

Area-wide Management of Stable Flies

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Stable Fly (*Stomoxys calcitrans*) (Diptera: Muscidae)

- Adults have biting mouth parts
- Obligate blood feeders
- Larvae develop in decomposing vegetative materials



Stomoxys calcitrans (Linnaeus), 1758 ♀. Actual size 7.0 mm.
COURTESY F. GREGOR.

Stable Flies



Blood Feeding

- Both sexes blood feed
 - Required for mating and egg production
- Blood feed 1-2 times / day
- Female requires ≥ 5 blood meals for 1st batch of eggs
 - ≥ 3 for subsequent batches
- 2-4 minutes to feed
 - Most of adult life **off** hosts



Vectors

- Biological
 - *Habronema microstoma*
- Mechanical (none confirmed)
 - Lumpy Skin Disease of cattle
 - Bovine Leukemia
 - Equine infectious anemia
 - *Trypanosoma evansi*
 - *Besnoitia*

In the Buffet Line



Larval Developmental Sites

- Decomposing vegetative materials
 - Often mixed with urine and dung



Developing in Crop Residues

A herd of cattle, including several brown and black cows, is grazing in a field of dry, yellowish-brown crop residues. The background shows a line of trees under a bright, hazy sky. The text "Developing in Crop Residues" is overlaid in the center in a large, black, sans-serif font.

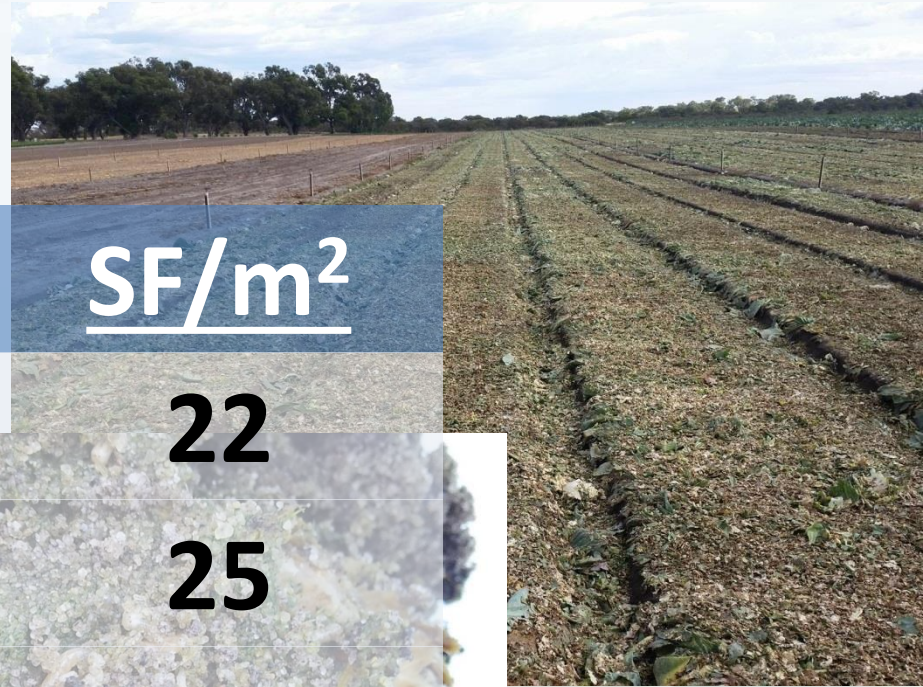
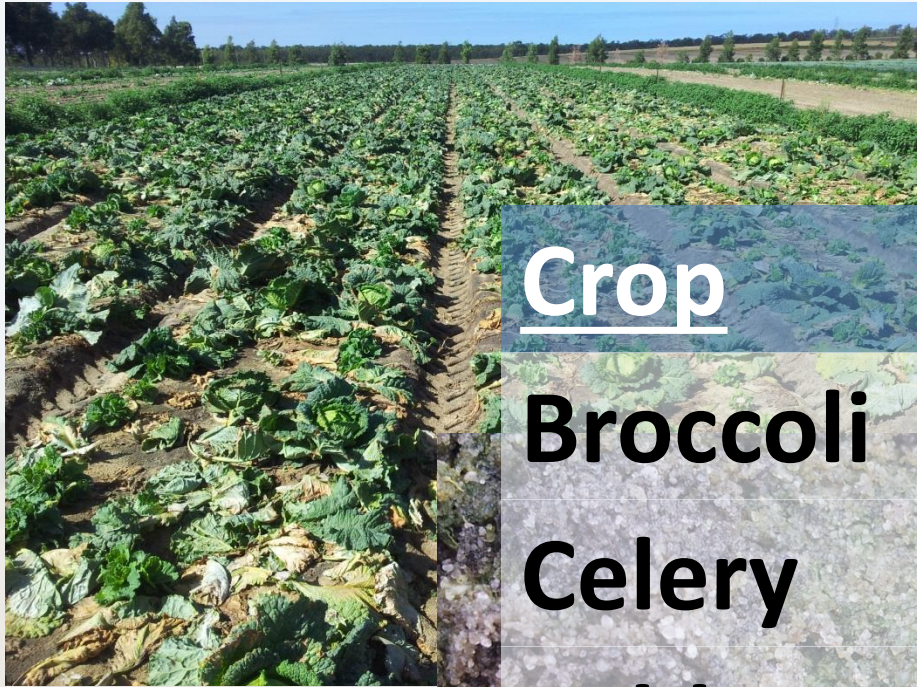
Pineapple – Costa Rica



1500 - 2000 SF / m²
20,000,000 / ha



Vegetables – W. Australia



Crop

SF/m²

Broccoli

22

Celery

25

Cabbage

46

Caulis

35



Sugarcane - Brazil







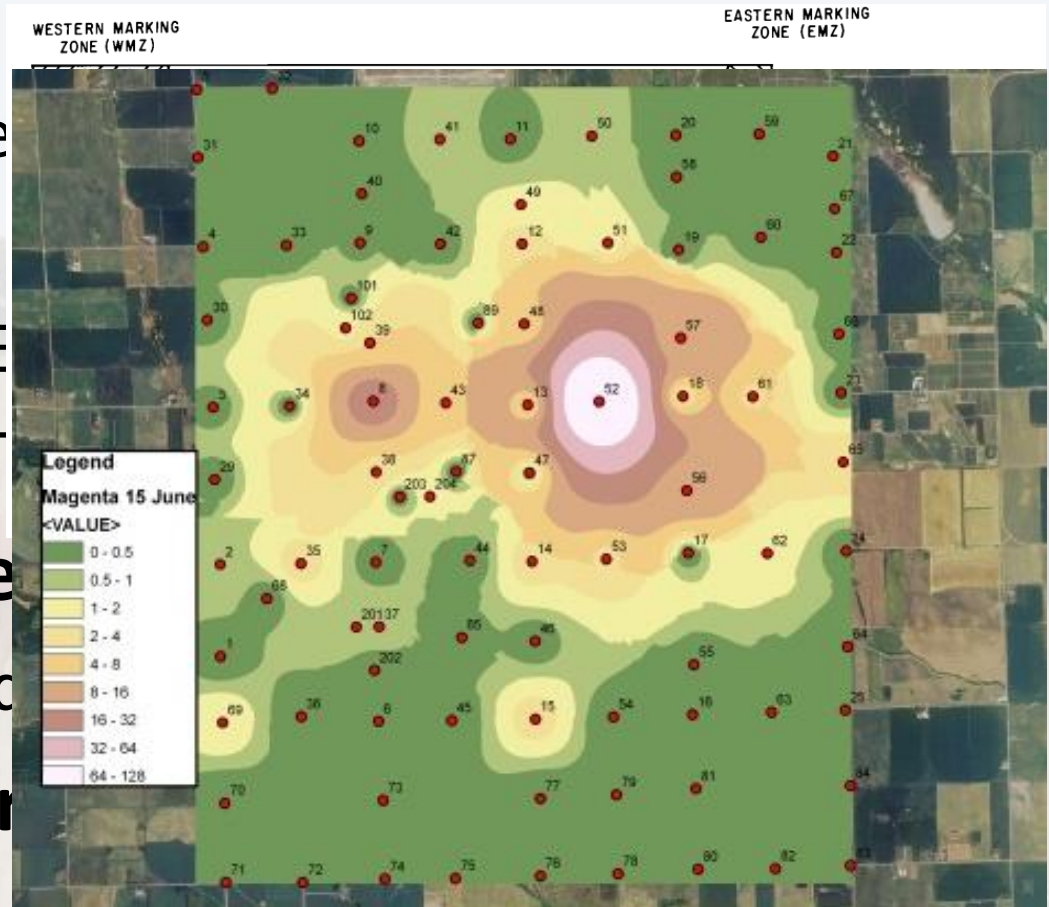
Area-wide Management of Stable Flies

- Why?
- Challenges
- Prerequisites
- Management options



Why?

- **High vagility**
 - 225 km (Hogsette)
 - ≈ 30 km in 24 hours
 - 8 km in 2 hours (E)
 - Median 1.6 km (T)
- **Larval development**
 - Diverse, dispersed
- **Low economic threshold**
 - ≈ 15 flies / animal



Challenges

- **High population density**
- **Both males and females blood feed**
 - When livestock not available, very annoying to humans
 - Potential disease vectors
- **Very adaptable**



Prerequisites

- **Public support / consensus / demand**
- **Regulatory Authority**
 - Standards/regulations
 - Enforcement
- **Funding**



Management Options

- **Genetic** – SIT, genetic load, GMO, etc.
- **Cultural/sanitation**
- **Biological**
- **Traps & Targets**
- **Chemical**
 - Immature
 - Adult
- **On-animal**
 - Chemical – repellents & insecticides
 - Physical – hoods, socks, blankets, etc.



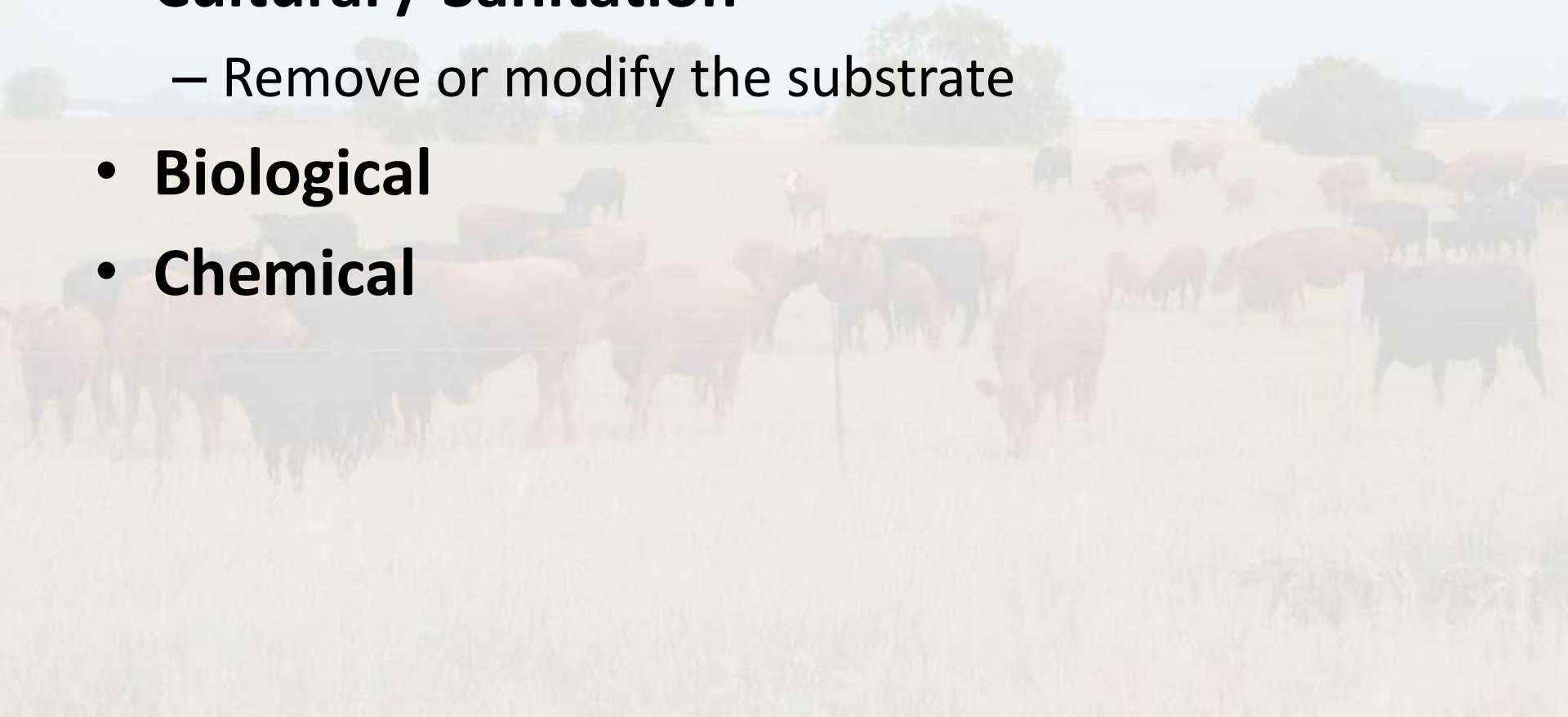
CIA Principle in IPM

- **Control is most effective when the target is:**
 - Concentrated
 - Immobile
 - Accessible



Controlling Immature Stable flies in Substrate

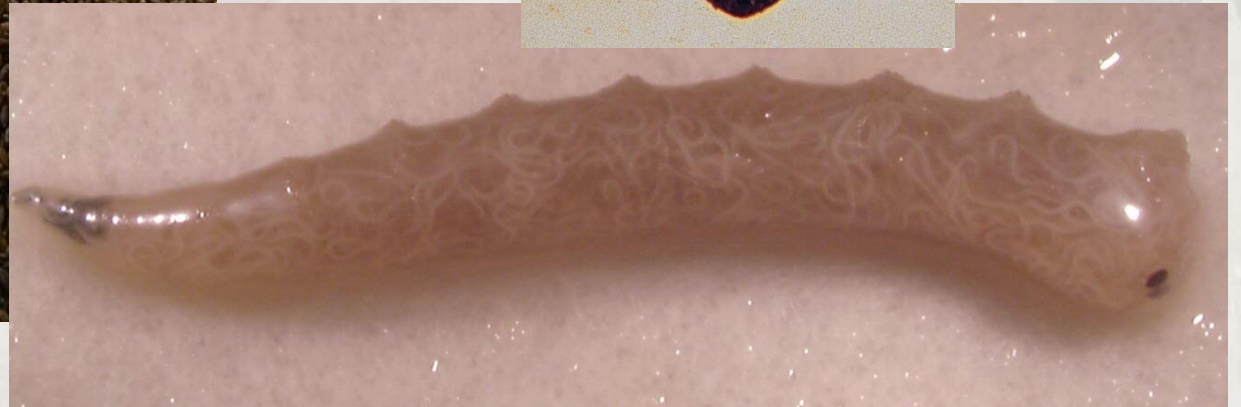
- **Cultural / Sanitation**
 - Remove or modify the substrate
- **Biological**
- **Chemical**



Cultural / Sanitation



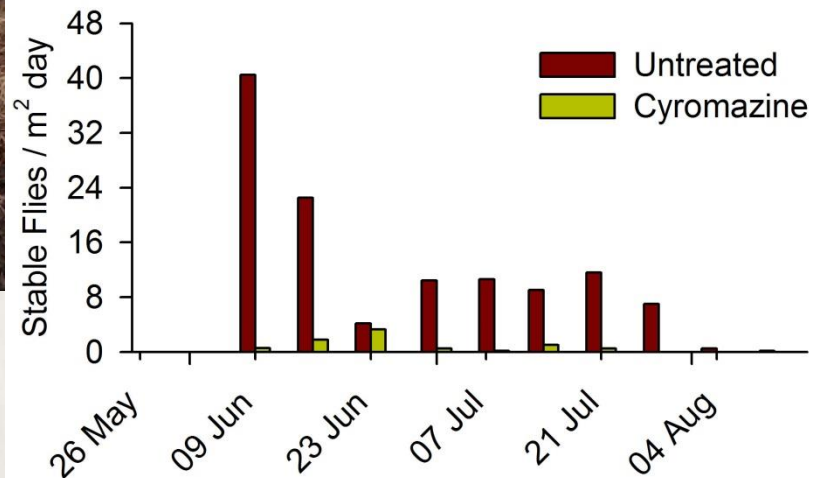
Biological



Chemical

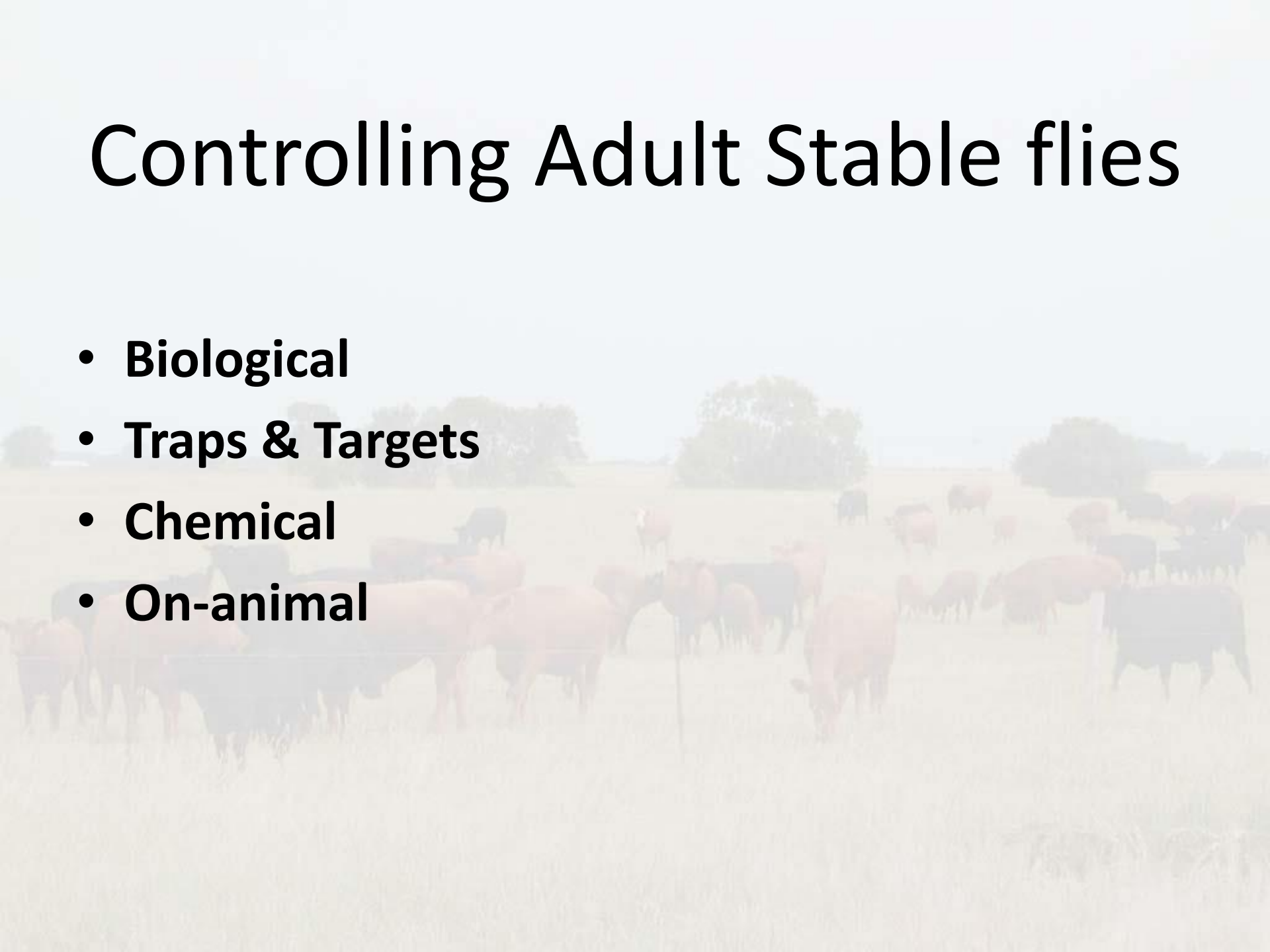


Stable Fly Adult Emergence from Hay Feeding Sites Treated with Cyromazine



Controlling Adult Stable flies

- **Biological**
- **Traps & Targets**
- **Chemical**
- **On-animal**



Chemical



Traps & Targets



On-animal



Summary

- Area-wide management of stable flies involves application of traditional technologies in a coordinated, organized and mandated manner.
 - Cultural/sanitation
 - Biological
 - Traps & Targets
 - Chemical
 - On-animal

Acknowledgements

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Questions?

