

AZOLLA

A BIOFERTILIZER AND SUSTAINABLE PRODUCTION OF LIVESTOCK FEED.

Aishwarya Vitthal Uphale

College of Agriculture, Baramati

INTRODUCTION

Azolla water fern is a free floating aquatic fern and is a genus with belongs to the family salvinaceae. It is grown in fresh water and is naturally available mostly on moist soils, ditches marshy ponds and is widely distributed in tropical belts of India.

Some legends say that its cultivation was introduced by the Buddhist monk Khong, Mirch Khong in the eleventh century and others say that Beo Going was discovered and domesticated by a Village woman called Bo Heng. It is native to much of Africa, Asia, and part of Australia.



WHAT IS AZOLLA?

Azolla is a freshwater water fern that lives in pond lakes, swamps and streams in both tropical and subtropical conditions for many centuries Azolla has been used as green manure for rice. It is a floating pteridophyte that contains as endosymbiont the nitrogen Fixing cyanobacteria *Anabaena azollae*.

NEED OF AZOLLA

- Azolla is hitherto, used mainly as green manure in paddy has tremendous potential to meet the growing demand for fodder among the small farmer's taking up animal husbandry.
- It is in association with blue green algae *Anabaena* can fix atmospheric nitrogen (N) into ammonia which can be utilised by rice plants when it is incorporated into the soil. The rate of nitrogen around 25 kg/ha. Dry Azolla flakes can be used as poultry feed and green Azolla as a good feed for fish. Azolla is very rich in protein (25-35%), calcium (67 mg/100g) and iron (7.3mg / 100 g). The annual production of biomass is 1000 MT/ha, and the dry matter is 80 MT/ha. As a result, Azolla *Anabaena* can fix almost three times more atmospheric nitrogen than legumes. Typical rates for legumes are

400kg of nitrogen per hectare per year those for Azolla *Anabaena* are 1100 kg of nitrogen per hectare per year.



SPECIES OF AZOLLA

There are five species of Azolla.

- *Azolla carotina*
- *Azolla filiculoids*
- *Azolla mexicana*
- *Azolla microphylla*
- *Azolla pinnata*

The *Azolla pinnata* is a common species that is highly used in India.

PRODUCTION OF AZOLLA

Growing of Azolla is done basically by two types –

- Azolla in situ (grown with standing crop within the field)
- Azolla ex situ (grown in an area by accumulating sufficient water)

These are also another method of culturing

Azolla in polythene. Production of Azolla as green manure in paddy field

- 1) The land should be puddled and leveled so that standing water is uniform throughout the field.
- 2) Azolla inoculum is sprinkled in the plot and 45kg of single super phosphate per acre is applied in the field.
- 3) The land used for the cultivation of Azolla is not washed because after broadcasting Azolla in the transplanted paddy crop.
- 4) The plot itself may be used for the cultivation of paddy.

CULTIVATING AZOLLA AS LIVESTOCK FEED

- 1) Slurry made of 2 kg cow dung.
- 2) 30 gm of super phosphate mixed in 10 liters of water is poured into the prepared sheet.
- 3) More water is poured to raise the water level about 10cm.
- 4) About 0.5 – 1 kg fresh and pure cultured

Azolla is placed in the water.

5) This will grow rapidly and fill the pit within 10-15 days.

6) To reduce excessive ambient light a shade made out of coconut leaves may be laid above the tank.

7) After 7 days, 1.5 kg of Azolla can be harvested every day.

8) pH of medium should be between 5.5 – 7.

9) The cost involved in setting up folder plots varies between Rs.1500 to 2000.

YIELD OF AZOLLA

Azolla produces around 8-10 tons of green mass which is equal to 25 – 30 kg N₂ which is again equal to 55- 60 Kg of urea.

ECONOMICS OF AZOLLA CULTIVATION

- The expenditure on preparing a 6 × 4 feet pond is minimal at Rs-500.

- A farmer can realize a net profit of over Rs 4000 Per annum from additional fish production and reduces usages of concentrate feedings for cultured fish species.

ADVANTAGES OF AZOLLA

- Azolla helps in weed control and suppresses tender weeds such as chara and Nitella in a rich field.

- Naturally, Azolla releases plant growth regulators and vitamins which are very much required to enhance the growths of paddy.

- Azolla helps to increase crop yield and quality.

- Azolla is used as green manure as well as biofertilizer.

DISADVANTAGES

- The initial cost of cultivation is high.

- Extreme low temperature is also not suitable.

- Ignorance of people about benefits of Azolla.

- The market for Azolla is not so popular.

- Temperature more than 35°C is not suitable.

