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Research Article

Production of *Azolla* in Different Condition and its Comparative Study

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ABSTRACT

Azolla (mosquito fern, duckweed fern, fairy moss, and water fern) is a genus of seven species of aquatic ferns in the family Salviniaceae. They are extremely reduced in form and specialized, looking nothing like other typical ferns but more resembling duckweed or some mosses. *Azolla* is a highly productive plant. The study indicated Green *Azolla* to be a good source protein supplement with 22.3% crude protein fractions, high digestibility of dry matter and organic matter and rich in trace minerals thus could be used as an alternate protein supplement or as supplementary protein supplement to ruminants. The *Azolla* meal was easily digestible. The micro flora and micro fauna quantity in stomach of the domestic animals were increasing due to feeding of *Azolla* meal. *Azolla* can multiply very rapidly. Phosphorus is one of the most important and often limiting nutrients for *Azolla* growth. Phosphorus deficiency is indicated by smaller, less vigorous plants and May causes the plants to become pink to deep red and fragile and to develop very long roots known as Red *Azolla*. It may be good nutritional supplement as a feed to the domestic animals in drought area because for production of *Azolla* require minimum space and water.

Keywords: *Azolla*, Comparative Study, Phosphoru, trace minerals

INTRODUCTION

Azolla is a aquatic ferns in the family Salviniaceae. They are extremely reduced in form and specialized, looking nothing like other typical ferns but more resembling duckweed or some mosses. *Azolla* is a highly productive plant. It doubles its biomass in 3–10 days, depending on conditions. *Azolla* is most commonly fed in the fresh form harvested daily. It was proposed that if suitable storage techniques such as sun-drying or ensilaging were available, the problems of maintaining supply when growth rates are low could be overcome. The greens (green plants) have long been recognized as the cheapest and most abundant potential source of proteins because of their ability to synthesize amino acids from a wide range of virtually unlimited and readily available primary materials (Fasuyi and Aletor, 2005). Light intensity plays a measure role in growth and development of *Azolla*. Deficiency of phosphorus and high intensity of light affect

the chlorophyll content of *Azolla* and convert green *Azolla* into Red *Azolla*. Azolla content good quantity of nutrient value like crude protein, crude fat, crude fiber etc.

MATERIAL AND METHOD

Azolla culture collected from Krushi Vigyan Kendra, Pokharni, Nanded. *Azolla* grown in two different tanks, one tank having supplemented with sufficient amount of cow dung, SSP and cover with Shed net. Another tank supplemented with low quantity of cow dung, SSP and shed net was not supplied. After 21 days powder was prepared from both Green *Azolla* and Red *Azolla* and nutritional components was analysed.

Biochemical Analysis

Crude Protein

The crude protein content of *Azolla* powder sample was analysed by Micro-Kjeldahl Method.

Crude Fat

Crude Protein of Azolla powder sample estimated. (Sadasivam and A. Manickam, 1992)

Crude Fiber

Crude Fiber of Azolla powder sample estimated. (Sadasivam and A. Manickam, 1992)

RESULT

When *Azolla* grown in different tank by providing different condition after 21 days two type of *Azolla* obtained one was green *Azolla* and another was red *Azolla*. *Azolla* supplemented with cow dung, SSP and shed net green *Azolla* obtained and tank did not have such supplement red *Azolla* obtained. Biochemical study showed that green *Azolla* contain greater nutritional quality compare to red *Azolla*.

Biochemical analysis showed that *Azolla* meal (AZM) contained (% DM) 22.3 in Green *Azolla* and 20.5 in Red *Azolla* crude proteins, 14 % in Green *Azolla* and 10% in Red *Azolla* crude fiber, 16% in Green *Azolla* and 15.4% in Red *Azolla* Ash, Crude fat 6% in Green *Azolla* and 4% in Red *Azolla*, Ash 16 % in Green *Azolla* and 15.4% in Red *Azolla*, Moisture 80.4% in Green *Azolla* and 72% in Red *Azolla*. The use of a feed ingredient in feeding livestock presupposes that the nutritive value in terms of nutrient content and availability are known. The crude protein (CP) content of AZM was 22.3% in Green *Azolla*.

Fig. 1 Green *Azolla*

Fig. 2 Red *Azolla*

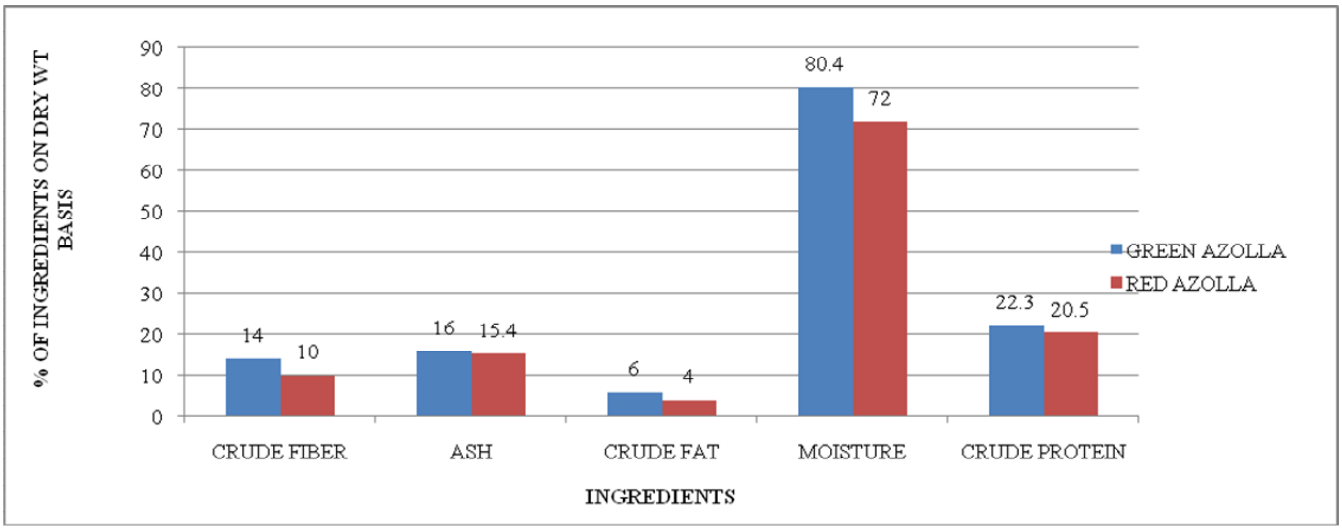

Table1: Results			
Sr. No.	**Ingredients %**	**Green *Azolla* %**	**Red *Azolla* %**
1	Crude fiber	14	10
2	Ash	16	15.4
3	Crude Fat	6	4
4	Moisture	80.4	72
5	Crude Protein	22.3	20.5

DISCUSSION

The crude protein content of *Azolla* vary from 13.0 to 34.5% (VanHove and Lopez, 1987) These variations in the nutrient composition of *Azolla* meal is due to differences in the response of *Azolla* strains to environmental conditions such as temperature, light intensity and soil nutrients which consequently affect their growth morphology and chemical composition (Mila et al., 1996; Ishikura, 1982 and Arai et al., 1998). *Azolla* has a higher crude protein content (ranging from 19 to 30 percent) *Azolla* meal (AZM) contained (%DM) 21.4 crude protein, 12.7 crude fibre, 16.2 ash and 47.0 carbohydrate (O.A. Alalade and E.A. Iyayi , 2006).

CONCLUSION

Azolla is a small free floating aquatic fern it has been used for domestic animal, fishes,

poultry fodder ration .It may be good nutritional supplement as a feed to the domestic animals in drought area because for production of *Azolla* require minimum space and water. This can be a aquatic weed as a source of food, small cost of *Azolla* growing in canals, ponds etc. rapidly grown. In the present comparative study of Green and Red *Azolla*, the Green *Azolla* Nutrient content was high in quantity as compare to Red *Azolla* by using references. *Azolla* prefers a placid water surface and temperatures around 20-30°C. *Azolla* that is exposed to high intensity sunlight or heat turns red and grows more slowly. A good location for *Azolla* cultivation is in the shadow of a north facing wall or under a tree canopy.

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Conflicts of interest: Authors declared No conflict of interest

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