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MATHEMATICAL MODELLING FOR OPTIMAL CROP PLAN TO NET BENEFIT MAXIMIZATION

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ABSTRACT

The linear programming mathematical model was developed for resources management plan with the objective function for allocation of land and water for different crop activities to maximize the net return taking in to constrain land capability classification, availability of water in different season, crop water requirements, food requirement and affinity towards the crops of the peoples in selected district.

The analysis of the linear programming mathematical model was done using MATLAB software and conclude that, in existing crop plan during kharif season major area is under cotton (43.45%) followed by jowar (17%) whereas in proposed optimal crop plan without capital constraints major area was allocated under soybean (30%), cotton + tur (20%) of the total cultivable area of the selected district. In rabi major area in existing is under gram (5.2%) whereas in proposed plan area is allocated to wheat (20%), gram (20%). In existing summer area is 0.18% and annual was nil whereas in proposed plan is 3% and 4.13% respectively. In existing gross investment and net return per hectare was 10341 and 5203 Rs/ha, whereas in proposed plan is 14864 and 8833 Rs/ha. In proposed plan net return per hectare increases by Rs.3630.

KEYWORDS: Constraint, Crop Plan, Linear Programming Model