional security of the poor**

The total area of medium low to very low type of lands in Bangladesh is about 3.0 million hectares (21% of the total country) and a remarkable amount of the land remains fallow particularly in monsoon season due to flooding or submerged condition. Generation of floating agriculture based suitable modern technologies like Floating Bed cum Trellis (FBT) through intensive research programmes and extension/dissemination of the technologies can utilize the wet/flooded lands for crop production that would improve the food and nutritional security of the vulnerable poor people in wetland/flooded areas of Bangladesh.

Currently, a good number of research programmes are going on at Regional Agricultural Research Station, Rahmatpur, Barisal of BARI cultivation of pumpkin, bottle gourd, potato, cole crops (cabbage, cauliflower, knolkhol, broccoli etc.), carrot, water melon, strawberry, chili, bushbean etc. on floating bed (Fig. 4).



[10]

*Fig. 4: Cultivation of potato (a), carrot (b), cabbage (c), cauliflower (d) and bushbean (e) on floating bed.*

#### Additional information

The following video gives a short introduction about traditional floating garden practices and its improvements developed by BARI: <https://www.youtube.com/watch?list=UU6bZ-oCK06YzlRLwrEhVsYw&v=ktzkGqvWnUE> [11]

#### **SOURCE(S):**

[Bangladesh Agricultural Research Institute \(BARI\)](#) [12]

#### **Country:**

Bangladesh

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#### **Links:**

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[6] <http://teca.fao.org/read/8867>

[7] [http://teca.fao.org/sites/default/files/Fig%201\\_Bottle%20guard%20cultivation.jpg](http://teca.fao.org/sites/default/files/Fig%201_Bottle%20guard%20cultivation.jpg)

[8] [http://teca.fao.org/sites/default/files/Fig2\\_2.jpg](http://teca.fao.org/sites/default/files/Fig2_2.jpg)

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[11] <https://www.youtube.com/watch?list=UU6bZ-oCK06YzlRLwrEhVsYw&v=ktzkGqvWnUE>

[12] <http://teca.fao.org/partner/bangladesh-agricultural-research-institute-bari>