



Managing Rodents in Australian Pecan Orchards

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 **BASF**
We create chemistry

What we want



What we see

What we target



Our approach



Our Tools





The real problem





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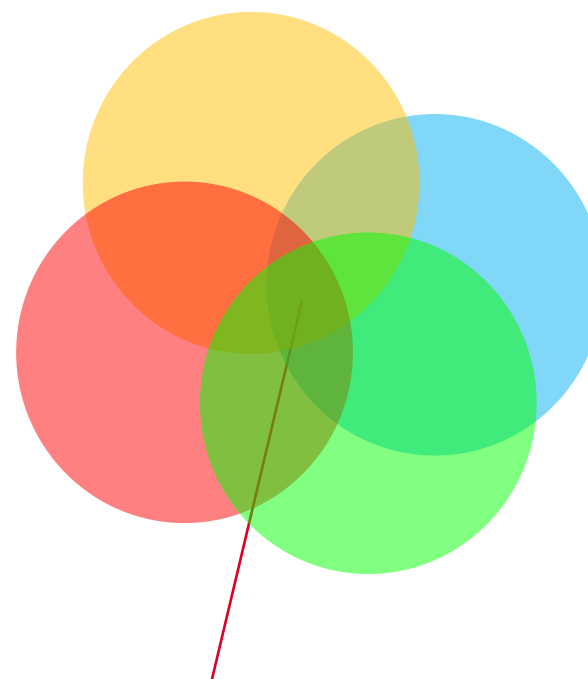


The real problem

Integrated Pest Management

Integrated Rodent Management Strategy:

-  Effective rodent monitoring
-  Habitat manipulation
-  Resource management
-  Rodent control



AREA OF "IPM"

Australian research – Macadamia orchards

- One primary species responsible for damage – *Rattus rattus*
 - ▶ *Introduced rodent*
 - ▶ *Agile climber*
 - ▶ *Creates ground burrows in adjacent habitats*
- Damage occurs within the canopy and primarily around orchard edges
- Rodents remove nuts to adjacent non-crop habitats

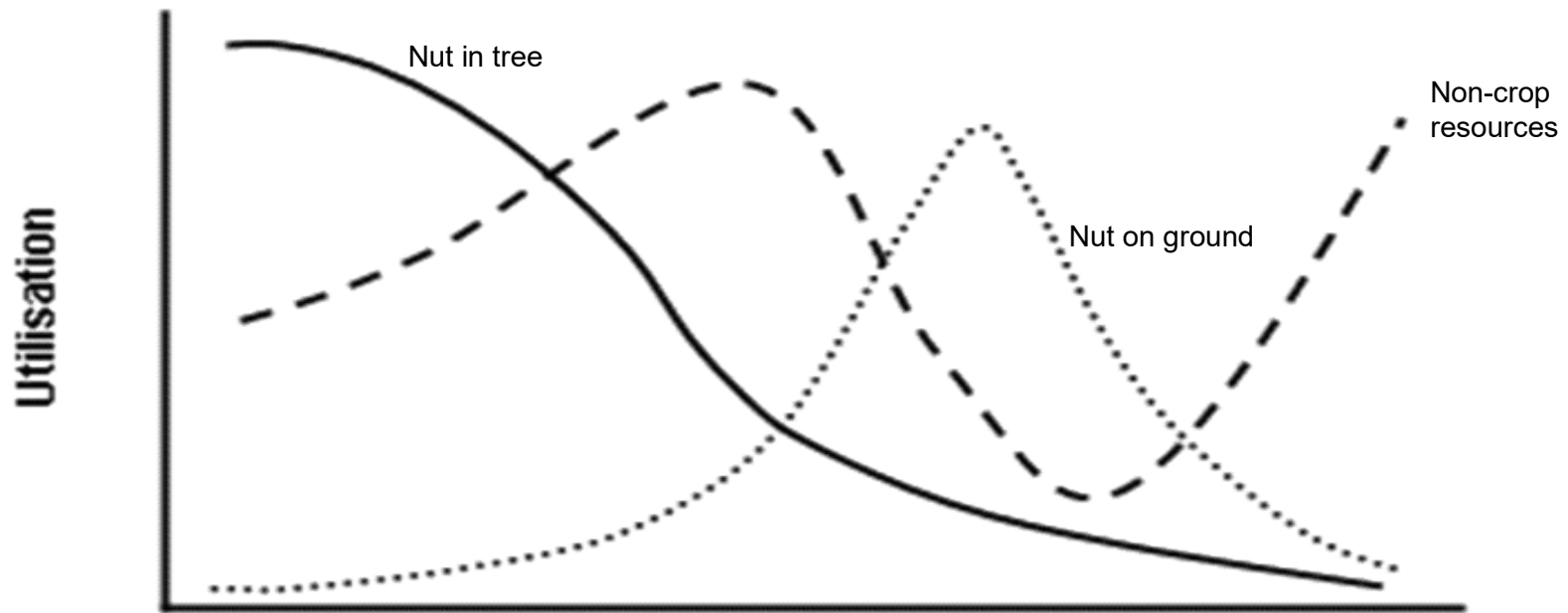
White *et al.* 1997, White *et al.* 1998, Horskins *et al.* 1998, Horskins and Wislon 1999, Elmouttie and Wilson 2005, Elmouttie *et al.* 2010

Australian research – What we know

- Damage has been estimated to be as high as 30%
- Additional losses associated with nut removal – the damage we see may not be all that exists
- Habitat manipulation (removal of weeds banks, headland management, grass management in crop) provides an effective method of control
 - ▶ more cost effective than baiting alone

Horskins and Wislon 1999, Elmouttie and Wilson 2005, Elmouttie *et al.* 2010,

Australian research – What we know



White *et al.* 1997, White *et al.* 1998, Horskins *et al.* 1998, Horskins and Wislon 1999, Elmouttie and Wilson 2005, Elmouttie *et al.* 2010

What does this all mean – lessons fr Pecan production

- Rodents feeding behavior follows classic predator avoidance foraging model
 - ▶ Feed in areas to minimise risk whilst maximising resource intake
- Non-crop resources are essential for population maintenance – population needs food when crop is not in season
- Non-crop habitats provide an essential system component – in “classical” systems
- Orchard maintenance is critical

Management, what should we do

Season

- Adjacent non-crop habitats must be maintained - all season
 - ▶ Slashed
 - ▶ Revegetated
- Orchard system must be maintained – in conjunction with other cultural practices
 - ▶ Slashed
 - ▶ Herbicide – Basta[®]
- Encourage natural predators

Management, what should we do

Harvest

- Harvests need to be conducted regularly – particularly as nut in tree declines
- At the end of the harvest, remaining nut on ground must be destroyed ASAP

Management, what should we do - harvest

Baiting (no currently registered bait for pecans)

- Bait strategically - know your orchard/s and the areas which are high risk
- Bait at the onset of damage and monitor bait take
- Bait in trees not on ground (exception when removal is occurring)
- Utilise the correct bait stations, and position baits effectively
- Bait considering natural predators

Selontra[®] A Unique Solution – Looking to register into Pecans

- **Quick control** – Works quicker and with less bait than AVKs
- **Environmental benefits** - Unique avian toxicity and secondary poisoning profile
- **Less restrictive** - Submission for a broader range of uses
- **Reduced wastage** - Stable, securable formulation contains stop-feed technology
- **Alternative MOA** - High palatability acute rodenticide – a real rotation partner





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