

Abstract

Field studies were conducted to determine the contribution of seed tuber size on late blight management, weed abundance, crop performance and net farm income. Seed tuber sizes were as follows: small size (15 to 27 mm), size 1 (28–35 mm), size 2 (36–45 mm) and size 3 (46–60 mm) of Shangi, Kenya Mpya, Unica and Dutch Robijn potato varieties. Fungicide spray regimes were weekly, biweekly and triweekly. Data on late blight severity, weed frequency and density, growth parameters, costs and revenues were collected. Results revealed that seed tuber size, variety and fungicide application regime had significant ($P \leq 0.05$) effects on late blight severity. As such, weekly spray intervals reduced blight severity by 50%, and the blight-tolerant variety (K. Mpya) suppressed the disease to below 1%. Whereas the lowest disease severity was observed on seed sizes 2 (44%) and 3 (43%), the highest blight score was recorded in small seed size (59%) after 70 days of emergence. Notwithstanding the variety used, a combination of seed size 2 with weekly spray interval showed the lowest disease progression as compared to any other combination. Crop growth parameters differences were phenomenal among seed sizes: stem count increased six-fold, while height and canopy were double the observation made in the small seed size for seed sizes 2 and 3. Weed frequency, relative frequency and density decreased with increasing seed size planted. As a result, seed tuber sizes 1, 2 and 3 augmented marketable yield by 49%, 62% and 65% as compared to the small tuber size, respectively. However, seed size 2 had the highest cost–benefit ratio (1.50), followed by size 3 (1.05).