

## Research Paper

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# Cultivation of cluster bean (*Cyamopsis tetragonoloba* L.) in association with *Ber* (*Zizyphus mauritiana*)—An eco-friendly vege-forage-horti system of agro-forestry

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**Abstract :** The adaptive trial was laid out for two consecutive years during 2004-05 and 2005-06 in the area jurisdiction of Zonal Agricultural Research Station, Mainpur. The site is situated in catchments area of river Kali having degraded soils. The three year well thrived newly orchards of *Ber* were selected for vege-forage - horti system in *Ber* growing tract of Mainpur. The four varieties of cluster bean *i.e.*, Pusa Mausami, Pusa Sadabahar, Pusa Navbahar and local were grown in the interspaces of cultivar Banarasi Karka of *Ber*. The cultivar Pusa Navbahar of cluster bean gave highest green pod yield by 107.00 q/ha followed by cv. PUSA Sadabahar (103.70 q/ha). Pusa Mausami gave green pod by 101.50 q/ha in association of *Ber*. The lowest yield was recorded with local variety, used as check. The order of varieties performance in association of *Ber* was Pusa Navbahar (107.00 q/ha) > Pusa Sadabahar (103.70 q/ha) > Pusa Mausami (101.50 q/ha) and local check (92.00 q/ha). The average fruits yield of *Ber* was found higher (80.05 q/ha) under companion cropping system over sole cropping of *Ber* (78.00 q/ha) under rainfed situation.

**Key words :** Vege-forage-horti system, Rainfed-situation, Tolerant to drought, Synergistic effect, Crisp in fruits, Scarlet colour

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Agro-horticulture system is one form of agro-forestry in arable lands having fruit trees as tree component. Thus, the system provides higher income per unit area. Some times, well maintained and established orchards bring even better returns than the field crops. The amount of rainfall and its distribution decides largely the type of fruit that can be grown. In dry lands area of South-Western-Semi-Arid Zone of U.P. guava, ber, phalsa and pomegranate can be raised.

Dry land pulses crop base agro-horticulture systems have been found dependable propositions for utilization of degraded lands in erratic rainfall areas because fruit trees in general, can tolerate extreme soil and climatic conditions, whereas legumes provide good land cover. The fruit tree component should be selected suiting the soil and climatic conditions. The tree should have the following features *viz.*, fast growing high palatability, good cropping ability, ability to withstand browsing and resistance to drought. Likewise, some dry land pulse crops like moong

bean, urd bean and cluster bean should fulfill the ability to grow well even under shade, tolerant to drought, easy propagation, high palatability, ability to conserve soil and water and able to withstand.

In agro-horticultural alley cropping system with *Ber* for fruit plantation along with rainy season dry land crop cluster bean proved to be better companion crop under rainfed situation. It is very hardy type of crop and survives well in semi tropic area. It is grown very commonly in the northern plains and appreciable area has come under this crop in southern plain also. The pod is primarily used as a vegetable. In the low rainfall areas of northern plains, it is the most common poor man's vegetable crops. Thus a strong need was felt to develop a suitable model of agro-forestry for harvesting of vegetable, fodder and fruit under two tier systems in degraded situation, is the subject matter of this paper.