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Azolla Application for Improvements in Soil Fertility

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1. Introduction

As per habitate azolla grows in water, hence termed as aquatic ferns. Totally azolla has seven species named as *A. caroliniana, A. filiculoides, A. Mexicana, A. microphylla, A. nilotica, A. pinnata* and *A. rubra.* Out of these seven, A. pinnata is quiet common and readily available in India. Nowadays, in Indian agriculture system numerous insecticides, pesticides, herbicide are being used for producing of crop. They are not atmosphere friendly, due to application of these kind of agent's soil and rhizosphere is getting polluted. While in compare to application of chemicals, biofertilizer like azolla have various advantages in improving soil fertility.

2. Methodology

1) To grow azolla, make a five meter long one meter wide and eight to ten inches deep fixed cement tank. The length and width of the tank can be increased as per the requirement.
2) If you can not make the tank, then make the tanking crater by laying bricks by placing the bricks on the ground, putting 150 grams thick polythene in the pit on the four sides of the pit and pressing bricks properly. Make a crater / tank in a shady place.
3) Put 50-kilograms of cleanly filtered silvery soil in the pit / tank.
4) Make a two-day-old dung in 25 liters of water and add four to five kilograms of solution and put it on the bed of azolla.
5) Fill eight to ten centimeters of water in the pit / tank always keep so much water in the pit / tank for good production.
6) Put one to one and a half kilograms of mother-azolla culture into the water. (It needs to be thrown once in the pit / tank, after which it gradually starts growing.)
7) In ten to twelve days, the azolla spread over the water and look like a thick green mat.
8) A day after twelve days, one kilogram of agelo can be extracted from a plastic filter daily.
9) Make a solution of cow dung water once a week and keep it in the pit / tank.
10) Before feeding animals, cleanse the azolla after water, so that the odor does not smell.

3. Azolla Benefits

1) To meet out the green manure demand for paddy cultivation, to check the growth of weed and improved fertility.
2) The biological nitrogen and different type of minerals are the alternative source of compost production.
3) Rich in essential amino acids, vitamins (vitamin A, vitamin B12 and Beta- Carotene)
4) In cows, milk production can be enhanced up to 15 – 20 % by feeding azolla.
5) Azolla increases the quality of harvested water in the form of tanks or ponds as it acts as a nutrient feeder and checks algal blooms.
6) Azolla rises easily in the jungle. But can also be grown in the controlled environment.
7) It can be produced broadly and can be used in both Kharif and Rabi season as green manure.
8) It can convert the atmospheric carbon dioxide and nitrogen into carbohydrate and ammonia respectively, and after decomposition, it provides nitrogen to the crop and provides biological carbon content in the soil.
9) The root system of oxygen crops generated in oxygenic light synthesis and other microorganisms available in the soil helps in respiration.
10) In the paddy field, Azolla also suppresses small weed like fodder and nitella.
11) It enhances the efficiency of the use of chemical fertilizers.

4. Precautions

1) For good yield, it is necessary to keep the environment free of infection.
2) Temperature is a key factor for good growth. It should be around 35 degrees Celsius. To reduce the effect of cold weather in cold areas, feed should be covered with plastic sheets.
3) A direct and adequate sunlight space should be given priority. In shade place yields less.
4) The pH of the medium should be between 7 to 5.5.
5) Proper nutrients such as dung solution, micro nutrients should be kept as needed.