

CLUSTER BEAN

N. D. Yadava

Clusterbean is a main *khariif* legume crop which recently classified in arid legume group. It is commonly known as a Guar (Rajasthan, Punjab, Haryana), Ghurthi (UP) which is grown for vegetable, green fodder, green manure and as a grain crop. It is a main source of gum having 28-32 per cent gum. It is drought hardy crop grows well in rainfed condition of Rajasthan specially in arid parts of the state and also fitted well in the rainfall pattern of the region. India has become a leading exporter of guar gum especially to USA and earns about Rs.170 million annually.

Clusterbean is grown mainly for grain and vegetable purposes. Its seed contains 28-32% of Gum therefore it is main raw material for gum producing industries. Generally major supply of gum for paper and cotton industries, is manufactured by guar seeds. The green pods are used for vegetable purposes. Its green and dried pods both are used for vegetables. It has high caloric and nutritive value. The crop is also grown for fodder purposes. Its fodder is very much rich in nutrients. The guar seeds are also used for preparing the animal feed. Its pods and grains are also used as a medicine for diabetic patients. The toasted guar is used for poultry meal and feed for pigs. Different concentrate used for animals are also prepared by guar seeds. The guar straw is also used as nutritive fodder for animals.

Origin

Clusterbean is grown in India from a very ancient times as a fodder and vegetable crop. Some wild plants were found growing in India so that it is believed that it has been originated from India. Vavilove (1951) has reported its origin in India. But on the basis of wild species, its center of origin in tropical Africa (Gillete, 1958). Cheivellier, (1939) reported that cultivated guar is originated from the region of Sindh. In USA, clusterbean was introduced from India.

Distribution

India is a largest guar exporting country in the world. In India the Rajasthan state has maximum area as well as production which contribute about 65 % of total guar production of the country. The other guar producing states are Haryana, Punjab, Gujarat and Madhya Pradesh but have few pockets where guar is cultivated for grain purposes. In Rajasthan during 1995 total area under clusterbean was 17.7 lakh ha with the total production of 2.77 lakh tonnes. The area and

productivity per ha decreased during 1989-90 in Rajasthan as well as in India. The area production of clusterbean in different states has been summarised as under.

Table 36.1. Area, production and productivity (Kg/ha) of clusterbean in different states of India (1989-90)

States	Area(000 ha)	Production(000ha)	Productivity (kg/ha)
Rajasthan	1966.0	438.3	223
Haryana	182.0	131.2	720
Gujarat	80.1	46.8	584
Punjab	31.4	29.6	943
Uttar Pradesh	2.7	2.0	741
All India	2262.2	648.3	287

Climate

Clusterbean crop has wide climatic adaptability from humid to arid climate. Generally the grain crop is grown during *kharif* season mainly as a rainfed crop. The crop performed well under rainfed condition even where the rainfall ranges between 250-500 mm under sandy soils. The normal growth and development of plants requires 27-35°C. It can tolerate shade and frost up to a greater extent. It is photosensitive crop and flowering occurs when it is sown in *kharif* season.

Soil and Soil Preparation

Generally clusterbean is grown on sandy loam to loam soils, but well drained loamy sand soils having a pH range of 7.5 - 8.5 is well suited for its cultivation. The soils of acidic nature or having high level of salinity or alkalinity are not suited for its cultivation. The soils of low lying areas having water logging or excessive wetness for a longer period are not suitable for cultivation. The dune soils in arid zone of western Rajasthan have sand depositions with poor fertility status, even though the crop grows well with poor rainfall also.

For soil preparation, the sandy and sandy loam soils need not to be ploughed more but clusterbean being a deep rooted crop having tap root system the soils must be tilled 1-2 times by disc harrow followed by cultivator for making good tilth in soil. The land which was not under cultivation and was left as a fallow for a long period for more than 3 years, one ploughing by disc plough followed by one to two harrowing is sufficient for better seed germination and plant growth. It reduces the weed infestation up to a greater extent. Before sowing the weeds and unwanted vegetations and crop stubbles, must be eradicated from the field.

Cropping Systems

In arid rainfed areas clusterbean is mostly grown as a mixed crop with pearl millet, mothbean, Sesame. In the areas where irrigation facilities are available and land is sown during rabi and summer season the crop is grown in rotation with wheat. In rainfed condition the most prominent rotations are Pearl millet + Guar-fallow, guar-fallow/mustard, Sesame + Guar -fallow, Guar -taramira, Guar-Mustard, Grass + Guar- fallow etc.

Intercropping with pearl millet have showed no adverse effect on pearl millet but also gave the additional seed yield under rainfed condition (Singh et al., 1985). The pearl millet grain yield was