Food and Agriculture Organization of the United Nations

Supporting the management of Yellow Crazy Ants in Tuvalu

Monica Gruber

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Funafuti, Tuvalu

OBJECTIVES

- Visit Tepuka to assess YCA abundance and (honeydew-producing) plant pests
- YCA management reference materials
  - Understand the decision-making process for management options
- Discuss findings on outer islands
- Work through the decision process for management options
- Treatment using pesticides
  - Health and Safety
  - Application methods
- Discuss approaches for outer islands / identify information gaps
- Community messaging (and translations?)
- Feedback on YCA IPM strategy, SOPs and ESIA, and additional needs

TEPUKA

REFERENCE MATERIALS

1. Survey guide – how to assess the abundance and impacts of YCA
2. Integrated Pest Management (**IPM**) strategy – guides the management of YCA
3. Environmental and Social Impact Assessment (**ESIA**) – potential impacts of treatment products
4. Standard Operating Procedures (**SOPs**) – what, when and how to use treatment products

SURVEY GUIDE

IPM STRATEGY

ESIA

IPM – YCA MANAGEMENT PRIORITIES

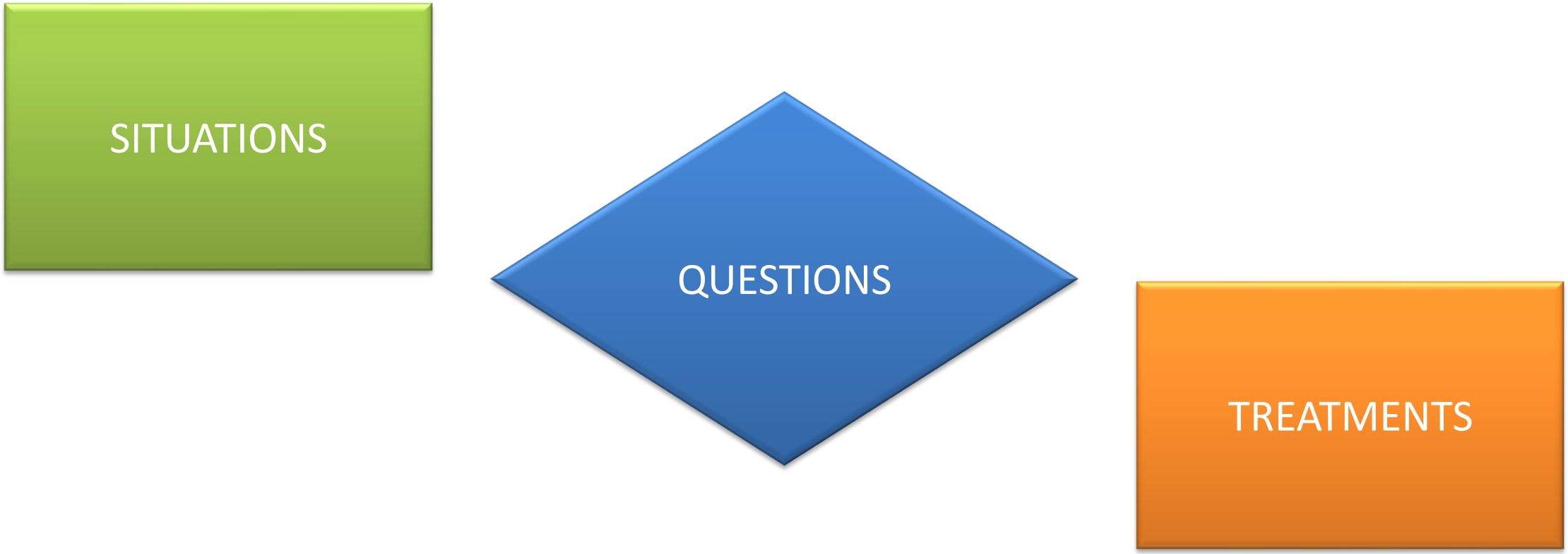
1. Preventing spread of YCA
2. Site hygiene and securing food resources
3. Controlling honeydew-producing plant pests
   - Biological controls
   - Non-toxic spraying
4. Pesticide use
   - Residual barrier sprays
   - Targeted pastes
   - Broadscale pesticide treatment (baiting)

SOPs

SOPs – DECISION-MAKING

1. Nature of the problem
2. Desired outcome or benefit
3. Ant abundance
4. Environmental context
5. Risk factors
6. Available tools

SITUATIONS, QUESTIONS, TREATMENTS



SITUATIONS

Around homes, schools, hospitals

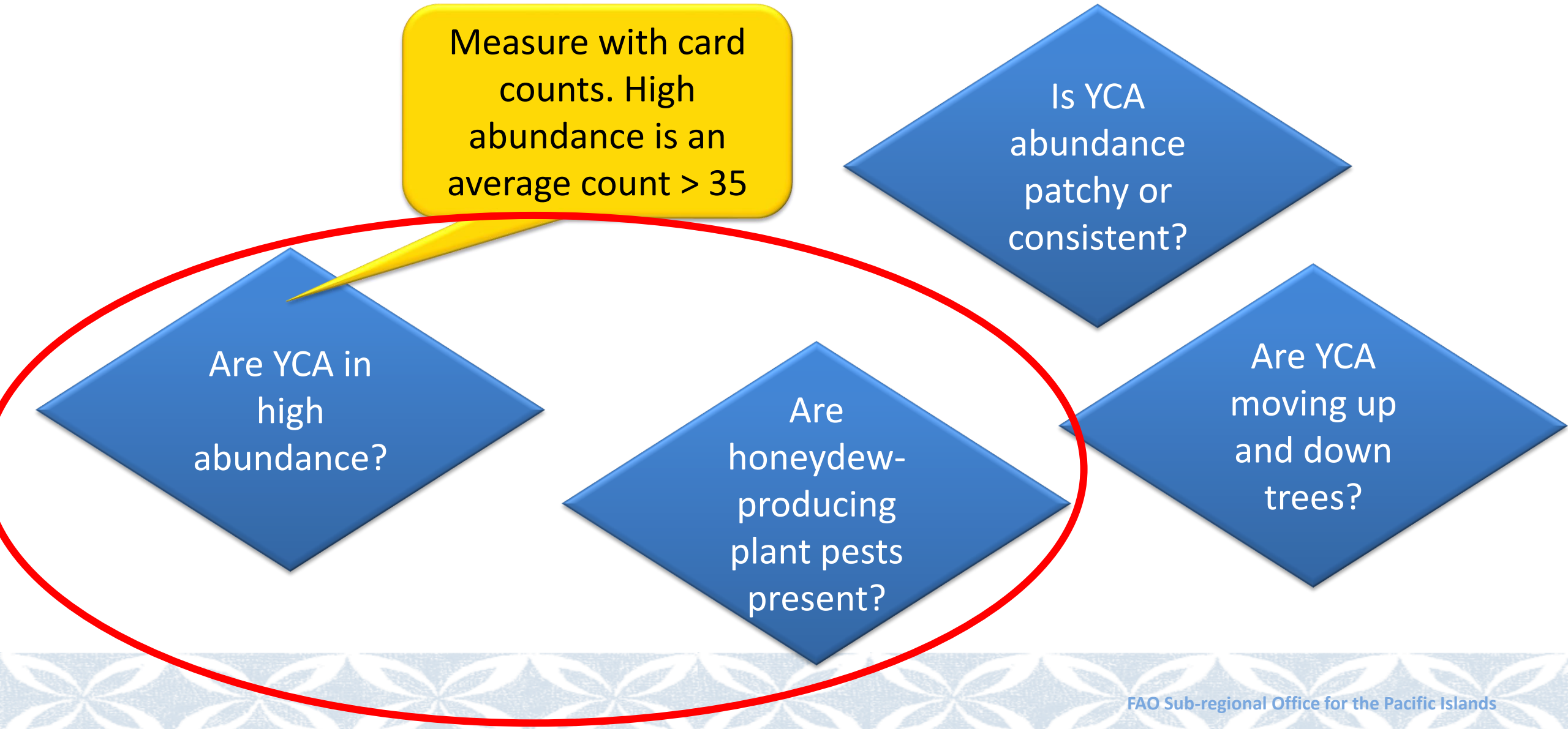
Toddy trees

Around pig pens

Open, lightly or densely vegetated areas

Pulaka pits

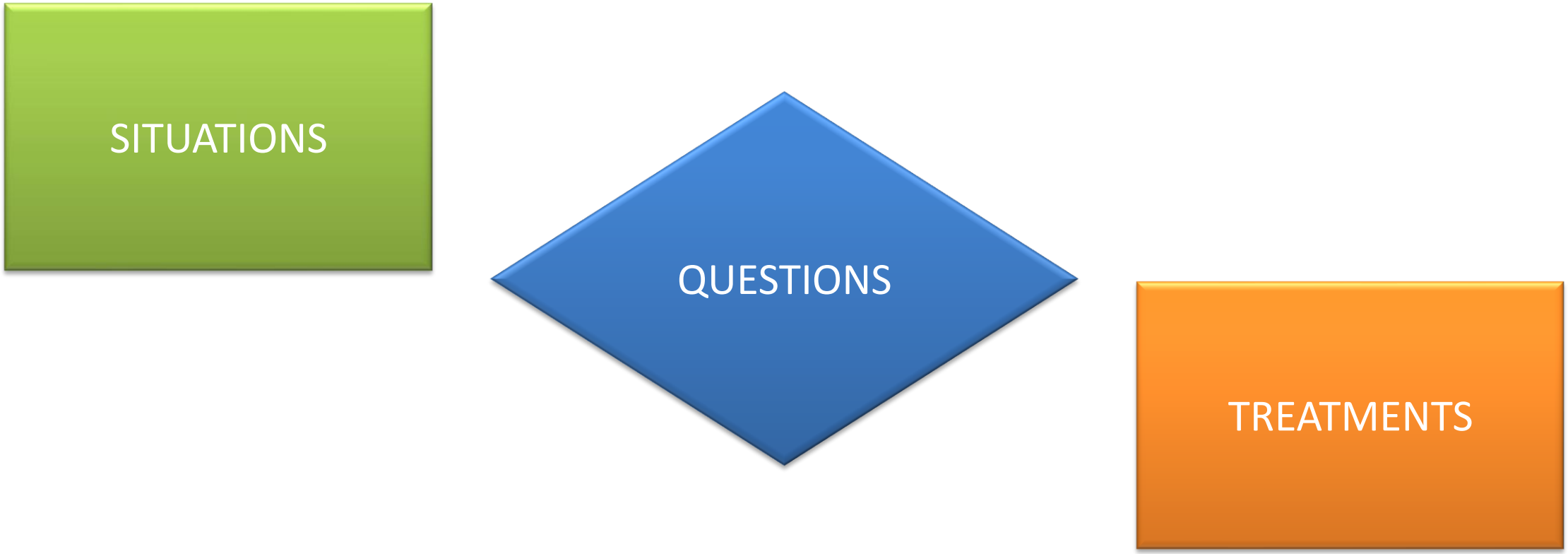
QUESTIONS

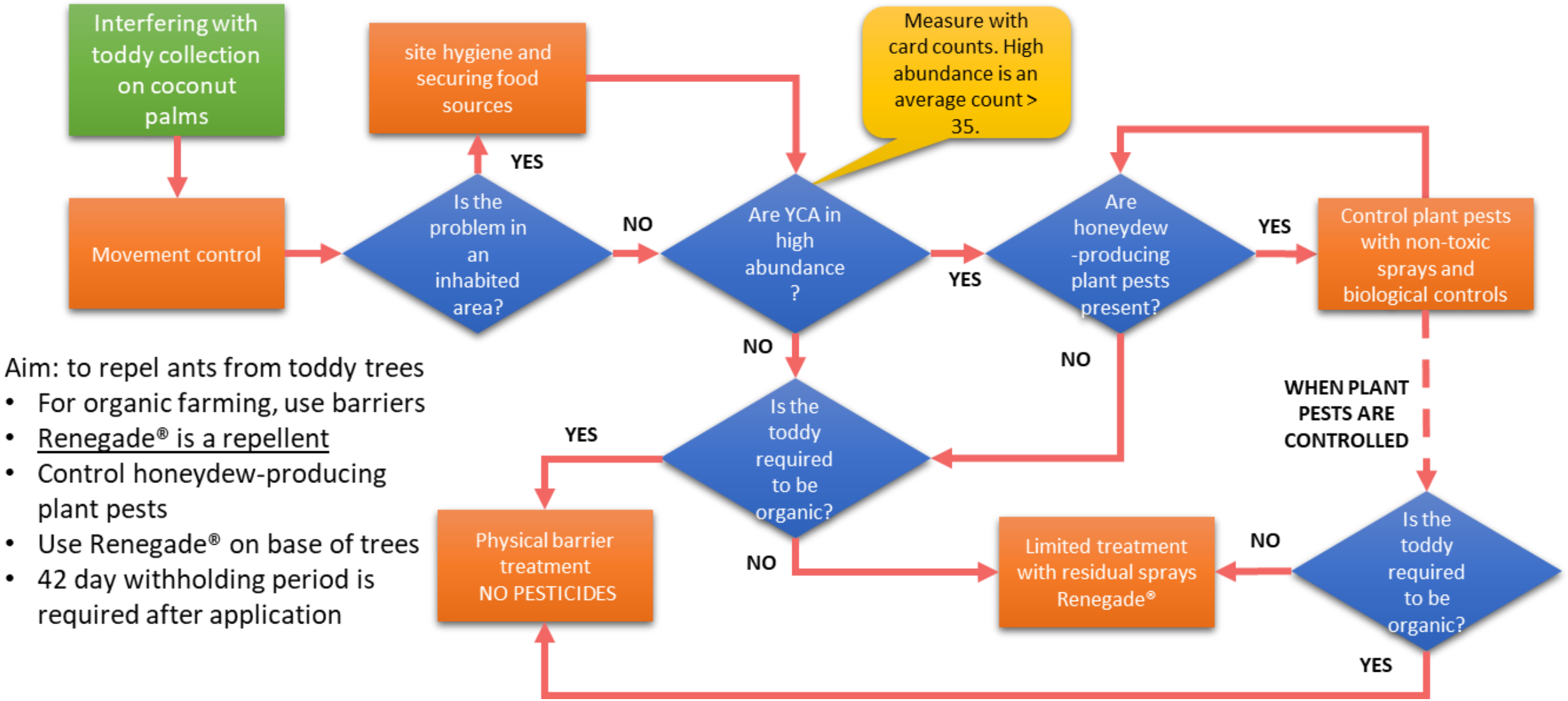

Measure with card counts. High abundance is an average count > 35
Is YCA abundance patchy or consistent?
Are YCA in high abundance?
Are honeydew-producing plant pests present?
Are YCA moving up and down trees?

TREATMENTS

Movement control, site hygiene and securing food sources	Limited treatment with targeted pastes	Broadscale granular baiting with handheld spreaders
Control plant pests	Limited treatment with residual sprays (ATTRATHOR®, Renegade®, Termidor®)	Broadscale granular baiting with handheld spreaders & mist blower

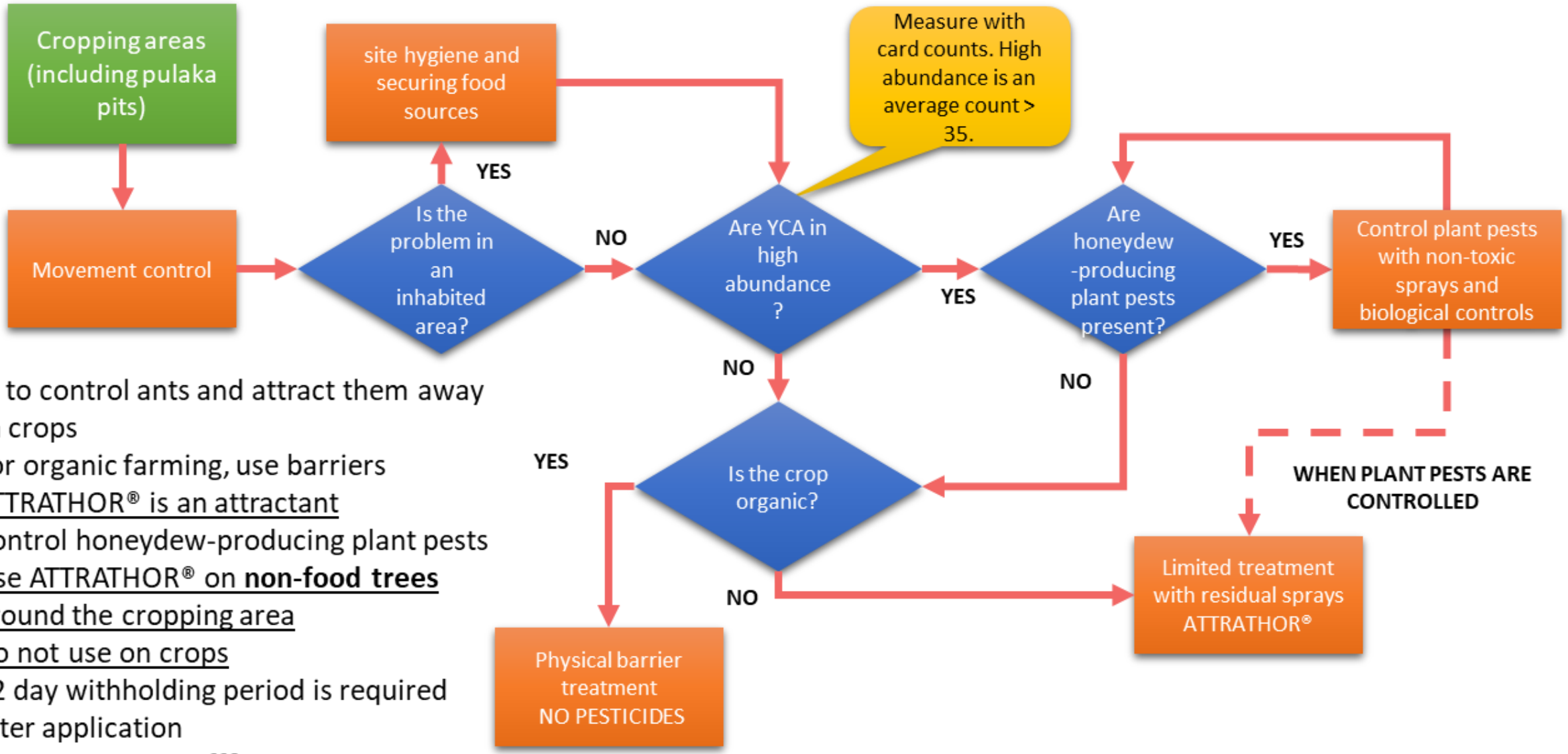
SITUATIONS, QUESTIONS, TREATMENTS





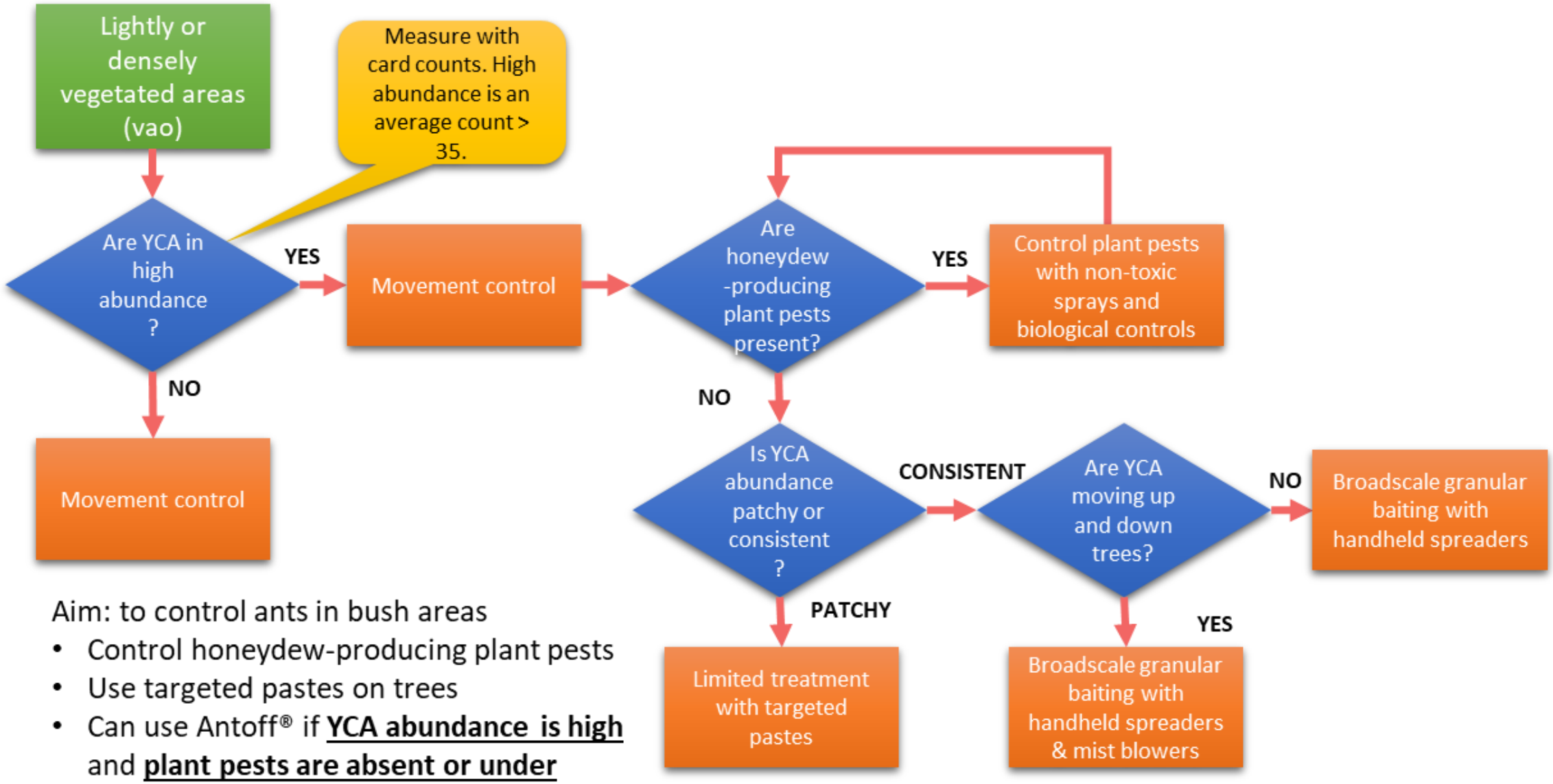
Aim: to repel ants from toddy trees

- For organic farming, use barriers
- Renegade® is a repellent
- Control honeydew-producing plant pests
- Use Renegade® on base of trees
- 42 day withholding period is required after application



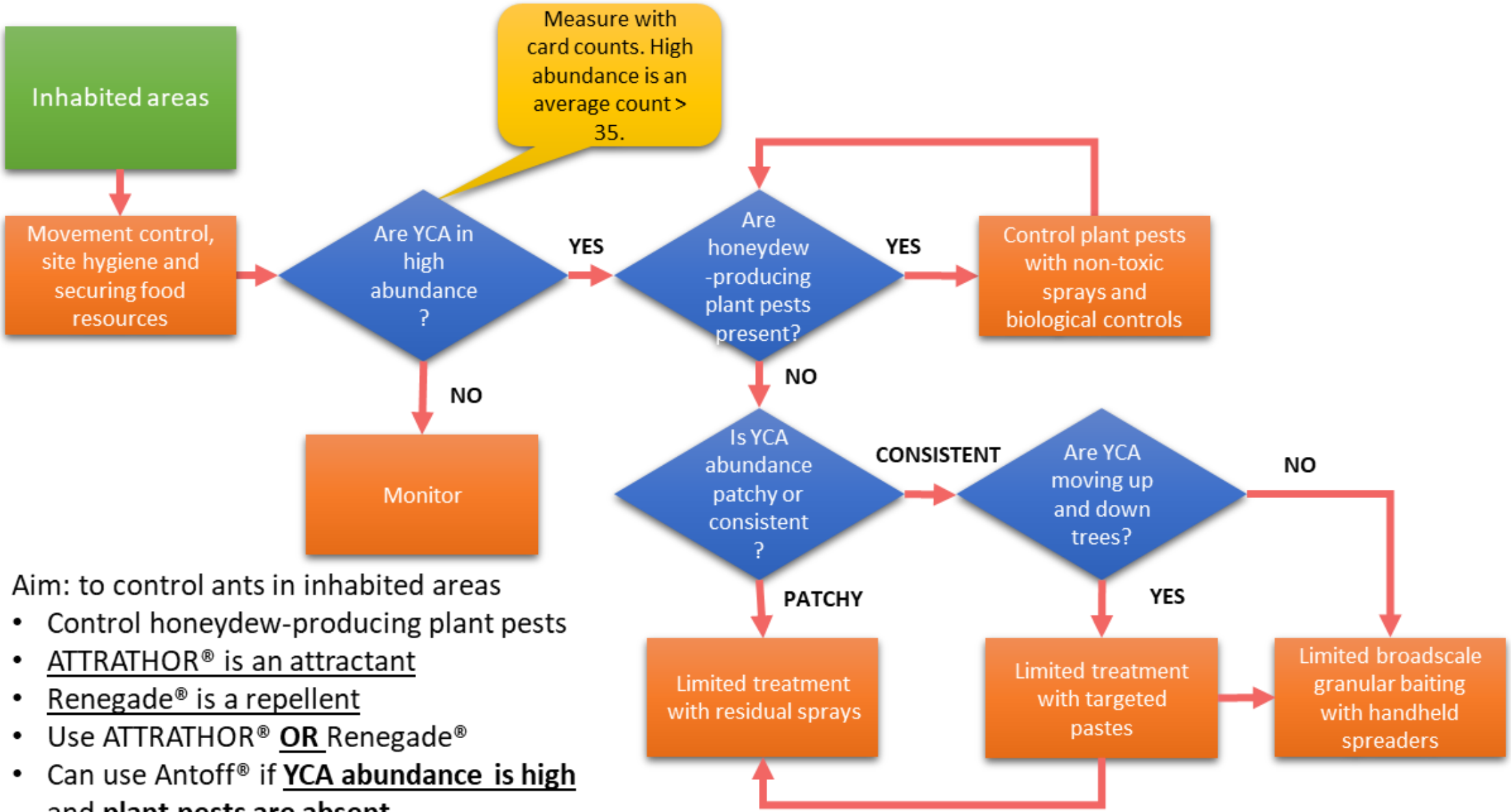
Aim: to control ants and attract them away from crops

- For organic farming, use barriers
- ATTRATHOR® is an attractant
- Control honeydew-producing plant pests
- Use ATTRATHOR® on **non-food trees** around the cropping area
- Do not use on crops
- 42 day withholding period is required after application
- **DO NOT USE Antoff®**



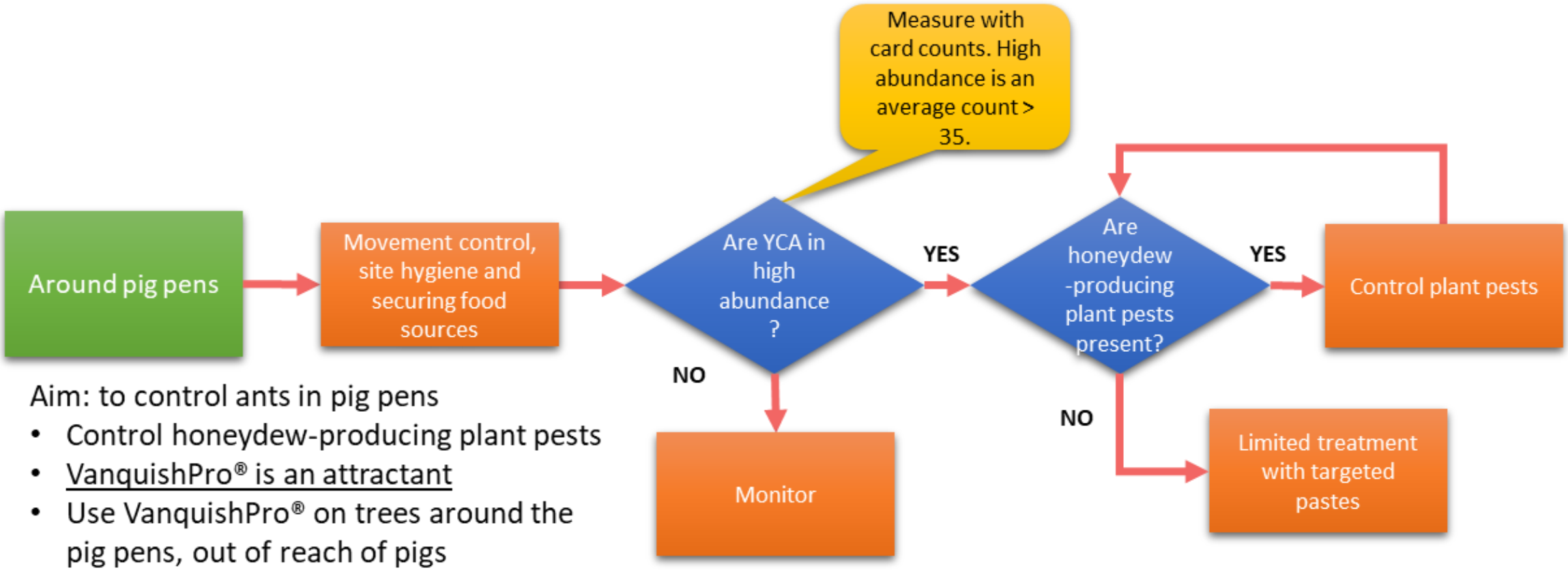
Aim: to control ants in bush areas

- Control honeydew-producing plant pests
- Use targeted pastes on trees
- Can use Antoff® if **YCA abundance is high** and **plant pests are absent or under continual control**



Aim: to control ants in inhabited areas

- Control honeydew-producing plant pests
- ATTRATHOR® is an attractant
- Renegade® is a repellent
- Use ATTRATHOR® **OR** Renegade®
- Can use Antoff® if **YCA abundance is high** and **plant pests are absent**



Aim: to control ants in pig pens

- Control honeydew-producing plant pests
- VanquishPro® is an attractant
- Use VanquishPro® on trees around the pig pens, out of reach of pigs
- **DO NOT USE Antoff®**

OUTER ISLANDS SURVEYS 2024

- Nanumea – YCA causing some problems, but decreasing
- Nanumaga – YCA causing problems, no other information
- Niutao – highly abundant over ¾ of island, mealybugs present
- Nukufetau – “white mealybug” AKA breadfruit scale
- Vaitupu – no issues and low YCA abundance, but farming mealybugs
- Nui – high YCA abundance, scale and mealybug
- Niulakita – not yet surveyed
- Nukulaelae – not yet surveyed

SITUATIONS

QUESTIONS

Nanumea

Lakena

- YCA distribution is getting smaller
- YCA is now only in the centre of the motu
- High YCA abundance in the centre of the motu
- Around pulaka pits, making it difficult to farm
- No mealybugs

SITUATIONS

Lolua

- No longer causing problems around Lolua village
- Has moved into the bush, which has mealybugs

QUESTIONS

WHAT WOULD YOU DO IN LAKENA?

- YCA distribution is getting smaller
- YCA is now only in the centre of the motu
- High YCA abundance in the centre of the motu
- Around pulaka pits, making it difficult to farm
- No mealybugs

Lightly or densely vegetated areas (vao)

Cropping areas (including pulaka pits)

Are YCA in high abundance?

Are honeydew-producing plant pests present?

WHAT WOULD YOU DO IN LAKENA?

- YCA distribution is getting smaller
- YCA is now only in the centre of the motu
- High YCA abundance in the centre of the motu
- Around pulaka pits, making it difficult to farm
- No mealybugs

Lightly or densely vegetated areas (vao)

Movement control, site hygiene and securing food sources

Cropping areas (including pulaka pits)

Limited treatment with residual sprays (ATTRATHOR®, Renegade®, Termidor®)

WHAT WOULD YOU DO IN LOLUA?

- No longer causing problems around Lolua village
- Has moved into the bush, which has mealybugs

Lightly or densely vegetated areas (vao)

Are YCA in high abundance?

Are honeydew-producing plant pests present?

WHAT WOULD YOU DO IN LOLUA?

- No longer causing problems around Lolua village
- Has moved into the bush, which has mealybugs

Lightly or densely vegetated areas (vao)

Movement control, site hygiene and securing food sources

Control plant pests

WHAT WOULD YOU DO IN TEPUKA

Lightly or densely vegetated areas (vao)

Are YCA in high abundance?

Is YCA abundance patchy or consistent?

Are honeydew-producing plant pests present?

WHAT WOULD YOU DO IN TEPUKA

Broadscale granular baiting with handheld spreaders

Control plant pests

TREATMENT USING PESTICIDES

- Residual sprays
  1. ATTRATHOR®
  2. Termidor®
  3. Renegade 100EW®
- Targeted pastes
  - Vanquish Pro® and Xstinguish®
- Broadscale granular baits
  - Antoff®

HEALTH AND SAFETY EXERCISE

- In groups
  - Discuss health and safety and make notes
    - Talk about different things you need to do to protect...
      1. People living in the environment
      2. People using the pesticides
      3. The environment itself

HEALTH AND SAFETY

Competent personnel

- adults (over 18 years), physically and mentally able and trained to carry out the work,
- have read and understood the ESIA, SOPs, IPM strategy, and SDS for any treatment product.

Supervisors

- fully trained to undertake the treatment activities,
- ensure all participants (operators) are trained
- an employee of the Tuvalu Agriculture department,
- available to assist and accountable for health and safety,
- supervise any mixing or measuring of pesticides.

Safe handling and application

- Personal Protection Equipment (PPE) must be worn.
- Follow the directions on the packaging.
- Do not use more or less than the recommended concentrations.
- Calculate quantities twice.
- Measure and mix liquid pesticide before going out to the field.

Safe application

- respecting buffer zones, where pesticide application is restricted to protect sensitive areas like waterways.
- washing hands after any handling of pesticides, particularly before eating, drinking or smoking.

Spillage

- follow the cleaning instructions on the SDS.
- dispose of any equipment used to clean up the spill in accordance with safe disposal procedures.

Safe storage

- pesticides must be stored according to Tuvalu's regulations, locked and inaccessible to unauthorized persons, most importantly children
- pesticides containment facilities should prevent the entry of animals (such as rates) that could consume the pesticides.
- liquid pesticides should be double-contained, to reduce the risk of worker exposure.
- pesticides should be kept separate from food, medicine, and other materials to avoid contamination.
- pesticides must be stored in their original, undamaged containers with legible labels.
- people must not eat, drink or smoke in pesticide containment facilities.
- pesticides should never be transferred to food or drink containers.

Safe disposal

- do not dispose any pesticides or used pesticide containers in the environment.
- do not reuse any containers for other purposes.
- used containers and pesticides that are no longer required should be dealt with using the recommendations of SPC's pesticide management scheme.
- do not burn empty containers.
- pesticides or their containers should never be dumped into the environment, lagoon or ocean.

Tracking of use

- A register of the pesticides and their initial quantities is required.
- A logbook of pesticide use. Each time a pesticide is used, a note must be added to the logbook.

OBJECTIVES

- Visit Tepuka to assess YCA abundance and (honeydew-producing) plant pests ✓
- YCA management reference materials ✓
  - Understand the decision-making process for management options ✓
- Discuss findings on outer islands ✓
- Work through the decision process for management options ✓
- Treatment using pesticides ✓
  - Health and Safety ✓
  - **Application methods**
- **Discuss approaches for outer islands / identify information gaps**
- ***iNaturalist exercise***
- **Community messaging**
- **Feedback on YCA IPM strategy, SOPs and ESIA, and additional needs**

APPLICATION METHODS

- Residual sprays
  1. ATTRATHOR®
  2. Termidor®
  3. Renegade 100EW®
- Targeted pastes
  - Vanquish Pro® and Xstinguish®
- Broadscale granular baits
  - Antoff®

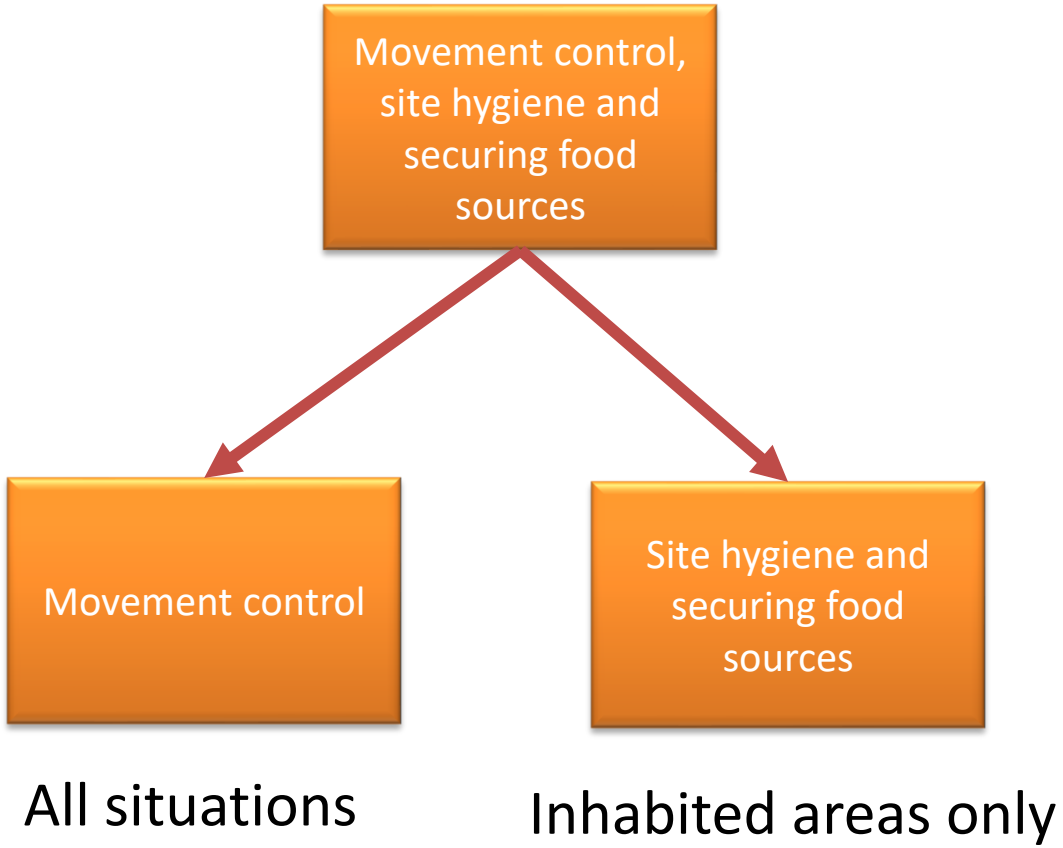
APPLICATION METHODS VIDEO

DECISION-MAKING

1. Nature of the problem
2. Desired outcome or benefit
3. Ant abundance
4. Environmental context
5. Risk factors
6. Available tools

MANAGEMENT DECISION-MAKING

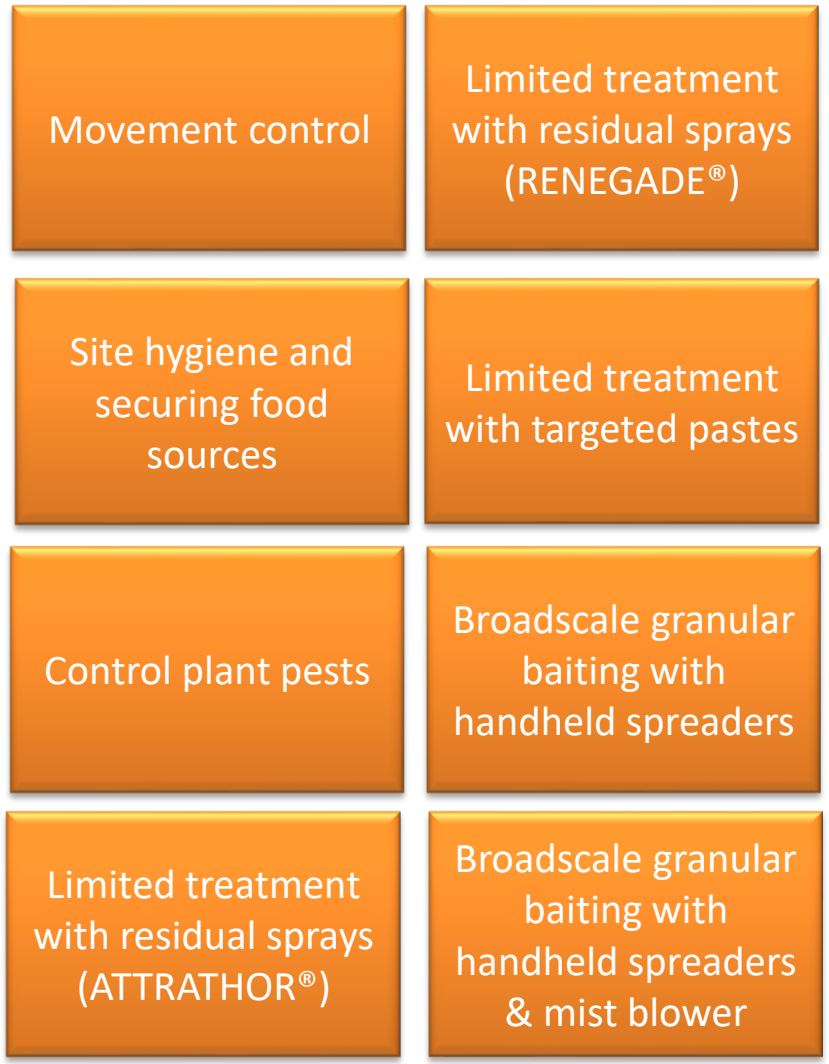
- Nanumea ✓
- Nanumaga
- Niutao
- Nukufetau
- Vaitupu
- Nui
- Funafuti
- Niulakita
- Nukulaelae



VAITUPU

1. What would you do and why?
2. What more information do you need?

- Situation:
  - YCA not causing problems
  - YCA are in low abundance in Vaitupu village motu
  - What about other motu?
  - Mealybugs (honeydew-producing plant pests) are present
  - “Mealybug destroyer” biological control insects are present



NANUMAGA

1. What would you do and why?
2. What more information do you need?

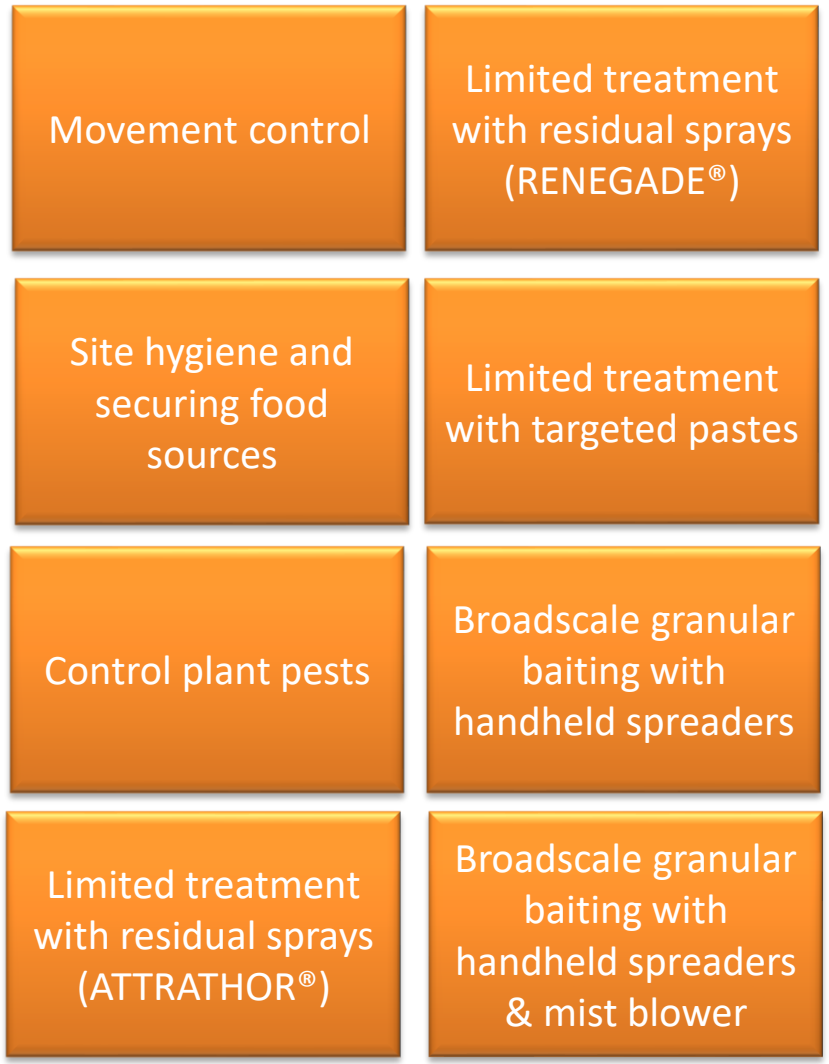
- Situation:
  - YCA in high abundance in the village and the vao
  - Villagers have made chicken coops, off the ground to keep ants away
  - Mealybugs (honeydew-producing plant pests) are present, and the YCA are “farming” them
  - The situation is improving
  - No information on “Mealybug destroyer” or other plant-pest biological control insects

Movement control	Limited treatment with residual sprays (RENEGADE®)
Site hygiene and securing food sources	Limited treatment with targeted pastes
Control plant pests	Broadscale granular baiting with handheld spreaders
Limited treatment with residual sprays (ATTRATHOR®)	Broadscale granular baiting with handheld spreaders & mist blower

NIUTAO

1. What would you do and why?
2. What more information do you need?

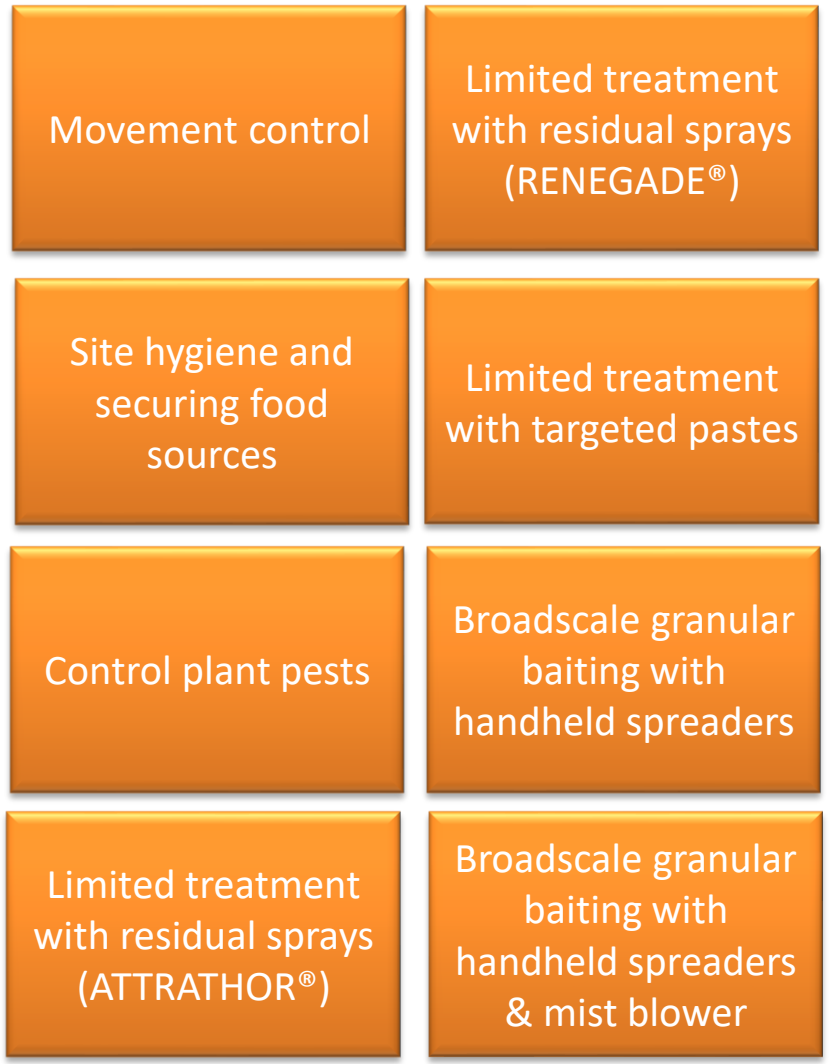
- Situation:
  - YCA are in high abundance
  - Mealybugs (honeydew-producing plant pests) are present, and the YCA are “farming” them
  - No information on “Mealybug destroyer” or other plant-pest biological control insects



NUI

1. What would you do and why?
2. What more information do you need?

- Situation:
  - Fenuatapu was treated using Antoff® in 2017
  - YCA is abundant in the village, where it comes into houses looking for food
  - YCA is abundant in the vao
  - No information about mealybugs (or other honeydew-producing plant pests)
  - No information on “Mealybug destroyer” or other plant-pest biological control insects



NIULAKITA

1. What would you do and why?
2. What more information do you need?

- Situation:
  - YCA is abundant in half of the vao, where the land was cleared in 1990s for the Fialua banana project
  - Not many YCA in the village (in 2023/2025)
  - YCA are attracted to fruit fly traps
  - No information about mealybugs (or other honeydew-producing plant pests)
  - No information on “Mealybug destroyer” or other plant-pest biological control insects

Movement control	Limited treatment with residual sprays (RENEGADE®)
Site hygiene and securing food sources	Limited treatment with targeted pastes
Control plant pests	Broadscale granular baiting with handheld spreaders
Limited treatment with residual sprays (ATTRATHOR®)	Broadscale granular baiting with handheld spreaders & mist blower

NUKULAELAE

1. What would you do and why?
2. What more information do you need?

- Situation:
  - Back in 2014 YCA was highly abundant, particularly on Motutala, but more on Fangaua
  - Low abundance on Asia and Mulitealua
  - Abundance not known on Tumiloto
  - No information about mealybugs (or other honeydew-producing plant pests)
  - No information on “Mealybug destroyer” or other plant-pest biological control insects

Movement control	Limited treatment with residual sprays (RENEGADE®)
Site hygiene and securing food sources	Limited treatment with targeted pastes
Control plant pests	Broadscale granular baiting with handheld spreaders
Limited treatment with residual sprays (ATTRATHOR®)	Broadscale granular baiting with handheld spreaders & mist blower

FUNAFUTI

1. What would you do and why?
2. What more information do you need?

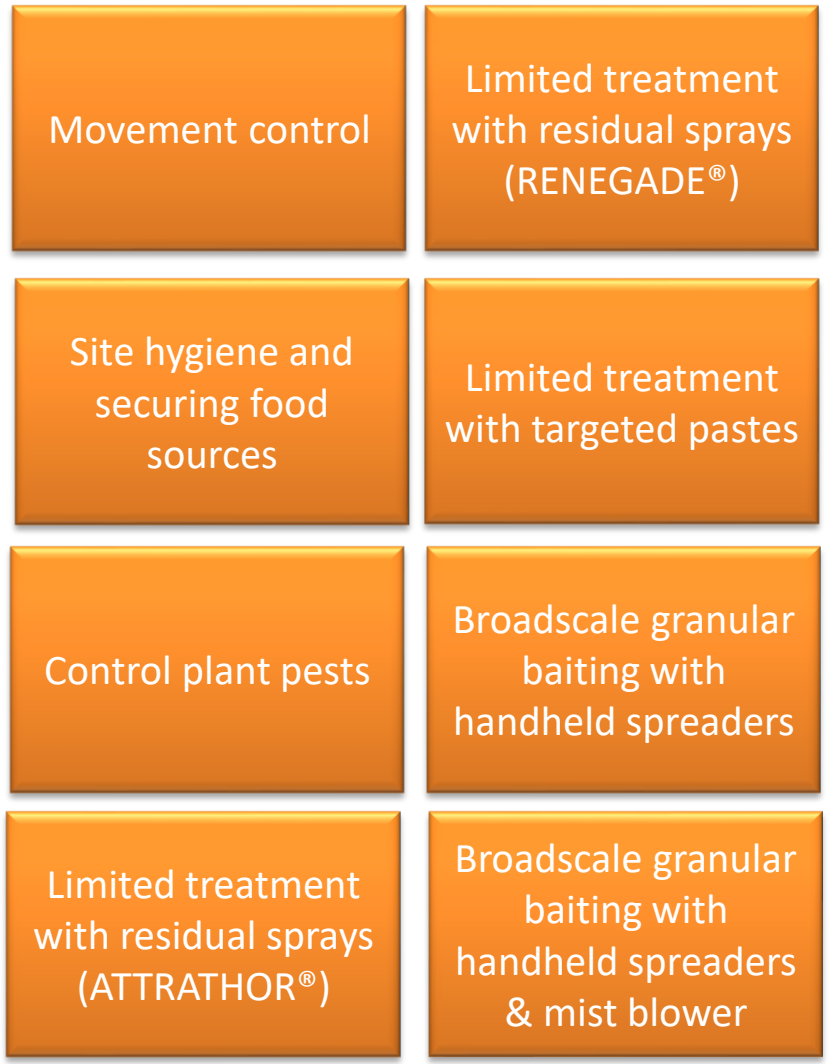
- Situation:
  - YCA is patchy in Fogafale
  - YCA has declined in Tepuka
  - YCA is present on most other motu in low abundance
  - Honeydew-producing plant pests are present, but not abundant (except patches on Tepuka) and Fogafale
  - “Mealybug destroyer” biological control of mealybugs is present in Funafuti

Movement control	Limited treatment with residual sprays (RENEGADE®)
Site hygiene and securing food sources	Limited treatment with targeted pastes
Control plant pests	Broadscale granular baiting with handheld spreaders
Limited treatment with residual sprays (ATTRATHOR®)	Broadscale granular baiting with handheld spreaders & mist blower

NUKUFETAU

1. What would you do and why?
2. What more information do you need?

- Situation:
  - YCA were treated with Antoff® in 2018
  - Improved the problem, but YCA is spreading to other motu – where people go to collect coconuts
  - Mealybugs are present
  - Other ants are present
  - People also complained about “tiny black ants”
  - No information on “Mealybug destroyer” or other plant-pest biological control insects



DECISION-MAKING

1. Nature of the problem
2. Desired outcome or benefit
3. Ant abundance
4. Environmental context
5. Risk factors
6. Available tools

MESSAGING (in the SOPs)

- Community notice
- Village council briefing
- Factsheets describing the purpose, goals and expected outcomes of the treatment
- Factsheet outlining the potential risks of pesticide use and how those will be managed
- Warning posters for use around areas being treated with pesticides
- Movement control poster for use around the area being treated
- Yellow crazy ant factsheet

WARNING POSTER

WARNING

POISON

YELLOW CRAZY ANT (LOO SEGA MAKINIKINI) CONTROL USING [VANQUISH PRO®/XSTINGUISH®] IN THIS AREA

FROM DD/MM/YYYY to DD/MM/YYYY [add the actual treatment dates]

THE POISON BAIT IS A GREEN PASTE

DO NOT TOUCH BAIT

DO NOT ALLOW UNSUPERVISED CHILDREN IN THIS AREA UNTIL DD/MM/YYYY [42 days after the end date above]

DO NOT EAT ANIMALS FROM THIS AREA UNTIL DD/MM/YYYY [42 days after the end date above]

DO NOT HARVEST PLANTS FROM THIS AREA UNTIL DD/MM/YYYY [42 days after the end date above]

DO NOT ALLOW ANIMALS TO ROAM IN THIS AREA UNTIL DD/MM/YYYY [42 days after the end date above]

If anyone feels ill health during or after pesticide treatment, report to [name of village council contact] and [agriculture extension officer] **to make sure it is not caused by the pesticides.**

For more information or to share concerns

Talk to [name of village council contact] and [agriculture extension officer].

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COMMUNITY NOTICE

Community notice: Yellow crazy ant (Loo sega makinikini) management on [name of island] island

Why is this work being undertaken?

Yellow crazy ants (YCA) have been causing problems on your island.

The Department of Agriculture is working with the community to control these ants to reduce these problems.

The ants are not able be eradicated (completely gotten rid of).

Why can't the yellow crazy ants be completely removed?

It is not currently feasible to eradicate yellow crazy ants because.

- Yellow crazy ants are difficult to completely remove.
- The pesticides used to control and eradicate yellow crazy ants can cause environmental impacts if they are used in large quantities – which is what would be needed for eradication.
- We would need to make sure that yellow crazy ants didn't come back – which is very difficult as the ant is so widespread over Tuvalu.

There are ways we can reduce the problems that they cause, and there is a lot you can do yourselves

What work is being undertaken?

The Department of Agriculture is working with the village council to control yellow crazy ants.

The control of these ants is being led by an "integrated pest management (IPM)" strategy. This strategy involves combining methods of control to minimize the impacts of yellow crazy ants. The methods to be used include:

- Making sure the yellow crazy ant cannot spread to new places.
- Controlling any honeydew-producing plant pests. Yellow crazy ants use this honeydew for food. This might involve.
    - The introduction of insects from elsewhere in Tuvalu.
    - Non-toxic spraying using soap, oil and water.
- Keeping areas around the home clean and tidy and securing food sources.
- Use of pesticide treatments such as: [Also include information here from appropriate treatment product factsheet below if needed]
    - Residual barrier spray
    - Targeted pastes
    - Broadscale pesticide treatment (baiting)

How can you help?

Preventing the spread of YCA is critical. There is little value in controlling the ants in one area if they are being unintentionally spread to others. Proactive vigilance now can save communities from severe infestations in the future.

- If you see YCA in a new area, inform [name of village council contact] and [agriculture extension officer] immediately
- Compost and organic waste must not be moved out of YCA-infested areas, as these materials may carry ants or their eggs.
- Imported construction materials present a high risk for introducing YCA and other invasive pests. Communities are encouraged to:
    - demand clean, pest-free materials
    - advocate for inspections before such materials are brought into the village.

Keep areas around your home clean and tidy:

- Keep areas clean and free of food scraps or organic waste.
- Trim vegetation around homes and cooking huts to reduce YCA habitat and access routes.
- Ensure proper waste disposal and do not dump of materials that may harbour ants or plant pests.

Who can give you more information?

Talk to [name of village council contact] and [agriculture extension officer] for more information.

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VILLAGE COUNCIL BRIEFING

Village council briefing: Yellow crazy ant (Loo sega makinikini) management

[this can be combined with information from the other factsheets]

Village councils have a vital role to ensure the success of the yellow crazy ant management programme to reduce the impacts of these ants.

The council can help by:

- fostering community-wide support, coordination, and sustained action yellow crazy ants (YCA).
- leadership to promote behaviour change and ensuring that management practices become part of everyday village life.

Some ways the council can help include:

- Establishing community rules and routines to support ant management. These may include:
  - Keeping residential areas clean and free of food scraps or organic waste.
  - Organising regular community clean-up events.
  - Promoting the trimming of vegetation around homes and cooking huts to reduce YCA habitat and access routes.
  - Ensuring proper waste disposal and discouraging dumping of materials that may harbour ants or plant pests.
  - Designating local community stewards or volunteers to monitor infestation levels, report new sightings, and assist Agriculture or Environment Officers during surveys or treatment activities.
- Working with the **Health Department** to ensure
  - aligning public health inspections with pest management priorities
    - completion of land inspections, especially in public areas such as schools, clinics, and gathering places, ensuring they remain free of conditions that attract or sustain ant populations.

By integrating these responsibilities into village by-laws or informal agreements, communities can build resilience and ownership over ant and pest control activities ensuring a cleaner, healthier, and safer environment for everyone.

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TREATMENT FACTSHEET

Antoff® treatment of Yellow crazy ants (Loo sega makinikini)

Why is Antoff® being used?

Antoff® is being used to control yellow crazy ant populations over a broadscale.

It is only used when yellow crazy ants are at vey high abundances throughout the environment.

What is Antoff®?

Antoff® is a granular pesticide (bait) that combines tiny amounts of a toxin (chemical) in a mixture that is attractive to yellow crazy ants (YCA). The ants take the Antoff® back to their nests where it kills off the whole colony.

Antoff® granules are spread evenly throughout the environment so that ants that are looking for food find the granules and take them back to the nests.

Antoff® is not toxic to people, but people should avoid touching the bait.

What can you expect?

Successful treatment using Antoff® is expected to reduce the numbers of yellow crazy ants within a few days by 90%.

What can you do to help make the work successful?

Keep out of the are that is being treated with Antoff® for at least five days during and after treatment.

Do not touch the bait, and do not let children touch the bait.

Keep animals away from the bait.

Help increase the success of yellow ant control:

- If you see YCA in a new area, inform [name of village council contact] and [agriculture extension officer] immediately
- Compost and organic waste must not be moved out of YCA-infested areas, as these materials may carry ants or their eggs.
- Imported construction materials present a high risk for introducing YCA and other invasive pests. Communities are encouraged to:
  - demand clean, pest-free materials
  - advocate for inspections before such materials are brought into the village.

Help keep yellow crazy ants from coming back:

- Keep areas clean and free of food scraps or organic waste.
- Trim vegetation around homes and cooking huts to reduce YCA habitat and access routes.
- Ensure proper waste disposal and do not dump of materials that may harbour ants or plant pests.

Who can give you more information?

Talk to [name of village council contact] and [agriculture extension officer] for more information.

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YCA FACTSHEET

Yellow crazy ants (Loo sega makinikini)

What do they look like?

- Workers (the ants you see) are 3-5 mm long.
- Movement is fast and erratic – "crazy".
- Long legs – look "spidery".
- Yellowish brown body.
- Do not sting or bite.
- Spray a weak acid.

What problems can they cause?

- Attack and kill small animals including.
  - Piglets, seabird and chicken chicks.
  - Hermit crabs and coconut crabs.
- Crawl on people when they are sleeping, making it difficult to sleep.
- Come into kitchens (indoor and outdoor) to take food
- Can blind people and pets with their acid spray.
- Nest in electrical equipment, causing power outages and fires.
- Nest in the base of plants, which can weaken the plants

How can you reduce the problems these ant cause?

Ants need food and places to nest. You can help stop them from causing problems

- Keep food in refrigerators or sealed containers – ask Agriculture if you need some containers.
- Keep food scraps for pigs, chickens and ducks in buckets with lids away from the house.
- Keep the area around the house clear of trees and rubbish piles.
- Do not take materials (coconuts, wood, leaves, plants) from areas where yellow crazy ants are living to other areas
- If the ants come inside, wipe down surfaces they are walking on with a vinegar, soap and water solution.

What to do if you find them

Talk to [name of village council contact] and [agriculture extension officer].

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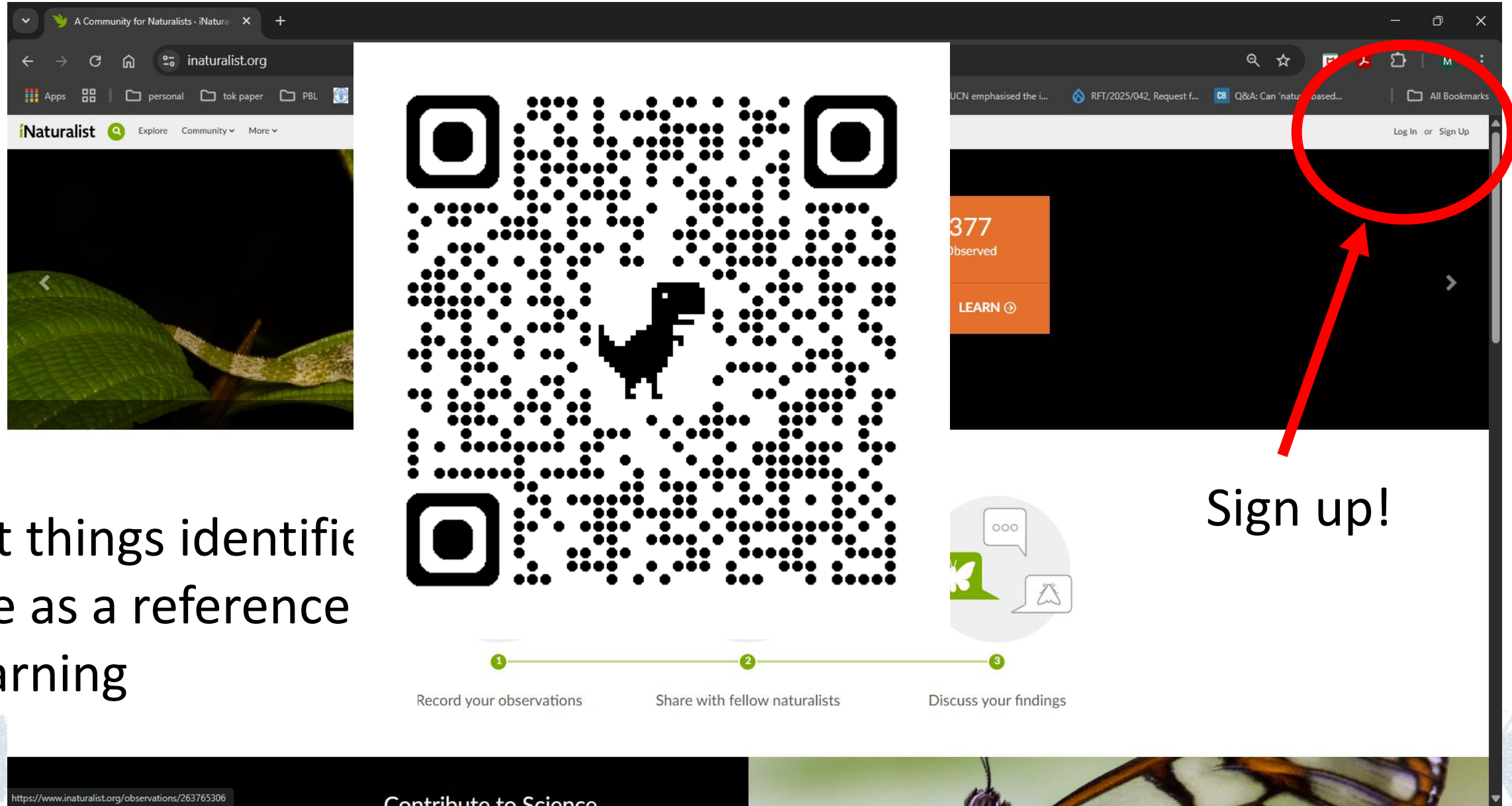
OBJECTIVES

- Visit Tepuka to assess YCA abundance and (honeydew-producing) plant pests ✓
- YCA management reference materials ✓
  - Understand the decision-making process for management options ✓
- Discuss findings on outer islands ✓
- Work through the decision process for management options ✓
- Treatment using pesticides ✓
  - Health and Safety ✓
  - **Application methods** ✓
- **Discuss approaches for outer islands / identify information gaps** ✓
- **Community messaging** ✓
- ***iNaturalist signup***
- ***Applying Vanquish Pro® and "ATTRATHOR®"***
- **Thursday afternoon: *iNaturalist exercise***
- ***Friday afternoon*: Feedback on YCA IPM strategy, SOPs and ESIA, and additional needs**

iNATURALIST



- Get things identifie
- Use as a reference
- Learning

APPLICATION EXERCISE

- Vanquish Pro® Monitoring paste SDS and product label
- Handheld sprayers with water for different methods for
  - ATTRATHOR® SDS and product label
  - Renegade® SDS and product label
  - Termidor® SDS and product label

NEXT STEPS / ADDITIONAL NEEDS

- Budget for pesticides
- Do we need more pesticides?
- Better to get equipment?
  - Spreaders
  - Mist blowers (good for plant pests!)
- What else is needed?

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SUSTAINABLE DEVELOPMENT GOALS

THANK YOU