Data-Driven Crop Advisory – A Use Case on Grapes

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Abstract : In India, grapes are one of the most important horticulture crops. Grapes are most vulnerable to downy mildew, which is one of the most devasting diseases. In the absence of a precise weather-based advisory system, farmers spray pesticides on their crops extensively. There are two main challenges associated with using these pesticides. Firstly, most of these sprays were panic sprays, which could have been avoided. Second, farmers use more expensive "Preventive and Eradicate" chemicals than "Systemic, Curative and Anti-sporulate" chemicals. When these chemicals are used indiscriminately, they can enter the fruit and cause health problems such as cancer. This paper utilizes decision trees and predictive modeling techniques to provide grape farmers with customized advice on grape disease management. This model is expected to reduce the overall use of chemicals by approximately 50% and the cost by around 70%. Most of the grapes produced will have relatively low residue levels of pesticides, i.e., below the permissible level.

Keywords : analytics in agriculture, downy mildew, weather based advisory, decision tree, predictive modelling
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