

## Morpho- economic potential of *Jatropha curcas* L. growing wildly in the subtropical region of J&K, India

S. KHAJURIA AND R.GUPTA

.....

### ABSTRACT

Plant species, which can be processed to provide a diesel substitute, have received the interest globally. *Jatropha curcas* L. can be successfully used as substitute for diesel fuel in this plant category. Surveys were made during 2005 and 2006 to identify and evaluate the germplasm of *Jatropha curcas* L. available in natural forests of Jammu region (J&K). Evaluation of *Jatropha curcas* germplasm comprising seventeen populations indicated a wide range of variability in vegetative growth and characters, which could be, harnessed in future improvement programme. A wide range of variation ranging from 2.15 to 14.57% in different parameters of vegetative growth among the population, highest being in number of branches per plant followed by seed yield/plant and lowest in oil yield were observed. Seed yield/plant had a positive and significant correlation with all the characters except leaf width, 100 seed weight and oil per cent, highest being with number of branches/plant, oil yield and plant spread ( $r = 0.789, 0.786, 0.772$ ). Oil yield had significant, correlation with plant height, number of branches/plant, plant spread ( $\text{cm}^2$ ), stem diameter and seed yield/plant ( $r = 0.708, 0.732, 0.632, 0.748$  and  $0.786$ ). Oil content (%), Oil yield and Seed yield (g) varied from 24.49 to 37.86, 60.09 to 220.3 and 323 to 582. The association of different yield component with the yield and their inter relationship will help in improvement of yield through selection of component characters substituting strong favourable associations. This evaluation has helped to identify cultivars with specific yield and vegetative growth features.

See end of article for authors' affiliations

.....

Correspondence to :

R. Gupta

Division of Agricultural Chemistry and Soil science, S.K.University of Agricultural sciences and Technology, Main Campus Chatha, Bhour Camp Jammu (J&K) INDIA

Accepted : March, 2007

.....

**Key words** : Biofuel, *Jatropha curcas*, Variability, Evaluation.

The use of trees and shrubs in arid and semi-arid regions is of vital importance for the human population in developing countries (Ben Salem and Palmberg, 1985). A number of surveys has been carried out in order to identify superior plant species, not only for use as raw material in industry but also as energy source (Corr *et al.*, 1985). As India cannot afford to spare edible oils for this purpose, the emphasis was shifted towards production of bio diesel from non-edible oils. *Jatropha curcas* L. (Euphorbiaceae) serves a very good fuel properties and can be successfully used as a substitute for diesel fuel, replacing dependence on imported fossil fuel besides contributing towards economic uplift of farmers, rejuvenation of wastelands, reducing soil erosion. The present investigation was undertaken to determine the magnitude of variability for yield and oil composition of *Jatropha curcas* L., grown wildly on the wastelands of subtropical Jammu (J&K) region from seventeen natural populations as a resource base for exploitation to identify superior germplasm (Pandey *et al.*, 1997).

### MATERIALS AND METHODS

Different locations were identified and trees 100 meter apart were marked growing in the natural stand/field boundaries at different altitude. The populations included in the study were grown in seventeen sites in four major districts of Jammu region. All seventeen plant population included in the study were phenotypically uniform and twenty even aged plants were selected in each population divided into three replicates. Various morphometric characters viz. plant ht, number of branches per plant, plant spread, stem diameter, leaf length, leaf width, number of capsules per plant, seed yield, oil content (%), oil yield and 100 seed wt were observed. Mean, range and coefficient of variation (CV%) were computed following Panse and Sukhatme (1957). The correlation coefficients among growth and yield traits were worked out as outlined by Gomez and Gomez (1984).

### RESULTS AND DISCUSSION

A wide range of variation ranging from 2.15 to 14.57% in different parameters of vegetative growth among the different accessions was observed highest being in number of branches/plant followed by seed yield/plant and lowest in oil yield (Table.1). Similar wide range