



**EWA-BELT**

Linking East and West African farming systems experience  
into a BELT of sustainable intensification

# Use of neem seed oil as an environmentally safe bio-pesticide to manage pest damage in different crops

Practice Abstract n.2

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As part of the research on retrieving plant protection traditional knowledge, several EWA-BELT project partners are investigating the efficacy of plant protection agents in greenhouse or field trials. The use of neem seed oil (NSO), as an environmentally safe pesticide to mitigate fall armyworm damage in maize, was tested by CSIR-SARI in Ghana. About 100–150 mg of NSO was obtained by measuring 1 kg of neem seeds, removing debris and the external covering. The kernel was pounded into a fine paste and kneaded with cold water until the oil emerged, which was then collected with a foam material. A knapsack was first filled to half its capacity with water, followed by sequentially adding 10 ml of liquid soap, 25 ml of NSO, and again water up to 15 L, vigorously shaking with each addition to obtain a homogenous mixture. The first application was done when maize plants were 2–3 weeks old and the second at the 6th–7th week. A reduction in infestation and damage was observed, with a grain yield increase by over 40% compared to the untreated plants. Within the project, the partner KDC is also testing the NSO, produced by local women in Ghana, to manage pest infestation in cowpea. A ~70% yield increase was found compared to the untreated plots and ~10% compared to the use of another tested bio-pesticide: *Securidaca longipedunculata* root extract. Moreover, in Northern Tanzania TARI evaluated the efficacy of different doses (0.5FR, 1FR, 2FR and 4FR) of a homemade bio-pesticide [full rate (FR) = 0.5 kg of pepper (*Capsicum* sp.) + 3 kg *Tephrosia vogelii* (fish bean) + 1 kg Neem (*Azadirachta indica*) in 20 L water] in controlling field pests on lablab (*Lablab purpureus* (L.) Sweet) and common bean. This treatment allowed an increase in grain yield compared to the untreated plants, up to 2.6 times in common bean and 1.7 times in lablab, which was not significantly different from the use of a synthetic pesticide.



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