

Plant-derived Insecticides



Outline: Plant-Derived Insecticides

Important insecticides from plants

-rotenoids - New World and Asia

-pyrethrins - Near Eastern center

-tobacco - New World

Ryania speciosa, Flacourtiaceae Antifeedants

-neem, *Azadirichta indica*, Meliaceae

Introduction

- Many insecticidal compounds are known from plants. Most plants make defensive compounds called allomones. Only a few are important commercially.
- Plant-derived insecticides have largely been replaced by synthetic materials, but there are some advantages to the naturally occurring materials. For example, these substances are biodegradable.
- Selectivity is needed. Compounds that are toxic to insects, but not toxic to mammals, are preferable, of course.

Rotenoids

- A series of compounds found in members of the genera Derris, Lonchocarpus, Tephrosia are known as rotenones.

- Commercially, rotenoids are isolated mostly from the roots of

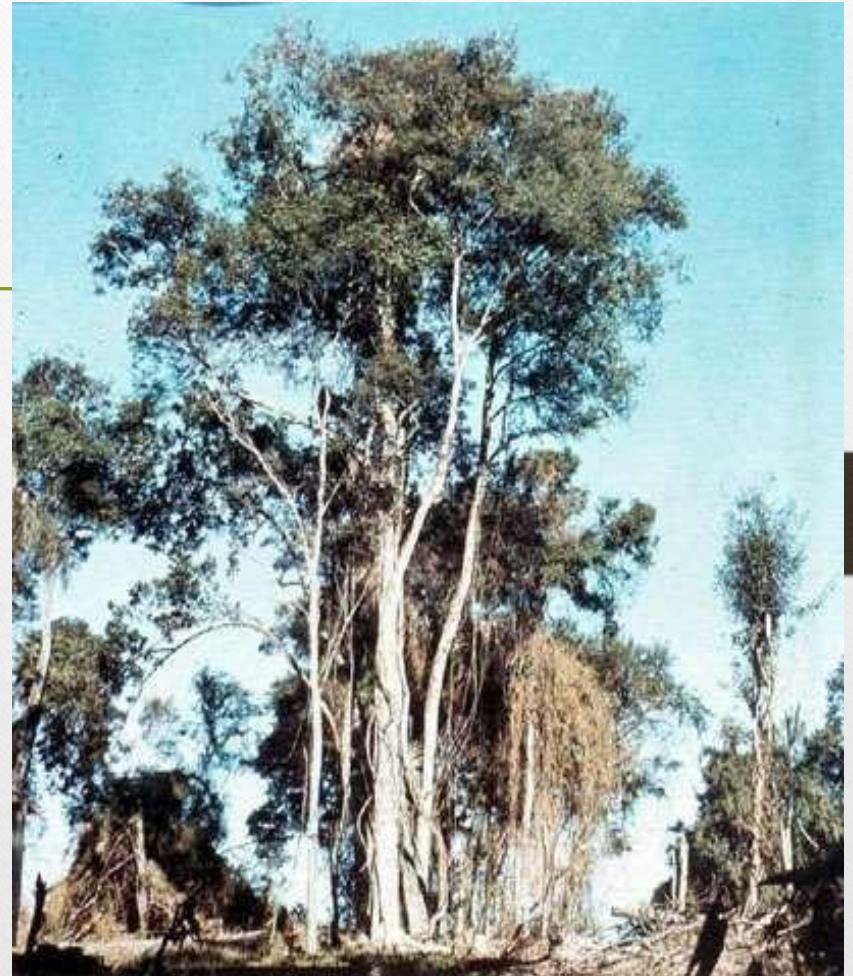
Derris elliptica in Indonesia and from Lonchocarpus

- These compounds are isolated by grinding the plant and extracting with solvents such as hexane or petroleum ether or chloroform.
- The compounds are oil soluble or lipids. They make up 1-20% of the dry weight of the roots.

Derris elliptica, Fabaceae



Rabo molle, *Lonchocarpus muehlenbergianus*, Fabaceae





**False indigo bush,
Amorpha fruticosa,
Fabaceae**

Pyrethrins

- Another major series of compounds, the pyrethrin, come from species of the genus Chrysanthemum (some people put these species in Pyrethrum) (Asteraceae or Compositae).
- These were used as far back as the 1st century B.C. by the Chinese. Insecticidal plants mostly are grown in countries with inexpensive labor and high elevations such as Kenya and New Guinea.

**Pyrethrum, *Chrysanthemum cinerariifolium*,
Asteraceae**



Harvesting pyrethrum flowers in Kenya



Other plant-derived insecticides

- *Ryania speciosa* (Flacourtiaceae) is also used occasionally and an insecticide.
- A mixture of diterpene, alkaloids is isolated and used for specialty insecticide uses.
- Because the extract is expensive, it is not commonly used.

Thank you.....