

## MATHEMATICAL ESTIMATION OF PLANT POPULATION

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### ABSTRACT

The yield rate of a cropping area depends on the spacing of plants because adequate number of plants can only support to enhance the rate of production. The more number of plants uses more amount of water through transpiration for which crop failure is a common phenomenon in rain fed areas. The area under study is a rectangular plot which is partitioned into finite number of circular seed beds of same sizes. The lost regions formed on the side of the circular seed beds are asteroids of same sizes. The non linear programming problem is formulated to decide the optimum number of plants for different types of crops. Lagrange's method is used to solve the formulated optimization problem. Though the minimum numbers of plants are estimated, still then it is accepted because of more plant spacing which can produce more individual rate of production of each plant. Finally the numbers of plants estimated and number of plants observed for different crops are compared to decide the better strategy which can enhance the rate of production without the effect of associated crop parameters like pattern of land, manure and seed quality respectively.

**KEYWORDS:** Asteroids, Lagrange's Method, Circular Seed Bed, Hessian Bordered Matrix