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Development of Sustainable IFS Model for Enhancing Productivity, Profitability, Sustainability and Resource Conservation under Changing Climate

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The present investigation was conducted to ascertain the productivity of diversified integrated farming system model at the ICAR-IIFSR, Modipuram (Uttar Pradesh), India during the 2015-2022. The different components of IFS (Integrated Farming System) were compared with each other for the allocation of various resources for their higher production and economic gain. In total, nine components like crops, dairy, fruit crops, fishery, poultry, mushroom, kitchen garden, boundary plantation and vermicompost were included for their cram. The productivity, profitability, sustainability, soil fertility upsurge and employment generation was increased highest from the crop module than other components because approximately 69.3% of land area (1.04 ha) was owed for crops production, 17.3% area for horticultural crops, 6.6% area for fish farming and rest land area i.e. 6.7% was held in reserve for dairy farming (shed and fodder production). Mushroom and vermicompost were also taken up as the supplementary enterprises. Keeping in view, the mutual benefit of one component to other in terms of production as a result reduced the cost of production and maintained inflow- out flow of inputs. To maintain the productivity and save the resources though recycled from crops, livestock, fishery, mushroom and poultry as residues viz. rice straw, dry leaves of sugarcane, green manure, dung, urine, fish pond mud, mushroom spent and water, bunds weeds, stubbles, stalks, poultry excreta and mushroom spent. Results of the study reveals that productivity of cereals, pulses, oilseed, fodder, sugarcane, vegetables, fruits, milk, eggs, mushroom (milky, oyster and button types of mushroom) and vermicompost under integrated farming system were ample to meet out the demand of a 7members family of Indian household from 1.5ha of land model and surplus farm produces were vend in the market for attracting higher income to complete the other family requirements like education, marriage and medicines for family members and procurement of new seeds for sowing. Similarly, by making use of crop residues, green manure (GM), vermicompost (VC),mushroom spent (MS) and farm yard manure (FYM), the sum of nutrients requirement for the crops and plantation trees were rewarded in the tune of 60% nitrogen, 74% phosphorus and 95% potash, respectively and remaining nutrients requirement was supplied through chemical fertilizers. By the different components of the integrated farming system, the employment can be generated up to 939man days/annually from all components. However, higher man days were generated from the crop component alone (255) and thereafter from dairy (216), horticulture(149), fishery (96) and mushroom (76), boundary plantation (69), kitchen garden (32) and vermicompost (46) on the basis of three years mean data. Overall, observations after integrating different components of farming system, it may be inferred that the production, productivity, economic returns, balanced nutrition along with better employment can be achieved by adopting of the diversified farming system in upper Gangetic plain region of Uttar Pradesh which has not only alleviated the socio-economic condition of farmers, but also provides the sustainability in productivity by following of the various components and attaining 100% nutritional security.

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