



Organic Makhana Cultivation is More Profitable during Rainy Season in Low Land Areas

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Makhana cultivation in organic mode paved the way for higher returns by harnessing the maximum yield potential of the new variety Swarna Baidehi. Makhana planting at a distance of 1.4 m X 1.4 m was found for better growth and development. Organic manures in form of neem cake and castor cakes produced the highest yield. Rain water is sufficient for crop maturity at the low land or wetland ecosystem.

Introduction

Euryale ferox Salisb., commonly known as gorgon nut or makhana is an important aquatic crop of wetland Ecosystem. The crop thrives best in stagnant water pools in small areas like ponds and land depressions or in vast land like swamps area and ditches and in marshy land). Commercial cultivation of makhana is limited to very few states in India like North Bihar, Loktak Lake of Manipur, parts of West Bengal and Madhya Pradesh Odisa and lower part of Assam. After releasing of new cultivar Swarna Baidehi, which is a pure line selection showed tremendous yield of 2.8-3.0 t/h in field condition



Weed Free Organic Makhana Field

(Kumar et al., 2012). Keeping in view its commercial importance, a suitable agronomic practice was desired to sustain makhana industry in vibrant mode.

Cultivation Practices

In pond system or in field condition, makhana cultivation in organic mode paved the way for higher returns by harnessing the maximum yield potential of the new variety. Makhana, which is known as prickly water lilies require less water for its physiological process but more water to float (Jana, 2016a) and decomposition. Roots are fibrous spongy types responded best to rotten organic manures. It was observed that organic manures in form of neem cake and castor cakes

produced the highest yield of 2.5 ton/ha (Jana, 2016b). Field cultivation with organic input was also performed well during rainy season.

Table 1: Growth and Production of Organic Makhana during Rainy Season

S. No.	Treatments	Vegetative biomass (kg/fresh weight)	Reproductive biomass (kg/fresh weight)	Number of fruits	Yield (q/ha)
T1	Karanj and castor cake (50:50)/2T/ ha field system	11.62	2.45	12.45	25
T2	N:P:K pond system	10.08	1.80	8.90	16
T3	N:P:K Field system	8.32	1.54	10.25	14
T4.	Castor cake and sterilized Neem cake (7:10)2.5T/ha	15.67	6.24	15.33	40
T5	Control as local cultivar under field condition	6.83	1.402	7.88	10

In case of field cultivation, one month after transplanting, 10 cm water is to be provided for survivals of the plant after that it can utilize monsoon rain water for three months for flowering and fruit development. During late monsoon especially, in October, 20 cm water should be provided for degradation of biomass *in situ*. This type of degradation of plant biomass provides more nutrients to the field for next crop. Application of organic cakes had the two folds benefits: one on decomposition of organic manures it generates lot of heat which affects lot of weed seeds and renders them nonviable, the second, once plant growth was so rapid in a one month after transplanting, makhana crop covers whole fields and suppressed the growth of remaining weeds (Photo 1).

During early monsoon, field should be prepared by deep ploughing followed by puddling the field with rotavator. After 2-3 days, organic nutrients in the form of organic cakes like castor and neem cake at the proportion of 7:10 should be added in the soil @ 2.5 t/ha. Makhana planting at a distance of 1.4 m X 1.4 m was found for better growth and development. Rain water was sufficient for crop maturity at the low land or wetland ecosystem.

Yield

After following an improved package of practices a yield of 40 q/ha can be obtained.



Maximum vegetative growth under T5



The maximum fruits/plant (16.00) and production (40 q/ha) under T5