Alternatives to Anticoagulants – Applications in the Field

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Context for Vertebrate Management

- Population fluctuations
- High and low pest density management tactics
- Need for integrated approach with vertebrates
- Cal Poly examples
Population Fluctuations

MONITORING

Treatment

Economic Threshold

High Density

Low Density
High Density Tactics

• Work well to reduce large numbers of pests in a short period of time – easy to see results

• Examples: baits and fumigants

• Comes at a cost – environmental, resistance issues, and pest resurgence – the same problem next year
Low Density Tactics

• Need to be effective at low population levels

• Examples: well-adapted predators, gas cartridges, trapping

• Compelling need for an *integrated approach* – any method on its own will be limited in efficacy

• Key: must have a balance of high and low density tactics – and *maintain* the low density tactics
Management tactics: toxins

Anti-coagulant Baits and Fumigants

- PCQ – diphacinone (high density)
  - broadcast vs stations
  - Relatively easy

- Phosphides - zinc and aluminum (highly toxic) (high density)

- Giant destroyer (OMRI approved) (low density)
  - Can work well at high densities – but labor intensive
Management tactics: **non-toxic**

**Anti-coagulant Alternatives**

- Owls, raptors & others *(high & low density)*
- Burrow busters *(high & low density)*
- Shooting *(high density)* (expensive, legal issues)
- Trapping *(low density)* (labor intensive)
- Burrow simulators (with baits) *(high density)*
Management tactics: non-toxic

Cultural Controls

• Heavy brush vs clean

• Exclusion (gravel pits & mesh) for gophers
Does cropping system and acreage make a difference?

• Tillage frequency, soil type, annual vs perennial

• Helps determine where to set up your line to defend

• And the size of the area plays a significant role in determining what can be done ($$$)
Cal Poly – alfalfa, loose soil; high intrusion

Gopher mounds in Winter

Gopher mounds in Spring
Cal Poly Vineyard – compact soil; low intrusion

Gopher mounds in Winter

Gopher mounds in Spring
Gopher movement thru soil

Recently tilled soil:
17.6 inch average for new mound distance

No till soil:
11 inch average for new mound distance

8 wk sampling in fall 2015
Protecting a vegetable field

~130 yd trench

2 acres
Protecting a vineyard

14 acres
Things to keep in mind for owl / kestrel boxes and perches

- Location – based on biological needs of the predator, you may get 90% of what they require correct, but that other 10% will make the difference in whether they occupy or not

- Occupancy is crucial, based on available resources:
  
  As prey goes down, occupancy goes down
Large scale

- Sand slurry fills squirrel burrows
- Water seeps away
- Blocks access for awhile

http://www.burrowblocker.com/