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PROMISING TECHNOLOGY

IPNS Technology for Soybean-Wheat

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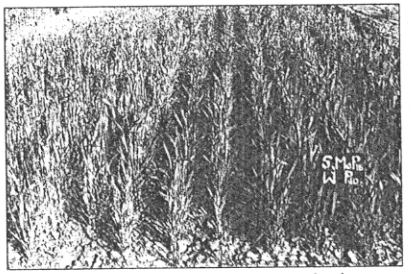
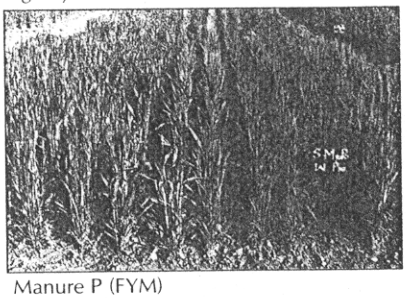
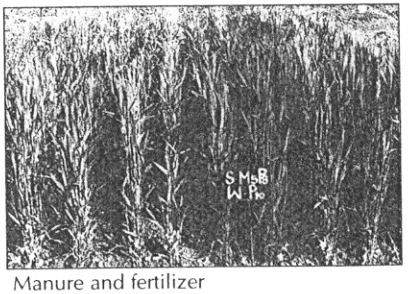
The Indian Institute of Soil Science, Bhopal has developed a technology on integrated plant nutrient supply (IPNS) system involving inorganic and organic sources of plant nutrients in soybean-wheat systems on Vertisols (Typic Haplusterts) low in N, P, S and Zn in Madhya Pradesh. Based on five years experimentation on integrated nutrient management for the soybean-wheat system, recommendation has been worked out for obtaining 2 tonnes per ha or more soybean grain and 3.5 tonnes per ha or more wheat grain. The technology which has been developed, not only produced higher grain yield of both soybean and wheat crops but also sustained the yield over the years besides improving the physical, chemical and biological aspects of soil fertility. The technology developed provides the farmers with different management options depending upon availability of farmyard manure (FYM) and fertilizer resources with them for achieving the yield target. Besides, economic impact, there is a long-term perspective of this technology with regard to soil-fertility maintenance by providing stability and sustainability to crop production under modern intensive farming.



Chemical fertilizer P. Response of wheat to equivalent rate of 10 kg ha^{-1}, as influenced by the source of P added (16 kg Pha^{-1}) to preceding soybean



Manure P (FYM)



Manure and fertilizer

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and elongation percentage required for modern textile industry.

Pusa strains 95-32-18-11, 95-33-47-2, 95-38-18-2 and 95-38-18-5 are the strongest one-inch cottons, perhaps in the whole world. Low micronaire for short cottons is also an exceptional trait. Pusa strains 95-33-47-2-1, 95-33-47-4-1, and 95-33-47-2-2 are long staple cotton strains of medium fineness, similar to Australian cottons imported in large qualitities in India, but far stronger. As per observation by CIRCOT all the 15 selected Pusa strains are of high fibre maturity level. Even low micronaire cottons (Pusa strains 95-38-18-2, 95-33-47-4 and 95-38-18-7) are quite mature. Nevertheless, high fibre elongation value (extensibility) is essential for high speed rotor spinning system, as it reduces during yarn production, and losses during chemical finishings. The elongation of yarn is primarily influenced by elongation of cotton fibre and very high elongation percent (6.2 to 7.9% as compared to 5.0-6.2% of leading indigenous commercially grown varieties) with high fibre quality index (FQI) 294.5 to 416.1 was recorded in all the fifteen strains.

The selected Pusa strains are ideally suited for various end uses of modern textile industry. Strains at Sr. No. 3,6,8 to 12 are suited for polyester and strains at Sr. No. 1,2,4,5,7 and 13 to 15 are best suited for Denim product.

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Diversified uses of coconut cultivars

The high value product of coconut is its oil. Besides its major uses as edible oil and hair oil, the coconut oil is put to diversified uses like manufacturing of soap, toiletries, dyes, lubricants, etc. It is also an important component in many pharmaceutical products.

Copra, the dried kernel of coconut, contains an average 65-70% of oil. Coconut oil contains~48% of lauric acid. The other medium chain fatty acids found in coconut oil are caprylic (~6.6%), capric (~5.8%) acids. The major long chain fatty acids are myristic (~19%), palmitic (~8.8%) and oleic (~8.8%) acid. Narrow range of melting point is a significant physical property which sets coconut oil apart from other oils. As the thrust now is on product diversification, it is mandatory to assess the levels of saturated acids like lauric, myristic and palmitic acids and unsaturated fatty acids in cultivars of coconut.

India has the distinction of maintaining 197 accessions of coconut comprising of indigenous (96) and exotic cultivars (101) at the Central Plantation Crops Research Institute, Kasaragod. Extensive research was done on oil quality from different cultivars. Since the level of unsaturated fatty acids in oil is important for human consumption, the cultivars were screened for low ratio of saturated fatty acids to unsaturated fatty acids concentration. Similarly, the cultivars suitable for specific industrial purposes could be identified.

The characteristic features of oil for edible purposes are low ratio of saturated to unsaturaed fatty acids, high lauric acid content and medium chain fatty acids. The hybrids which possessed above desirable traits are WCT x COD, COD x WCT, LCT x COD, LCT x GBD which are considered as promising hybrids on the basis of quantitative yield characteristics also. For soap industry the oil should possess high saturated fatty acids and high lauric acid content. The cultivars which suited better for this purpose are ADOT, LCT, SSG besides the hybrids. Oil from cultivars like BENT, FMS, MYD x WCT, WAT and WCT x GB, with high content of myristic acid, is suitable for cosmetic industry. By virtue of possessing high content of saturated fatty acids, medium chain fatty acids, and lauric acids, the cultivars likd ADOT, LCT, SSG and the hybrids COD x WCT, LCT x GBD and LCT x COD are most suitable for pharmaceutical industry. Thus, there exists a wide scope for multiplying the desired cultivars/hybrids based on the industrial demands for coconut oil.

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Biocontrol of nematodes in spice crops

A strong reliance on chemical pesticides for the control of plant parasitic nematodes in the past has proved to be highly toxic, built up residues in food produce and also infiltrate into ground water. Other means of nematode control are crop rotation and host resistance. The former approach is not feasible as

Yield evaluation of biocontrol agents in cardamom nurseries for *Trichoderma* spp. (*above*) and control (*below*)