

Potential for novel Pesticidal Plant treatment methods.

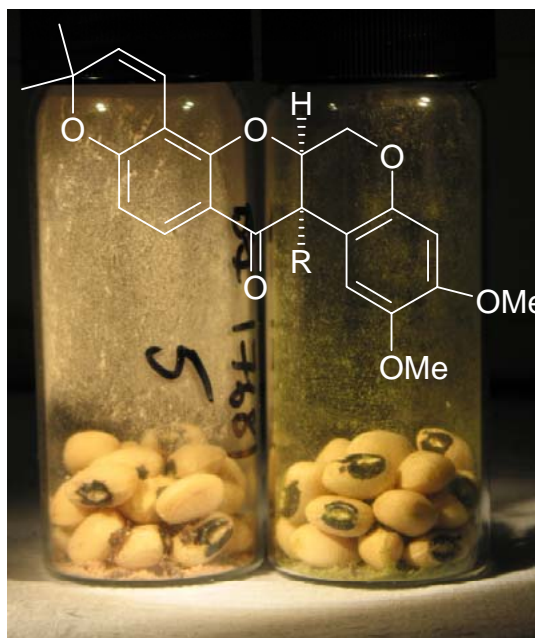
- Philip C Stevenson



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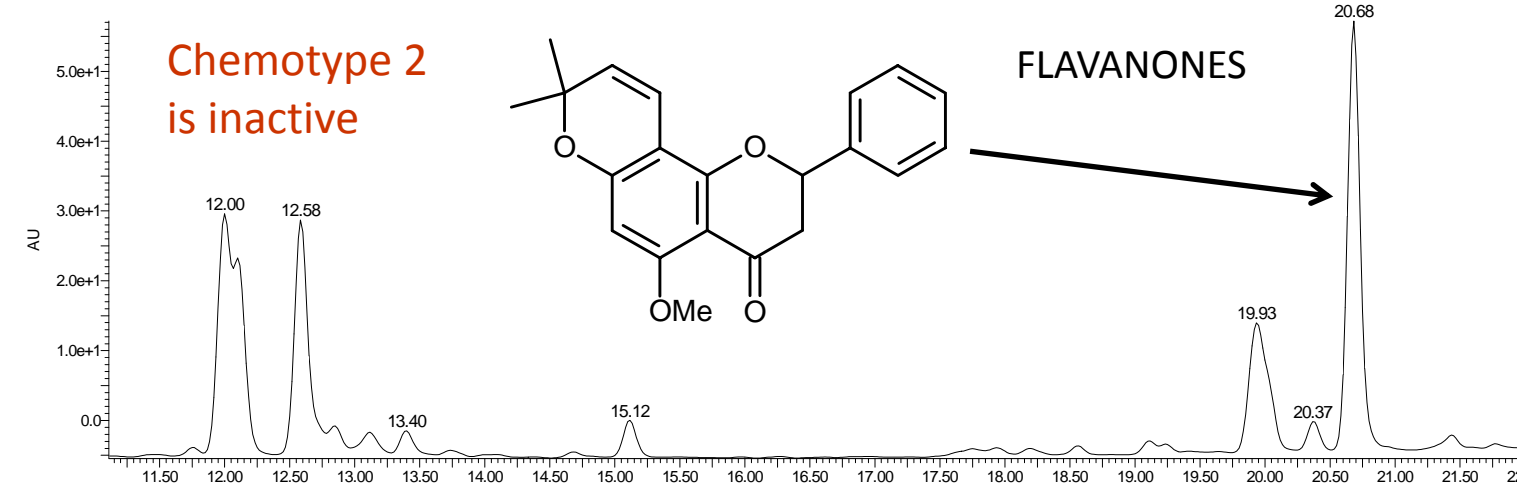
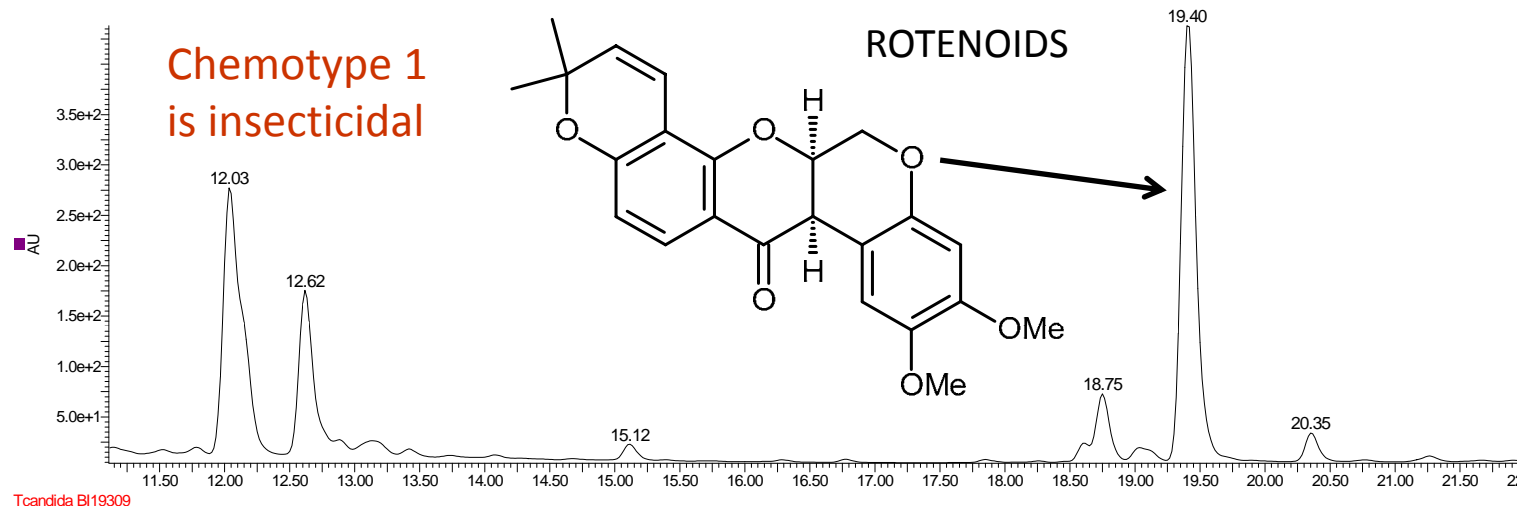


Is *Tephrosia vogelii* an effective alternative to synthetics?



Importance of chemistry in – Pesticidal Plants in Africa

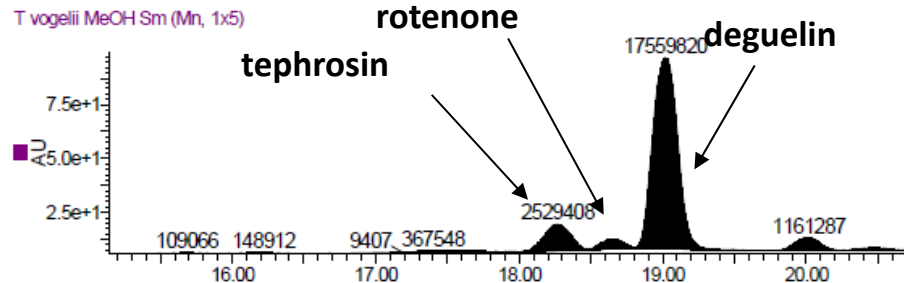
Chemical analysis of *Tephrosia vogelii* reveals 2 chemotypes



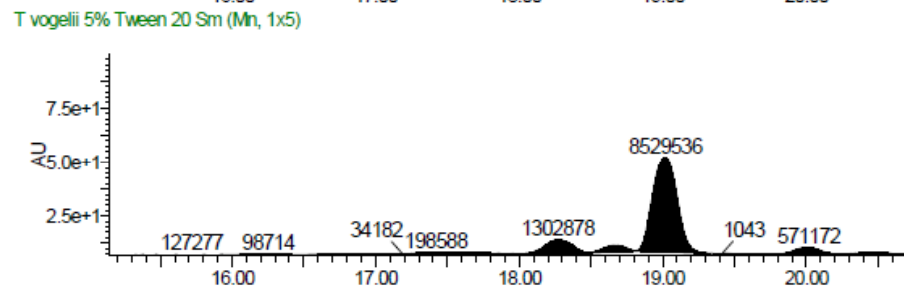




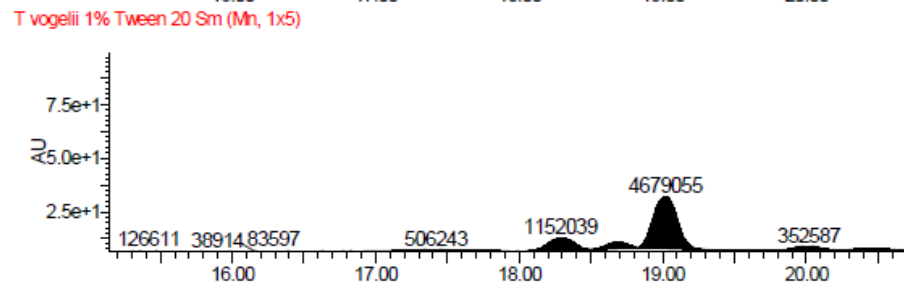
Optimising rotenoid extraction from *T. vogelii* leaves



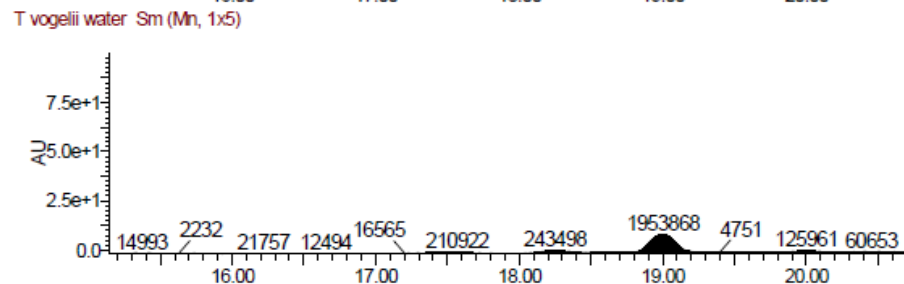
Methanol extract



5% Tween



1% Tween



Water

Simple improved technology

Muslin bag extraction with liquid soap



+



Plant material + soap in muslin sac hung in sprayer.



Securidaca longepedunculata



➤ Effective stored product protectant

- Ghana & Zambia.

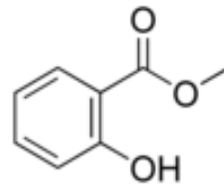
➤ Root bark pounded & mixed with grain

- inefficient

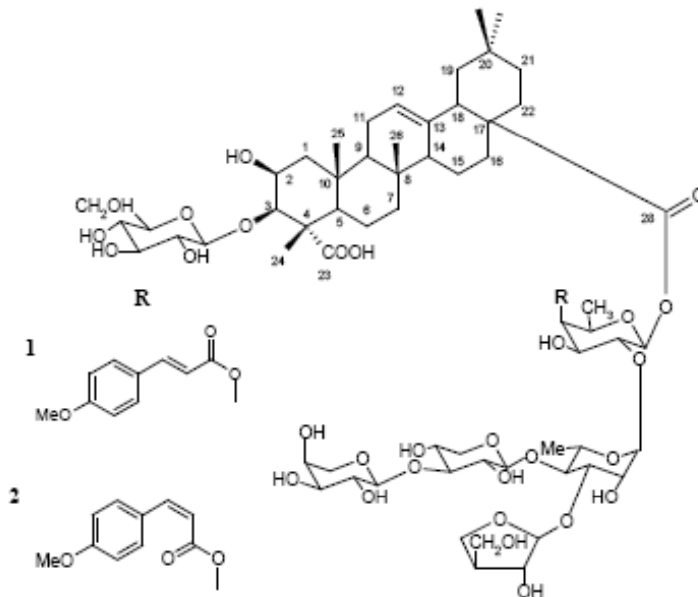


Securidaca longepedunculata

- Methylsalicylate
- Saponins



- Methyl salicylate deterrent and toxic to *Sitophilus zeamais* but volatile



- Saponins also active & occur in stem bark
- Can stem bark be used instead of root?
 - More sustainable

Stevenson et al., 2009 *J Ag Food Chem*, 57, 8860.

Jayasekera, Stevenson, Belmain and Hall, 2002 *J. Mass Spectrom*, 37, 577

Jayasekera, Stevenson, Belmain and Hall, 2005 *J. Chem. Ecol.*, 31, 303.

Securidaca longepedunculata

Water extracts saponins

- More efficient use of plant
- Every grain coated

Submersion of grain in soapy extract for treatment & solarisation kills pre-storage infestation.

Farmers tried this

–50% less plant material used



Extracting *Securidaca* and treating grain

Current field trial of water extract treated grain — Kasisi, Zambia



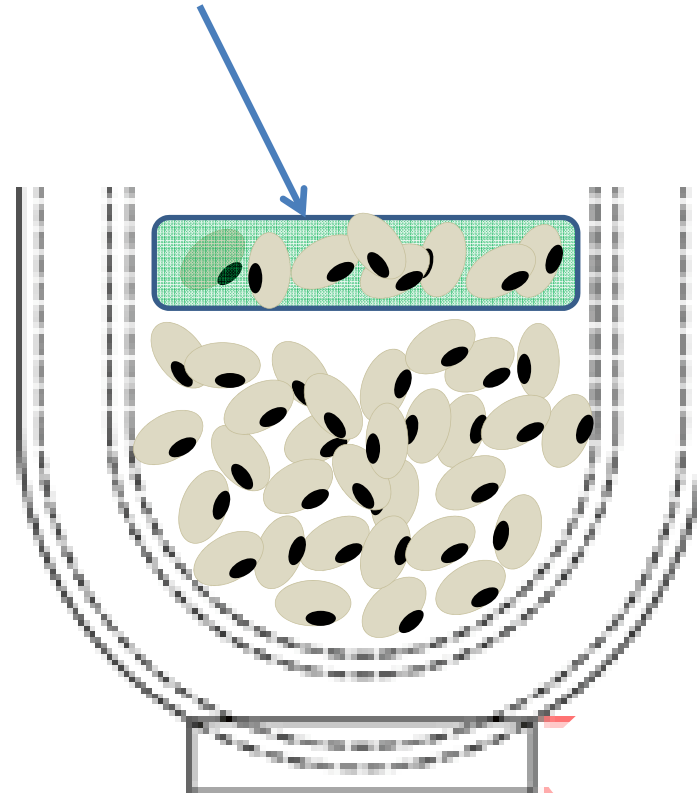
Extract requires less than half as much plant material as powdered but unpopular – too much effort!

Would it be easier if we produced something to spray?
Actellic can be sprayed so why not Plant extracts?

Typical clay storage pots for grain



Trap for invading insects –
beans/grain + toxic plant
material in a muslin bag



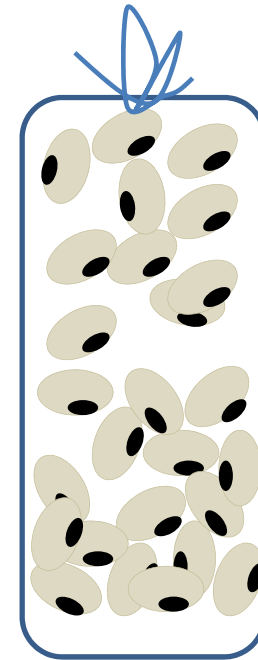
Soaking absorbent sacks in pesticidal plant extracts



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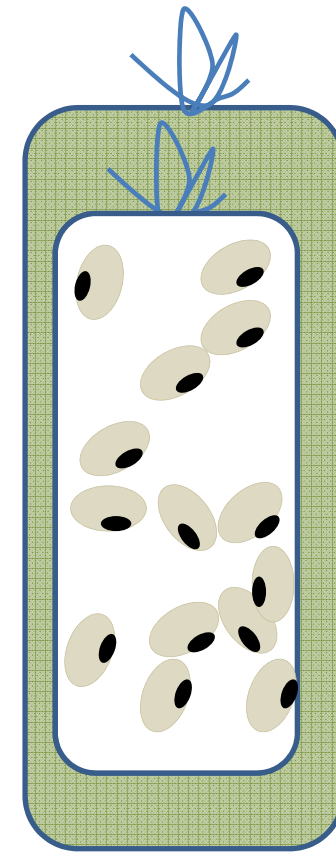


Typically maize is stored in plastic weave sack. Not absorbent.



Double bagging with plant material between sacks

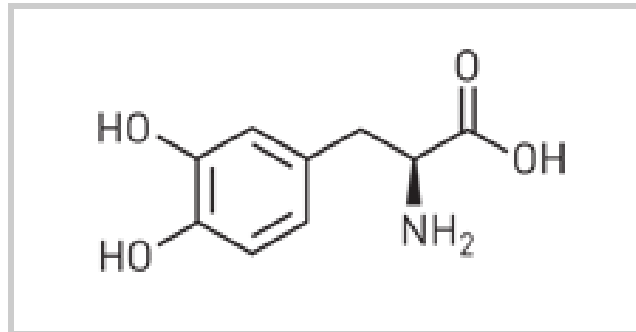
Grain protected from plant materials
Plant compounds protected from light



Could be applied as a plant extract paste



Mucuna pruriens



Polymerisation of L-dopa prevented with acid (vinegar)



**COLEACP:
an international
resource for the
horticultural trade**

**Facilitate flow of trade between ACP
countries and the EU**

- 1. promoting good practice,**
- 2. strengthening competitiveness**
- 3. lobbying and advocating on behalf
of the industry.**



For sustainable
development of the ACP
horticultural industry

The driver behind PIP was the change to EU legislation

PIP is a European cooperation programme managed by COLEACP.

Financed by the European Development Fund and implemented at the request of the ACP (Africa, Caribbean and Pacific) Group of States.

A second phase of PIP was launched in October 2009 for a period of five years.

- “Maintain and, if possible, increase the contribution made by export horticulture to the reduction of poverty in ACP countries”.
- The horticultural trade is an important driver for economic growth in many countries, and PIP helps ACP exports reach their full potential by enabling producers and exporters to meet the demands of the EU market.
- While export horticulture is the main focus, outputs are adapted to local and regional markets wherever possible to also benefit ACP consumers.

PIP Missions

- **Towards zero pesticide residues:**
- **Meeting the demands of European consumers.**
- **Raising awareness and influencing policy**
- **Facilitating trade to support smallholder farmers.**
- **Contributing to sustainable and safe food for local markets.**
- **Developing fair trade:**
- **Contributing to the Millennium Development Goals (MDGs).**