

Optimisation of Hybrid Seed Production in Arabica Coffee *Coffea arabica* L.

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SUMMARY

Hybrid varieties have become an integral part of coffee farming since the introduction of Cv. Ruiru 11, a Coffee Berry Disease and rust resistant variety, in 1985. More hybrid varieties are expected to appear in the coffee farming scene as various breeding programmes endeavour to introgress resistance to a number of diseases into the commercial cultivars. While procedures for artificial cross pollination at experimental levels exist, experience at the Coffee Research Foundation indicate that the availability of hybrid seed can be the main constraint to the rapid adoption of hybrid Arabica coffee varieties. Labour availability, climate factors such as rain and temperature, fruit set, and synchronised phenological changes have been identified as major bottleneck to efficient large scale hybrid seed production. In this paper, models for optimising the interrelationships between the various constraining factors and hence maximise seed yield are proposed. Data based on ten years of commercial hybrid seed production at the Coffee Research Foundation Ruiru are given in light of the proposed optimisation regime. Guidelines for making production decisions based on agro-climatic factors are proposed.