IDT8-083 | Strip intercropping system for sustainable crop production under rainfed ecosystem

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Strip intercropping system is one of the options to address crop failure in rainfed ecosystem due to prolonged dry spell and uneven distribution of rainfall. It is the practice of producing two or more crops in narrow strips located throughout the length of the field. The strips are wide enough so that each can be managed independently, and yet narrow enough so that each crop can influence the microclimate and yield potential of adjacent crops (Cruse, 2008). Strip intercropping is a highly sustainable system under rainfed ecosystem by its very nature. Strip intercropping offers raising different crops simultaneously with different traits for drought tolerance, and moisture-sensitive crops will secure the minimum income for farmers by avoiding entire crop failure (Dutta and Bandyopadhyay, 2006). The diversified nature of strip intercropping reduces pest infestation and rate of pesticide usage from the monoculture (Gurr and Wratten, 2003). Growing legume crops and deep-rooted crops in strips strongly increases soil fertility by fixing atmospheric nitrogen and reducing soil erosion (Jakhar, 2015). Accumulation of more crop residues that increase humus content and physical characteristics of soils leads to increased population of soil flora and fauna, which results in improved soil health and safeguards the environment. Also, strip intercropping is acceptable to farmers as it facilitates simultaneous growing of different crops such as food grain, oil seed, fiber and sugar crops. Strip intercropping is also highly suitable for modern concepts of agriculture, such as conservation agriculture, eco-friendly farming and organic farming. Further research and better understanding of strip intercropping system will help heighten its benefits under rainfed conditions.

IDT8-084 | Phosphorus influence on nitrogen uptake, nutrient and yield attributes of finger millet in semi-arid region of Kenya

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An understanding of P efficiencies of finger millet is very important in soil management and selection of varieties adaptable to P-deficient soils. Therefore, on-station experiments were conducted at the ICRISAT-Kiboko research station to evaluate the effect of differential levels of P on nitrogen uptake, nutrient content and yield. There were four P levels (0, 12.5, 25 and 37.5 kg ha^{-1} P_2O_5) and three varieties (U-15, P-224 and Ekalakala). Ekalakala was the local check while 0 kg/ha P_2O_5 was the control. The trial was laid out in a randomized complete block design in factorial arrangement with three replicates. Soil analytical results showed moderately available P but very low N, organic carbon and zinc. Significant differences *($P<.05$)* were observed between the phosphate levels on the nitrogen contents, where the control had the lowest with 4.95% and 4.90% for the short and long rains respectively; while the 25 kg ha^{-1} P_2O_5 rate had the highest, with 5.66% in the short rains and 5.14% in the long rains. The protein content significantly increased with phosphorus application, peaking at 11.00 g/100 g on the 25 kg ha^{-1} P_2O_5 treatment. The newly released variety (U-15) responded positively to P supplemented at 25 kg ha^{-1} P_2O_5, with a maximum grain yield of 3,410 kg ha^{-1}. It can, thus, efficiently utilize N in soils with low N and is highly recommended. The application of P beyond 25 kg ha^{-1} P_2O_5 would not be translated into profitable yields, but losses to the farmer.