

## THE ROLE OF *Psidium guajava* L., SEED BANK AS A STRATEGY FOR ITS SUCCESSFUL INVASION OF KAKAMEGA RAINFOREST, WESTERN KENYA

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### ABSTRACT

Kakamega rainforest is the only lowland remnant of the great Guineo-Congolean rainforest in Kenya. This natural resource in the Western Kenya is being progressively colonized by various alien invasive plant species with the *Psidium guajava*L., being the most important. It has interfered with the ecological integrity of the entire forest threatening its biodiversity. Studies have previously shown that *P. guajava* invasiveness could be attributed to its aggressive regeneration, profuse seeding and allelopathy. In this study we investigated the role of *P. guajava* soil seed bank as a strategy in its successful invasion of the forest. Soil samples were collected in 18 different quadrats from three invasion zones; 6 in the highly invaded zones, 6 in the lightly invaded and 6 in the no invasion zones, each quadrat measuring 10cm× 10cm. From each quadrat, 500cm<sup>3</sup> of soil samples were collected at different soil depths; 0-5cm, 5-10cm and 10-15cm. The soil samples were then placed in germination pots in a greenhouse and the seeds allowed to germinate over a duration of 90 days at a temperature range of 20-25<sup>o</sup>c. Our results indicated that most of the seeds (59%), which regenerated were found in the highly invaded zones, as compared to the lightly invaded (33%) and zones of no invasion (8%). It also indicated that there was significant difference in regeneration of seeds in the highly invaded ( $F(2, 15) = 18.97$   $p=0.0001$ ) and lightly invaded ( $F(2, 15) = 21.48$   $p=0.001$ ) zones. Most of the seeds regenerated in the 0-5cm depths as compared to the deeper depths. No significant difference was observed in the no invasion zones ( $F(2, 15) = 3.39$   $p=0.61$ ). The successful invasion of *P. guajava*, is therefore attributed to among other factors its rich soil seed bank and its ability to store seeds in greater depths of the soil.

**Keywords:** Seed bank, Invasiveness, *Psidium guajava*, Kakamega Rainforest.