

Introduction

Coffee (*Coffea* sp.) is a major crop in more than 85 tropical countries and an essential economic resource for Côte d'Ivoire. However, it is severely threatened by the coffee berry borer (*Hypothenemus hampei*), the world's most damaging coffee pest, responsible for yield losses of up to 60% and a significant decline in bean quality. The intensive use of chemical pesticides, although common, leads to resistance, health risks, and environmental pollution. Therefore, ecological alternatives are needed. The use of plant-based biopesticides, such as *Moringa oleifera*, represents a promising option for sustainable management of this pest. The main objective of this study is to evaluate the effect of aqueous leaf extracts of *M. oleifera* on the coffee berry borer in seeds.

Material and methodes

Preparation of aqueous leaf extracts of *Moringa oleifera*



Fig.1. Preparation of aqueous leaf extracts of *Moringa oleifera*

Treatment of coffee berries with aqueous extracts of *M. oleifera*

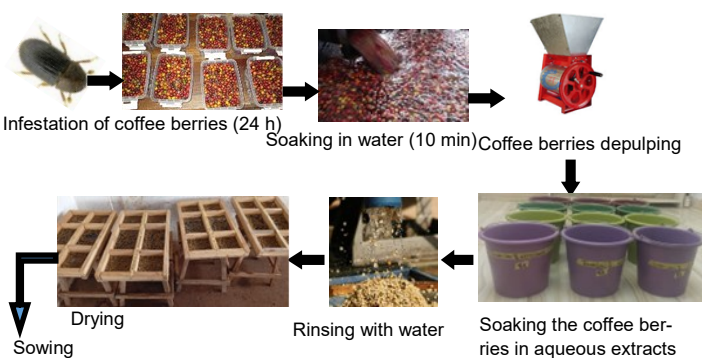


Fig.2. Coffee berries treatment with aqueous extracts of *M. oleifera*

Results

Number of coffee berries perforated by *H. hampei*

There was no significant difference in the mean number of coffee berry perforations caused by *H. hampei* after treatment with aqueous extracts of *M. oleifera*. However, the number of perforations in the control was significantly different from those observed in berries treated with the aqueous leaf extracts of *M. oleifera* (Fig. 3).

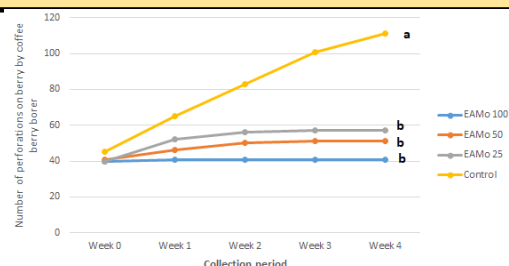


Fig.3. Number of coffee berries perforated after treatment

Germination rate (%) of coffee seeds

The different treatments using aqueous leaf extracts of *M. oleifera* are resulted in significantly higher germination rates compared to the control (50%), with values ranging from 76.66 to 80%.

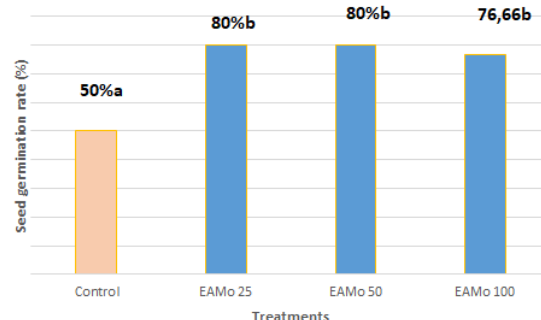


Fig.4. Seed germination rate by treatment

Mean heights of coffee plant

The different treatments using aqueous leaf extracts of *Moringa* induced mean plant heights significantly higher than the control (1.54 cm), with values ranging from 2.20 cm to 2.76 cm.

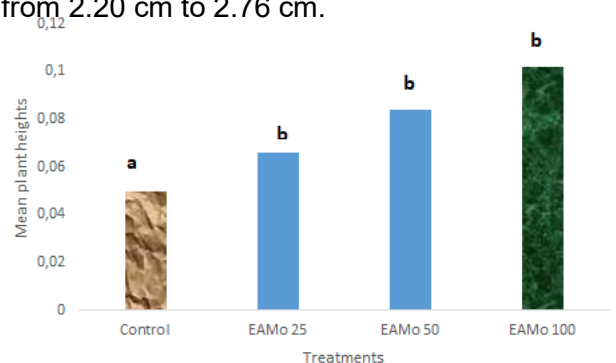


Fig.5. Mean plant height by treatment

Conclusion

The aqueous leaf extract of *Moringa oleifera* is demonstrated insecticidal efficacy against *H. hampei* and improved both the germination rate and plant growth. These results suggest that *Moringa oleifera*, rich in growth hormones, minerals, and antioxidants, represents a promising alternative for the protection and stimulation of coffee seeds.