OTHERS (incl. Cultivation, Distribution, New species, Post harvest Technologies, Packaging Technology, New technologies/Know How Developed, Book reviews, Forthcoming events)

CULTIVATION

NPARR 3(1), 2012-0104, **Effects of auxins and thiamine on the efficacy of techniques of clonal propagation in *Jatropha curcas* L.**

Effect of auxins (IAA, IBA, NAA) and vitamin-B_1 (thiamine) on rooting response of branch cuttings and air-layers of *Jatropha curcas* in relation to spring and monsoon seasons was investigated. Spring season was found best for clonal multiplication of genetically superior material in jatropha. Cuttings treated with 600 and 800 mg L^{-1} thiamine showed 100% sprouting in both seasons. The average sprout growth was also found maximum in thiamine treated cuttings. Auxins enhanced rooting of cuttings in spring season but showed very poor response or even failed to root during monsoon. Among different growth regulators; thiamine triggered highest rooting during monsoon and was comparable during spring season. Average percent rooting was also recorded maximum in air-layers treated with thiamine (75, 150, 300, 600 mg L^{-1}) in comparison to auxins in both the seasons. However, number of roots per layer increased with increasing concentration of NAA and IBA in spring but decreased in monsoon season. Cleft grafting was found more promising in terms of success in rainy season however; the growth of the grafted plants was quite slow as compared to spring season. This technique can be practically applied on commercial scale in the areas where *Jatropha gossypifolia* grows as weed [R.S. Dhillon*, M.S. Hooda, J.S. Pundeer, K.S. Ahlawat and I. Chopra (Department of Forestry, CCS Haryana Agricultural University, Hisar 125004, India), *Biomass and Bioenergy*, 2011, **35**(4), 1502-1510].

NPARR 3(1), 2012-0105, **Relationship between gibberellin, ethylene and nodulation in *Pisum sativum***

Gibberellin (GA) deficiency resulting from the *na* mutation in pea (*Pisum sativum*) causes a reduction in nodulation. Nodules that do form are aberrant, having poorly developed meristems and a lack of enlarged cells. Studies using additional GA-biosynthesis double mutants indicate that this results from severe GA deficiency of the roots rather than simply dwarf shoot stature. Double mutants isolated from crosses between *na* and three supernodulating pea mutants exhibit a supernodulation phenotype, but the nodule structures are aberrant. This suggests that severely reduced GA concentrations are not entirely inhibitory to nodule initiation, but that higher GA concentrations are required for proper nodule development. *na* mutants evolve more than double the amount of ethylene produced by wild-type plants, indicating that low GA concentrations can promote ethylene production. The excess ethylene may contribute to the reduced nodulation of *na* plants, as application of an ethylene biosynthesis inhibitor increased *na* nodule numbers. However, these nodules were still aberrant in structure. Constitutive GA signalling mutants also form significantly fewer nodules than wild-type plants. This suggests that there is an optimum degree of GA signalling required for nodule formation and that the GA signal, and not the concentration of bioactive GA *per se*, is important for nodulation [Brett J. Ferguson, Eloise Foo, John J. Ross and James B. Reid* (School of Plant Science, University of Tasmania, Private Bag 55, Hobart, Tasmania 7001, Australia), *New Phytologist*, 2011, **189**(3), 829-842].

NPARR 3(1), 2012-0106, **Effect of incorporated cowpea stover on succeeding cauliflower curd yield and N, P, K status in soil**

An investigation was carried out at Regional Agricultural Research Station, Assam Agricultural University, Gossaigaon during *Rabi* season of 2004, 2005 and 2006 to assess the influence of cowpea stover incorporation with five levels of N (0, 20, 40, 60 and 80 kg/ha) on succeeding cauliflower curd yield production and residual available N, P, K status and economic feasibility. Stover incorporation into the soil increased the curd yield of cauliflower by 10.1 q/ha (6.09%) and 18.4 q/ha (11.68%) as compared to stover removed and fallow land, respectively. Stover incorporation into the soil increased leaf N (%) by 0.71 and 0.82 and curd N (%) by 0.53 and 0.66 than

that of stover removed and fallow land, respectively. Compared with control, application of 20 kg N and 40 kg N/ha, application of 60 Kg N/ha resulted in significantly higher yield by 29.8 q/ha (20.16%), 17.2 q/ha (10.72%) and 11.3 q/ha (6.8%), respectively while application of 60 Kg N/ha being statistically at par with 80 kg N/ha level. Leaf N content (%) was higher by 0.64, 0.51, 0.32 and curd N content (%) by 0.53, 0.46 and 0.35 with 60 kg N/ha level than with control, 20 kg N/ha and 40 kg N/ha, respectively. Stover incorporation increased residual organic matter content (%) by 0.19, available N content by 16.56 kg/ha (6.7%), available P content by 2.6 kg/ha (20.63%) and available K content by 23.7 kg/ha (18.23%) than that of initial value. Maximum net returns (Rs. 63430/ha) and B:C ratio (2.59) accrued when planted at stover incorporated practices with the application of 60 kg N/ha compared to other N doses applied. The practice of stover incorporation into the soil along with 60 kg N/ha applied was found optimum for obtaining higher cauliflower curd yield and building up of NPK status in soil [Sarma, U. J. and Chakravarty, M. (Regional Agricultural Research Station, Assam Agricultural University, Assam), *Asian Journal of Soil Science*, 2011, **6**(1), 61-65].

NPARR 3(1), 2012-0107, **Cultivation of *Chlorella pyrenoidosa* in soybean processing wastewater**

Chlorella pyrenoidosa was cultivated in soybean processing wastewater (SPW) in batch and fed-batch cultures without a supply of additional nutrients. The alga was able to remove $77.8 \pm 5.7\%$, $88.8 \pm 1.0\%$, $89.1 \pm 0.6\%$ and $70.3 \pm 11.4\%$ of soluble chemical oxygen demand ($SCOD_{Cr}$), total nitrogen (TN), NH_4^+-N and total phosphate (TP), respectively, after 120 h in fed-batch culture. *C. pyrenoidosa* attained an average biomass productivity of $0.64\ g\ L^{-1}\ d^{-1}$, an average lipid content of $37.00 \pm 9.34\%$, and a high lipid productivity of $0.40\ g\ L^{-1}\ d^{-1}$. Therefore, cultivation of *C. pyrenoidosa* in SPW could yield cleaner water and useful biomass [Su Hongyang, Zhang Yalei* Zhang Chunmin, Zhou Xuefei and Li Jinpeng (State Key Laboratory of Pollution Control and Resources Reuse, College of Environmental Science and Engineering, Tongji University, Shanghai 200092, China), *Bioresource Technology*, 2011, **102**(21), 9884-9890].