

Fodder Beet - A Nutritive and High Yielding Fodder Crop Suitable for Salt Affected Soils of Arid Regions

S.P.S. Tanwar^{1*}, Akath Singh¹, S.M. Deb², Vikas Khandelwal and B.S. Jodha

Regional Research Station, Central Arid Zone Research Institute, Pali-Marwar 306 401, India

Received: December 2012

Abstract: An experiment was carried out to study the suitability and yield potential of fodder beet (*Beta vulgaris* L.) in Western Rajasthan for the first time. Under saline irrigation (EC 4 dS m⁻¹), a very high productivity was achieved i.e. fresh fodder yield of 61 and 72.1 t ha⁻¹ harvested at 120 and 150 days after sowing, respectively. Proximate analysis was also carried out and it was found to be an energy rich nutritive fodder. Compared to wheat crop, salt build up was less under fodder beet cultivation (1.11 dS m⁻¹). Therefore, considering huge potential of this crop for producing excellent quality fodder as well as phyto-amelioration of salt affected soils even under saline irrigation this crop should be promoted in arid regions where livestock based farming system is a norm.

Key words: Fodder beet, productivity, phyto-amelioration, saline irrigation.

Livestock plays a major role in lives of arid zone farmers, as they are appropriate for drought proofing. Under drought years agriculture production may ebb as low as 10% of the normal year, whereas livestock production may still remain more than 50% under same condition. Arid zone of Rajasthan supports a livestock population of 29.08 million that requires about 30.83 Mt fodder/year, of which at least 4.0 to 4.5 Mt of green fodder is needed to optimize the livestock productivity. However, the overall deficit for green fodder in western Rajasthan ranges between 78 to 93% (Pratap Narain and Kar, 2005). Further, with the establishment of milk collection centers in almost every village of arid zone, a large number of farmers have started rearing high yielding animals, i.e. cross-bred cattle and buffalo in the region for which green fodder is a must. A negative energy balance is recorded in these high yielding animals along with multi-nutrient deficiencies. This is mainly due to non-availability of green forage and hence their full yield potential is not realized. A range of fodder crops like pearl millet, sorghum chari, etc. are available during kharif season, however the choice is very limited during rabi season due to scarce and poor quality irrigation water.

Fodder beet (*Beta vulgaris* sub sp. *maritime*) is grown in many parts of world mainly for sugar,

*E-mail: spstanwar@gmail.com

Present address: ¹ Central Arid Zone Research Institute, Jodhpur 342 003, India.

² NRC on Yak, Dirang 790 101, India

fodder and vegetable. It is salt tolerant and probably the highest biomass producing crop in saline environments. In desert landscape of Egypt studies revealed that feeding sheep and goats on fodder beet roots can maintain animal productivity, and save about 50% of ration concentrate feed mixture and increase milk yield and its component (Mousa, 2011). Various studies indicated its suitability as energy rich fodder for dairy animals also (Mathew *et al.*, 2011). There are reports that this crop has a potential for vegetative bioremediation of salt affected soils where not much water is available for leaching (Tarek *et al.*, 2008). In India beet crop was introduced in 1960. Once beet was a popular crop in Hanumangarh and Sriganganagar districts of Rajasthan. A sugar factory was also established with beet as a raw material. However, with the closure of that factory, this crop has gone out of cultivation. Realizing its fodder value and phytoremediation potential, this study was conducted to assess its adaptability in arid regions of India.

Materials and Methods

A field experiment was conducted during rabi season of 2011-12 at Central Arid Zone Research Institute, Regional Research Station, Pali-Marwar. The experimental soil was fine loamy in texture, mixed hyper-thermic belonging to the family Lithic Calciorthiss having 30-45 cm depth and dense underlying layer of *murrum* (highly calcareous weathered granite fragment coated with lime) up to 10-15