



UPLAND HOLISTIC DEVELOPMENT PROJECT



Gardening Activity: Preparing and Using Natural Pesticides With Neem

Objective: To gain skills in preparing and using a natural pesticide mixture using the leaves of neem (sadao – *Azadirachta indica*) as well as galangal rhizomes (kha – *Languas galanga*) and lemon grass stalks (takrai hawm – *Cymbopogon citratus*).

Time Req: **Total Time:** Approximately 24 hours to gather, prepare, soak and apply the materials. (**Steps 1-2**) 45 minutes to gather and prepare the materials to soak overnight; (**Step 3**) Almost 24 hours to allow the materials to soak in water; (**Step 4**) 45 minutes to filter the neem solution, prepare and spray.

References: *Gardening for Nutrition in the Upland Villages of the Golden Triangle, Natural Crop Protection, Producing Food Without Pesticides, Amaranth to Zai Holes*

Materials: Machete, hoe, sack or basket for collecting plant materials, mortar and pestle, scales, 30-50 liter water can, mesh sack in which to soak plant materials, water, shampoo or mild detergent, backpack sprayer.

Procedure: Neem, a tropical hardwood tree in the mahogany family, is known for its properties as a natural pesticide as well as having medicinal value. The immature flowers may be eaten as well. Besides using fresh, younger leaves, the fruits of neem (dried and ground) may be prepared so as to control various insect pests such as caterpillars, beetles, locusts, weevils, mites and rice stem borers without endangering people or animals. Neem does not actually kill the insect pests, but acts either to repel them or to disrupt metamorphosis in certain insect species. To be most effective in vegetable gardening, neem should be sprayed preventively on a regular basis every one to two weeks.

Step 1 – collecting the plant materials

- With the assistance of UHDP staff, collect 2 kg of fresh neem leaves (dark green in color), 1 kg of galangal root and 1 kg of fresh lemon grass stalks and leaves.

Step 2 – preparing the materials for soaking

- With a mortar and pestle, thoroughly grind up each of the three types of plant materials. After the materials are ground, tie the materials within a mesh sack and soak them overnight in 20 liters of water.

Step 3 – preparing the materials for spraying

- Remove the plant materials from the mesh sack (add them to the compost pile) and filter the remaining water if necessary so

no objects will clog the nozzle of the backpack sprayer. Mix a tablespoon of dishwashing liquid or shampoo (no strong detergents) to the solution and pour into a 20-liter backpack sprayer.

Step 4 – applying the neem solution

- Thoroughly spray the solution on the under and upper surfaces of the garden plant leaves. Take care not to be too wasteful with the solution. **It's best to spray in the early morning or early evening when the sunlight isn't very strong as sunlight reportedly degrades the active ingredient in neem.**

Questions: Why are galangal and lemon grass added to the neem mixture?

Why should fresh, dark, green neem leaves be used to prepare the solution?

What is the purpose of adding the detergent to the solution prior to spraying?