CULTIVATION

NPARR 4(3), 2013-0333 Mild Fe-deficiency improves biomass production and quality of hydroponic-cultivated spinach plants (*Spinacia oleracea* L.)

It is of great practical importance to improve yield and quality of vegetables in soilless cultures. This study investigated the effects of iron-nutrition management on yield and quality of hydroponic-cultivated spinach (*Spinacia oleracea* L.). The results showed that mild Fe-deficient treatment (1 μM FeEDTA) yielded a greater biomass of edible parts than Fe-omitted treatment (0 μM FeEDTA) or Fe-sufficient treatments (10 and 50 μM FeEDTA). Conversely, mild Fe-deficient treatment had the lowest nitrate concentration in the edible parts out of all the Fe treatments. Interestingly, all the concentrations of soluble sugar, soluble protein and ascorbate in mild Fe-deficient treatments were higher than Fe-sufficient treatments. In addition, both phenolic concentration and DPPH scavenging activity in mild Fe-deficient treatments were comparable with those in Fe-sufficient treatments, but were higher than those in Fe-omitted treatments. Therefore, we concluded that using a mild Fe-deficient nutrition solution to cultivate spinach not only would increase yield, but also would improve quality.

[Chong-Wei Jin, Yue Liu, Qian-Qian Mao, Qian Wang and Shao-Ting Du, Food Chemistry, 2013, 138(4), 2188-2194].

NPARR 4(3), 2013-0334 Income generation through potato cultivation in Rewa district of Madhya Pradesh

Diversification helps in increasing income and reducing risk associated with the farming. Due to returns potato cultivation is gaining importance in the Rewa district. The study shows that the average yield of potato in the study area was 11.11 tons per hectare. The maximum yield (11.46 tons per hectare) was obtained on large size of farm's due to efficient use of inputs. Farm business income was higher in case of small farmers and decreased with the increase of size of holding. This shows the efficiency of smaller farmers to scale up potato production. The cost benefit ratio of potato production to the tune of 1.52 was found to be satisfactory and will be helpful in promoting nature for potato production in the area. However, cold storage facilities may help in increasing returns at farmers' level [Rajput L. S., Niranjan, H. K., Singh, K. C., Pradeep Mishra and Shrivastava, S. N., Environment and Ecology, 2013, 31( No. 2B), 984-987].

NPARR 4(3), 2013-0335 Exotic medicinal plants-current status and future priorities

Augmentation of new genetic resources either through indigenous collections or by importing from other countries is an important activity of any crop improvement programme. Indian history had witnessed the invasion of many world communities like British, French, Portuguese, Dutch, Arabians, Muslims etc with whom a diverse genetic base of many crop plants were also introduced in the country's flora. Many of these species have been adapted well and naturalized in Indian climate and are being used in various facets of life. The pharmaceutical industry is also backed by many such plants. Of the forty major commercial medicinal plants utilized by the Indian pharmaceutical companies, about 27 per cent have originated in other countries. The percentage is still higher in case of commercial aromatic plants viz., 52 per cent of the total aromatic component. The gradual increase in the utilization of exotic plants by the pharma-aroma-companies is because many plants have been introduced into cultivation and are now a part of regular agriculture system. The National Bureau of Plant Genetic Resources (NBPGR), New Delhi under ICAR is instrumental in providing this genetic variability of medicinal plants at both fronts. The import of
plant genetic resources into India is governed by Plant Quarantine (Regulation of Import Into India) Order, 2003. Access to genetic resources of Indian origin by foreign nationals is governed by Biological Diversity Act, 2002 of Government of India based on the principle of 'Sovereign rights of Nations' as promulgated under the legally binding Convention on Biological Diversity (CBD), 1992. The Convention provides for appropriate access to genetic resources and transfer of relevant technologies on mutually agreed terms, subject to prior informed consent [Vandana Tyagi; Veena Gupta and Singh, S. P., International Journal of Plant Sciences (Muzaffarnagar), 2013, 8(1), 10-18].


Salinity adversely reduces the overall productivity of plants including crops by inducing numerous abnormal morphological, physiological and biochemical changes that cause delayed germination, high seedling mortality, poor crop stand, stunted growth and lower yields. More than 1100 species of vascular plants are found distributed in saline habitats of India, out of which several have medicinal properties. Various experiments in arid and semi-arid regions of Indian sub-continent on salty soils and irrigating judiciously with saline water have shown that several aromatic and medicinal plants such as Goose berry, neem, Bael, Arjun, Jatropha, Vasaka, Ashawagandha, Castor, Isabgol, Periwinkle, Indian aloe, Senna, Mallati, Tulsi, Dill, Celery, German Chamomile, Vetiver, Palmarosa and Lemon grass can successfully be grown with saline irrigation and in moderate alkali soil without applying any amendment. This paper is an attempt to indicate that cultivation of aromatic and medicinal plants on degraded lands through biosaline agriculture is very much feasible [Dagar J. C.; Mukesh Kumar; Amit Kumar, International Journal of Agricultural and Statistical Sciences, 2013, 9(1), 273-283].