

## **Comparative studies for selection of *Jatropha curcas* L. capable of high yield and oil quality in Assam environment**

<sup>1</sup>Mapelli S., <sup>2</sup>Saikia S. P., <sup>1</sup>Pecchia P., <sup>2</sup>Mudoj K. D. and <sup>2</sup>Gogoi A.

<sup>1</sup>Institute of Agricultural Biology and Biotechnology, CNR, 20133 Milan, Italy

<sup>2</sup>North East Institute of Science and Technology, CSIR, Jorhat – 785 006, Assam, India

*Jatropha curcas*, a multipurpose shrub, is originated in Central America, now it is worldwide present throughout tropical and subtropical regions. In India, *J. curcas* had recently promoted interest as one of potential source to reduce dependence on crude oil. However, knowledge concerning genotype, phenotype and environmental interaction are limited. In the present study the magnitude of phenotype growth, oil yield and quality of promising jatropha sources from India growing belt has been evaluated at Jorhat in Assam. After 36 months of field planting, significant differences were noticed among all accession tested in agronomical and physiological parameters. All those data let to reduce the number of jatropha accessions to continue the evaluation of genotypes suitable for local climate and environment. The yield and oil quality of accessions selected on the phenotype and agronomic performance have been evaluated. Free fatty acids (FAs), triglyceride acid composition as well as the presence of phorbol esters and tocopherols are basic components indicating the oil quality. The oil yield varied between 22-35% of seed weight and, in general, the heaviest seeds have higher oil content. Oils are also characterized by different color, from light yellow to dark orange, probably reflecting different oxidative process or presence of different pigments. Indeed hexane extracted oil fraction shows a wide range, from 2 to 38%, of FFAs content and a low content of tocopherols. As expected also the phorbols are present in all oil samples in the range reported for jatropha. In triglyceride the polyunsaturated fraction is relatively modest and in general the FAs composition doesn't show wide changes between the jatropha accessions tested. The triglyceride composition doesn't seem to be the main factor that influence the oil value. Free FAs and phorbols seem to be more important factors for selection of better accessions. Furthermore a first integration of biochemical with physiological and agronomical data shows that, under Jorhat environment, the accessions expressing the best performance in the field are also the best in oil yield and quality.