

## Optimising use of Tephrosia for controlling insect pests

Botanical insecticides have not lived up their billing as the next generation commercial pesticides<sup>1</sup>. This is due to regulation of the complex chemical mixtures, availability of adequate supplies of source material, consistent efficacy and chemical stability in the field.



However, pesticidal plants still contribute a major IPM intervention for many small holder farmers in their battle to protect field crops and stored products from insects.

### Optimising use

NRI has validated and determining mechanisms of activity in several species including Tephrosia. Using this know-how NRI provides innovative and appropriate technology enhancements to improve use by increasing efficacy, reducing amounts of material required, informing how best to extract the active components and with RBG Kew confirmed identification.



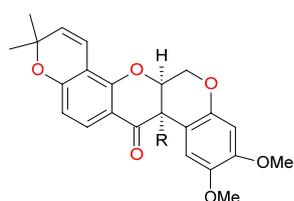
<sup>1</sup>Isman 2006, Ann. Rev. Entom. 51: 45-66. & Isman MB 2008, Pest Man Sci. 64: 8-11

## *Tephrosia vogelii*

*Tephrosia* is one of the most popular species in East Africa & is used to control field and storage insects. But surveys in Malawi, revealed that it was not always effective. Our research identified the occurrence of two distinct phenotypes that differed in their chemistry. The first contained insecticidal compounds (rotenoids) that were shown to be responsible for the biological activity whereas the second, chemotype 2, did not and so would not control insects.



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Soap improves extraction of rotenoids

### Improved extraction:

This explained the variability of effect but also led to an optimised method for processing. Farmers typically use water to extract the active chemicals. But rotenoids are only sparingly soluble in water. NRI showed that liquid soap improved extraction into water and increased efficacy.

We can also show when its best to harvest the plant material to make sure the concentration of active components is at its highest

