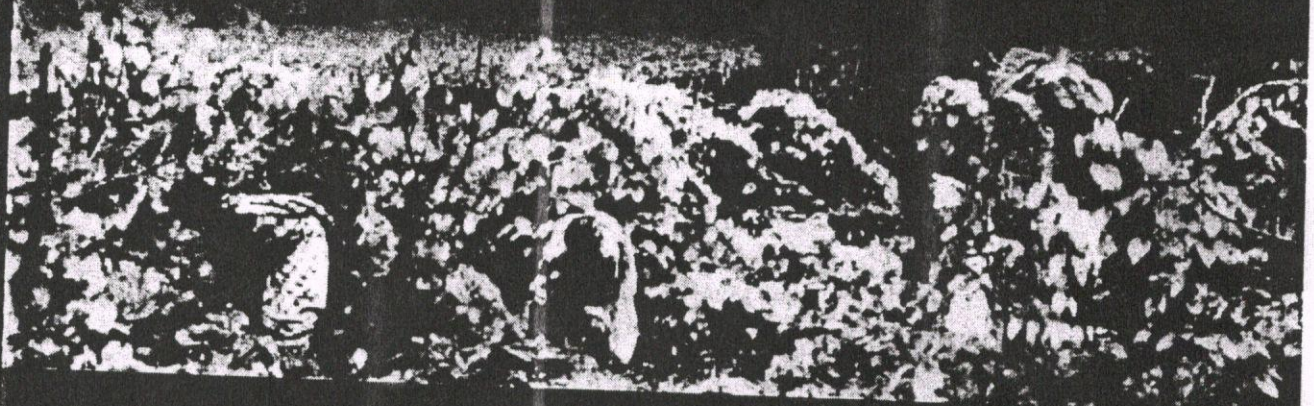


# Abstract

INTERNATIONAL CONFERENCE  
ON  
TRADITIONAL PRACTICES IN CONSERVATION AGRICULTURE  
September 18-20, 2010



Organized by  
Asian Agri-History Foundation (AAHF), Secunderabad  
AAHF Rajasthan Chapter, Udaipur, AAHF Uttarakhand Chapter, Pantnagar, and  
AAHF West Bengal Chapter, Darjeeling

In Collaboration with  
COMPAS, ETC, Netherland  
Centre for Indian Knowledge System, Chennai  
Janardan Rai Nagar Rajasthan Vidyapeeth University, Udaipur

Sponsored by  
Indian Council of Agricultural Research, New Delhi

## 1. Performance of Arid Legumes in Alternate Land Use Systems in Arid Kachchh Region of Gujarat

**Bhagirath Ram, Devi Dayal, M Shamsudheen, and S L Meena**

Central Arid Zone Research Institute, Regional Research Station, Kukma, Bhuj 370 105, Gujarat, India

Drought hardy food legumes namely cluster bean (*Cyamopsis tetragonoloba*), cowpea (*Vigna unguiculata*), moth bean (*Vigna aconitifolia*), and green gram (*Vigna radiata*; mungbean) are cultivated by farmers in the arid region with the objective to stabilize the production. Poor productivity of these food legumes continues to haunt despite great importance attached to their products. Opportunities also exist to spread these crops in new niches to diversify and improve the sustainability of the production system. Due to uncertainty and erratic rainfall, trees and grasses are more reliable for sustainability of production in the region. Cultivation of crops along with trees not only stabilizes the production but also improves the soil fertility, water use efficiency, and physical properties of the soil. Alternatively, horticultural crops such as date palm (*Phoenix dactylifera*), ber (*Ziziphus mauritiana*), pomegranate (*Punica granatum*), aonla (*Emblica officinalis*), etc. are cultivated in Kachchh region of Gujarat. These crops are predominantly grown in monocropping system, which often leads to rapid degradation of arable lands, besides holding very little scope for coping with the ever increasing needs of human and livestock population. Intercropping of arid food legumes, namely cluster bean, cowpea, moth bean, and green gram with fruit trees such as ber, pomegranate, and aonla shows promise to address these issues. A field experiment was conducted during *kharif* of 2008 and 2009 to determine the suitable agri-horti-intercropping system under arid regions of Gujarat. Four food legumes, i.e., cluster bean cv. Maru guar, cowpea cv. GC-3, green gram cv. K851, and moth bean cv. CZM-2, were evaluated for their performance as intercrops with the fruit trees aonla, ber, and pomegranate. Among the different alternate land use systems, maximum yield for all the four legumes was recorded with ber ( $346 \text{ kg ha}^{-1}$ ) followed by pomegranate ( $290 \text{ kg ha}^{-1}$ ) and the yield level was least ( $263 \text{ kg ha}^{-1}$ ) under aonla plantations. Seed yields of food legumes were maximum under sole cropping because of higher plant population. The yield reduction in legumes was minimum with ber followed by pomegranate and aonla. No adverse effect on the fruit trees in terms of their height, spread, and yield was observed due to intercropping of field crops.

2.  
D  
N  
1.  
2.

Th  
an  
an  
ge  
cal  
inc  
gro  
pro  
ide  
thi  
thi  
ad  
in  
tri  
ne  
ag