

Influence of Media Mixture and Watering Frequency on Seed Germination and Seedling Growth of Arabica Coffee

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SUMMARY

A split plot design with three replicates was used to arrange potting media and watering as main- and sub-plot treatments, respectively. The media treatments included topsoil (TS), forest soil (FS), coffee compost (C), and fine sand (S), which were blended in various ratios. The watering frequency consisted of four watering intervals applied at an interval of every 1, 2, 3 and 4 days/week starting from seed sowing up to the appearance of first pair of true leaf. Thereafter, these watering intervals were respectively extended and applied at intervals of every 2, 4, 6 and 8 days within a week up to field transplanting stage with six pair of true leaves. Germination count was made at every week intervals and subsequent extension and destructive growth parameters were recorded at the two growth stages. The results show significant effects of the main treatments on seed emergence and seedling growth parameters recorded at both stages. The use of compost as a media ingredient shortened mean days to emergence and resulted in maximum germination per cent and early seedling vigor. In other words, TS alone and media composition without compost (2TS: 0C:1S) resulted in significantly inferior seedling growth with the least shoot, root and total dry matter yields, particularly at the last growth stage. In contrast, seedling growth was more favored due to the use of FS and all other media types blended with composts and the results followed the order: FS > 3TS:1C:0S > 2TS:1C:1S > 2TS:1C:0S > 6TS:3C:2S > 3TS:2C:1TS > 1TS:1C:1S > 2TS:2C:1S, suggesting diverse potting media options in coffee nurseries. Both more frequent and infrequent watering delayed mean days to emergence while the fastest seed emergence was noticed on pots that received water at an intervals of every 3 days per week. Seedling growth data measured at the first pair of true leaf stage depict significantly lower results due to frequent watering at an interval of every other day. In other words, those seedlings that received water at an interval of every 2 (first stage) and 4 days (second stage) gave significantly higher results for most of the growth parameters, including shoot, root and total dry matter production. In general, media prepared without compost and delayed watering resulted in a stunted growth, with short plant height, thin girth and lower total dry matter yields noticed at both growth stages. On the other hand, treatment interaction had no marked effect on the growth responses at both growth stages. However, most parameters recorded at the first stage were maximum when water was applied at an interval of every 2 days on most media types. Similarly, interaction impact was not significant with increased seedling age, though maximum shoot and root growth parameters were noticed on most media that received water at a moderate interval of every 4 days/week.