

ARTISANAL OR HOMEMADE NEEM:

ENVIRONMENTAL HEALTH AND SAFETY FACTSHEET¹

Homemade neem is commonly used as a pesticide derived from the broadleaved, perennial woody tree *Azadirachta indica*. Neem is well known as a traditional product that can be effective against insects, nematodes, fungus, and mites but there are many pests for which neem is traditionally used.

Azadirachtin is the primary **active ingredient in neem pesticides**. It can be found throughout the plant, but the seeds contain the highest concentration. The use of neem for crop protection discourages feeding by insects, acts on the regulation of growth of insects, prevents egg laying, reduces reproduction, and blocks pathogens from vectors. **Neem oil sprays** have some fungicidal activity and are used for control and treating plant diseases such as rust and powdery mildew.

Farmers sometimes mix neem leaves with grain to protect the grain from storage pests; **precautions should be taken to ensure that neem residues are not present in grain intended for human and/or animal consumption.**

Use of Neem against Locust and Fall Armyworm (FAW)

Neem has also been shown to be an effective prophylactic against armyworms. In Ethiopia, among locally available botanicals tested, neem was found to provide best control of FAW. Some farmers in East Africa and India have used neem against **locust infestations**, but the results are not yet conclusive.

Although repellency is considered the weakest mode of action for neem, it is effective for some locust and grasshopper species. Antifeedant activity of neem is often short-lived and variable.

Potential Adverse Impacts of Neem Use to Crops and the Environment:

- Neem oil can damage plants by burning their foliage and therefore should not be used on recent transplants or otherwise stressed plants.
- Neem pesticides can be moderately toxic to fish and other aquatic animals.

¹Commercial products must be approved by an applicable USAID PERSUAP and used in accordance with the pesticide label.



Message to Farmers:

Even when applied correctly, neem can take time to work, and reapplication may be necessary to completely control insect populations. Neem is slow acting and does not kill pests on contact so apply according to instructions even if results are not immediate.



Common Names for Neem Tree:

Arishta, Arishtha, Bead Tree, Holy Tree, Indian Lilac, Indian Neem, Lilas des Indes, Lilas de Perse, Margosa, Margosa Tree, Margousier, Margousier d'Inde, Nim, Nimb, Nimba, Persian Lilac, Pride of China, Mkilifi, Mwarubaini kamili (in Kiswahili).



Crops that USAID approves neem use for:

- Grains (e.g., rice, maize)
- Pod Seed pulses and legumes (e.g., soybean, cowpea)
- Roots/Tubers (e.g., cassava, sweet potato, yam, potato)
- Solanaceous crops (e.g., tomatoes, peppers, eggplants)
- Okra
- Cucurbits (e.g., melons, cucumbers, squashes)
- Brassicas (e.g., cabbage)
- Fiber and oil crops (e.g., cotton)
- Seed and oil crops (e.g., sesame)
- Tree Fruit crops (e.g., banana)
- Tea, tobacco, and coffee

USE, RISKS, AND MITIGATION MEASURES FOR ARTISINAL NEEM

STEP	RISK	MITIGATION
Crushing or grinding seeds to extract oil	If a household mortar is used, it can become contaminated.	Ideally, use a mortar/pestle or grinding tool that is different than that used for food. Grinding tools should be cleaned with soap and water and then an acid such as lemon juice or vinegar. After cleaning, dispose of the cleaning substances (e.g., rice pieces) in a latrine or bury.
Surfaces contaminated with neem	Neem oil may penetrate or be difficult to remove from surfaces and may contaminate food prepared on the same surface.	Do not prepare neem on commonly used food preparation surfaces. Use soap and water and then lemon or vinegar to clean the surface after contact with neem.
Kneading of neem paste or collection of neem oil Spraying of neem	Contact with skin, eyes, and around the nose can cause irritation.	Clearly communicate health risks of neem preparation. Ensure use of Personal Protective Equipment (PPE), at minimum glasses, coveralls, and gloves. Wash with soap and water following contact.
Application of neem	Neem oil strongly inhibits germination and growth of several specific crops: alfalfa, bean, carrot, radish, rice, and sesame and some weeds.	Test the neem product on a limited area before applying it to a broad area.
Extraction of active ingredients from neem using chemicals	Chemicals can pose a risk to health, but risks depend directly on the type of chemical, concentration, and way in which it enters the body. Chemicals can enter waterways and contaminate surface and ground waters. If chemical containers are inappropriately labelled or if they are not properly stored, they might become accessible to children and/or misused unintentionally or intentionally.	Select less hazardous substances for extraction and use the smallest amounts possible. Ensure all chemical bottles are labelled and stored away from children, away from food, and preferably locked. Do not store near open flames or in excessive heat. Ensure use of PPE. Wash with soap and water following contact. Do not reuse chemical containers.
Neem oil storage	Neem oil may become ineffective above 50 °C or with exposure to sunlight.	Ensure proper storage conditions. Do not apply neem oil that has been improperly stored (in direct sunlight or above 50 °C). Dispose of neem oil that has been improperly stored.
Disposal of neem oil	If pesticides are not properly disposed of, they might contaminate waterways, soil, or become accessible to children.	Dispose unused or ineffective neem in a pit away from water sources. Triple rinse all bottles with soap and water and dispose of rinse water in a pit away from water sources. Do not reuse bottles for anything other than neem pesticides. If bottles will not be used for neem pesticides puncture the bottom and sides and dispose of properly.

A longer and more detailed version of the “Artisanal or Homemade Neem: Environmental Health and Safety Factsheet” is available.