

OPTIMIZED METHODS OF THE EQUALIZED SPRINKLING IRRIGATION FOR GREENERY PATCHES

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Abstract: This paper mainly focuses on the optimized methods of the sprinkling irrigation for greenery patches, by maximally equalizing the amount of water sprayed on a certain area.

Firstly, under the assumed condition, the Equilateral Triangle Model is superior to the Square Model, when water is distributed evenly in each circular area covered by one single spout. Additionally the boundary problems are studied.

Secondly, the Equilateral Triangle Model and the Square Model on horizontal plane are comparatively studied when the distribution of water has the linear relation with the distance. The relationship between k which denotes the integral of piecewise interpolating function coefficient and m which denotes the distance between neighboring spouts is obtained by superposition of water amount from the different spouts. And the optimized scheme of k is obtained by the way of numerical methods. As a conclusion, we analyzed the advantages of the two models.

Finally, the problems on oblique plane are studied. The distribution of water amount is simulated by mathematical experiment, and figures are drawn by MATLAB. The most significant thing is that the one optimal spout's angle of elevation for each appointed slope angle could be determined by programming.

Key words

Sprinkling irrigation Optimizing Spout arrangement
Water equilibrium Oblique planes