STUDIES ON EFFECT OF FERTILIZERS, GROWTH REGULATORS AND PRUNING ON GROWTH, YIELD AND QUALITY OF DRUMSTICK (Moringa oleifera Lam.) Var. PKM-1

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by
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ABSTRACT

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An experiment was conducted on annual drumstick to study the influence of fertilizers, growth regulators and pruning i.e. through physical and chemical means on its growth, productivity and quality. Two fertilizer doses were tested i.e. 150:75:75 g NPK plant/year (F2) and 200:125:125 g NPK plant/year (F1) whereas one was treated as control (F0). Foliar sprays of growth regulators viz., GA3 20 ppm (G1), Triacontanol 5 ppm (G2), Biozyme 10 ppm (G3) and NAA 20 ppm (G4) were applied as subplot treatments with one untreated control (G0) for comparison. Further, two pruning treatments were examined i.e. at 50 cm height (P1) and at 1 m height (P2). Data were analysed and abstract of results obtained is summarized below.

From the standpoint of tree height, number of primary branches and plant spread, F1 was found to be the best (222.86 cm, 13.54 and 94.42 cm, respectively) whereas G1 and G3 were prominent among foliar sprays
Considering leaflets/branch, E₂, G₁, G₂ were found the best (38.78, 34.93 and 34.82, respectively). Treatment of GA₃, NAA and pruning at 50 cm came into focus with maximum stem thickness (45.19 cm, 43.39 cm and 40.98 cm, respectively). Maximum fresh and dry weight of leaves were due to F₁ (508.81 g and 74.11 g, respectively) whereas, G₁ was the best for leaf area (84.85 dm²). Total dry matter production (kg/plant) was distinctly superior with F₁ (2.55), treatment of G₂ (2.32), G₁ (2.18) and pruning at 50 cm (2.14).

Control treatment exhibited their excellence with reference to reduced height at first branch (33.56 cm) and at first panicle (86.02 cm).

Considering yield parameters, days taken for first flowering were lowest in F₂ (81.11 days) followed by G₂ (91.39 days) and G₁ (93.65 days). Number of flowers per panicle and number of panicles per tree were the highest in F₂ (152.58 and 62.77, respectively) followed by G₂ (155.14 and 75.10, respectively) and G₁ (135.83 and 63.24, respectively). Pruning at 50 cm was also the best with more number of flowers and panicles (122.11 and 60.21, respectively). Fruit set percentage was also higher in F₂ (2.33%) G₂ (2.17%) G₁ (1.98%) and P₁ (1.75%). Maximum number of fruits per plant were harvested in F₂ (212.14) followed by G₂ (212.13), G₁ (190.77) and P₁ (195.07). Yield in terms of kg/plant and t/ha was also at its peak in the same treatments i.e. F₂ (10.99 kg and 23.87 t/ha), G₂ (10.99 kg and 23.94 t/ha), G₁ (10.35 kg and 22.47 t/ha) and P₁ (10.12 kg and 22.04 t/ha).

All fruit characters like weight, length, breadth, circumference, flesh and skin weight, number of seeds per fruit were maximized with fertilizer dose of 150:75:75 g NPK, growth regulator like Triacontanol, Biozyme and GA₃ along with pruning at 50 cm.

Macro-nutrient content and uptake patterns were maximized by application of 200:125:125 g NPK and with application of NAA and GA₃ respectively whereas pruning did not play any definite role.
Quality attributes of fruit viz., Vit 'C' content, crude protein, sugars, iron content were also high with application of 150:75:75 g NPK/plant, application of Triacontanol (5 ppm) and Biozyme (10 ppm) with significantly positive influence of pruning at 50 cm also.

Treatments like F2, G1, G3 were also superior with respect to lower fruit fly incidence and higher shelf life (days). Maximum Benefit/Cost ratio was recorded by application of Triacontanol (6.29) followed by Biozyme (5.42), fertilizer dose of 150:75.75 g NPK/plant (3.88) and pruning at 50 cm (4.56).

From a holistic consideration, application of fertilizer at 150:75.75 g NPK/plant/year was found to be optimum in conjunction with foliar sprays of either Triacontanol (5 ppm), Biozyme (10 ppm) or GA3 (20 ppm) and pruning at 50 cm height proved to be desirable from the standpoint of growth, yield and quality and this is advocated for the crop.