



# INTEGRATED PEST MANAGEMENT

CITY OF SEBASTIAN

# SUB-COMMITTEE MEMBERS

## City Staff:

Brian Benton, Leisure Services Director

Kimberly Haigler, Environmental Planner

## Natural Resource Board:

Brian O'Neill

Kathy Brothers

Thomas Carrano

Jessica Lovell

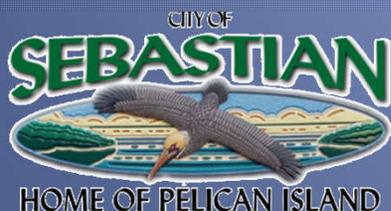
## Scientific Consultants:

Christine Kelly-Begazo, Director, UF IFAS IRC Extension Office

Sharon Tyson, Florida State Parks

Dr. Graham Cox, Pelican Island Audubon Society

Ruth Callaghan, CEAC (Certified Environmental Analytical Chemist)



## SUB-COMMITTEE GOAL

To assist City staff in the development of an Integrated Pest Management Plan for Sebastian's parks and properties, which promotes sustainable pest management methods that minimize health, environmental, and economic risks. This plan will serve as a guideline for leisure services staff in the control of landscape pests

# PREVIOUS PEST MANAGEMENT

- BMPs were utilized and Pesticide use was minimal
- Most of the non-chemical methods in this plan were already part of regular park maintenance
- Currently has two licensed applicators on parks staff

## HOWEVER:

- Record-keeping could be more detailed
- No standards were set for City Contractors

**WE CAN DO BETTER!**



# GOALS OF IPM PROGRAM

- Reducing the amount of pollutants entering surface and ground water
- Minimizing effects on native plants, animals and habitats
- Ensure effective, economic pest management
- Minimizing health risks to the public, City staff, and the environment
- Promote the transparency of the City's pest management activities
- Increase public awareness of IPM methods and benefits



# IPM PROGRAM

- IPM Policy, established with R-20-12
- Program Coordination
- Tracking Pesticide Use
- Staff Training
- Licensed Applicators
- Public Outreach
- Contract Provisions



# WHAT IS A PEST?

- Any species that is found to be undesirable
- A pest in one area, may not be in another
- Often these species have been introduced to the area (directly, or indirectly)
- Species causing disease, die-off, or displacing the more desired species for the area
- Native species can become pests



*crabgrass*



*dollar spot fungus*



*grubworm*

# PUBLIC OUTREACH

- CITY'S IPM WEBSITE
- SOCIAL MEDIA
- COMMUNITY EVENTS
- LANDSCAPE INDUSTRY
- "NEW HOMEOWNER" FOLDERS
- IPM PLAN ANNUAL REVIEW PROCESS









IDENTIFICATION

Key Pests of Concern:

- Fire Ants
- Sod Webworms
- Mole Crickets
- Jap. Beetle Grubs
- Moles
- Cut Worms
- Mice
- Broadleaf Weeds
- Signal Grass
- Dollar Weed
- Pennywort
- Torpedo Grass
- Goose Grass
- Crab Grass

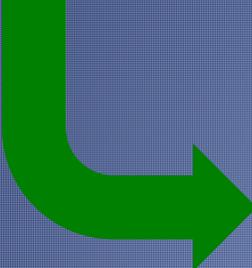


*mole cricket damage*



*dollar weed*

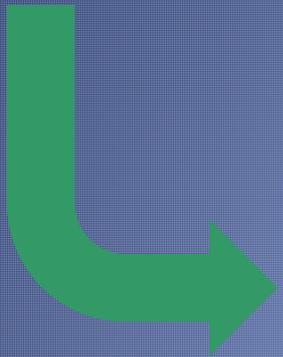




PLANNING

- Think PREVENTION
- Determine tolerance threshold
- What action is needed?
- Consider ALL costs equally
- Classification system for the parks and properties





IMPLEMENT  
IPM STRATEGY

1

BIOLOGICAL  
CONTROL



2

CULTURAL  
CONTROL



3

MECHANICAL  
CONTROL



4

CHEMICAL  
CONTROL



## IMPLEMENT IPM STRATEGY

1

### BIOLOGICAL CONTROL

- Utilize natural enemies
- Enhance beneficial species



*foliar nematode*



*Myco-herbicide*



*air potato beetle*

## IMPLEMENT IPM STRATEGY

2

### CULTURAL CONTROL



- Disrupt the pest environment
- Remove pest attractants
- Plant pest resistant species.
- Right plant, right place.



*controlled burns*



*native plants*



*sanitation*

## IMPLEMENT IPM STRATEGY

3

### MECHANICAL CONTROL



- Prevent pest entry with physical barriers



*pheromone trap*



*mulching*



*pruning*

## IMPLEMENT IPM STRATEGY

### NON-CHEMICAL CONTROLS



- Each park type is assigned its own set of non-chemical methods
- These are conducted as part of the regular maintenance of these areas
- All activities recorded on “Monthly IPM Log” Form
- Further method recommendations



*mulching*



*sanitation*

## IMPLEMENT IPM STRATEGY

4

### CHEMICAL CONTROL



- The LAST tool of IPM
- Carefully weigh environmental costs & benefits
- The LABEL IS THE LAW!
- Choose the least-toxic option available that will do the job
- Create an “Approved Pesticide Table”
- Develop a Pesticide Use Methodology



*read the label!*

# PESTICIDE USE METHODOLOGY

- Record all inspection and pesticide application data on “Chemical Control Log”
- Determine Application rate: mix chemicals and calibrate equipment accordingly
- Routinely scheduled applications and broadcast applications should be avoided
- Establish buffer zones around bodies of water
- Safety Data Sheets (SDS) will be on site at all times
- Notification signage must be posted in treated areas at least 24 hours before application
- Pesticides utilized are limited to those listed on the “Approved Pesticide Table”



# APPROVED PESTICIDES TABLE

- Previously utilized by staff
- Recommended through UF IFAS publications
- Discovered through sub-committee research and discussion
- Selection of pesticides for use are based upon a combination of a low Environmental Impact Quotient (EIQ), low cost, and maximum efficacy.
- Pesticide table data includes attributes such as: active ingredients and their percentages, EPA Registration #, targeted pest, a cost rating per 1000 ft<sup>2</sup>, and the observed staff efficacy

TRADE NAME	ACTION	EPA REG. #	ACTIVE INGREDIENT(S)	LABELED HAZARD LEVEL	EIQ	APPLICATION RATE LBS PER ACRE	FIELD USE EIQ	TARGET PESTS	PERMITTED USE	COST (only includes cost of product)	COST RATING/ 1,000 ft <sup>2</sup> (only includes cost of product)	CITY STAFF OBSERVED EFFICACY
Advion Fire Ant Bait (Granular)	Insecticide	100-1481	Indoxacarb .045%	Caution	31.19	1.5 LBS	0	Fire Ants	All Parks	\$341.60/ 25 LBS	\$	HIGH
Avenger (Liquid)	Herbicide	92967-1	d-Limonene 70%	Caution	N/A		N/A	Non-Selective	All Parks	\$105.00/ GAL	N/A	N/A
Conserve SC (Liquid)	Insecticide	62719-291	Spinosad 11.6%	N/A	14.38	0.68 LBS	1.1	Sod Webworms	All Parks	\$147.03/ 32 OZ	\$\$	N/A
Dimension 2EW Pre Emergent (Liquid)	Herbicide	62719-542	Dilthiopyr 24%	Warning	15.73	2 LBS	7.6	Broadleaf Weeds	RESTRICTED*	\$116.75/ 64 OZ	\$\$	MODERATE
Dr. Kirchner Natural Weed Killer (Liquid)	Herbicide	Exempt	Sodium Chloride 4.00%	Caution	N/A	No data, stated to spray each weed to the point of wetness	N/A	Non-Selective	All Parks	\$99.99/ 5 GAL	N/A	LOW
Eco Might WOW (Liquid)	Herbicide	Exempt	Peppermint Oil 4.5% Potassium Sorbate 3.5% Sodium Chloride 3.5%	Caution	N/A	27.23 LBS	N/A	Non-Selective	All Parks	\$2,595.55/ GAL	\$\$\$\$	HIGH
Entrust SC (Liquid)	Insecticide	62719-621	Spinosad 22.5%	N/A	14.38	.05-10 OUNCES PER ANT HILL	N/A	Fire Ants	All Parks	\$469.95/ QT	\$\$\$\$\$	N/A

Excerpt from Approved Pesticide Table

# BIO PESTICIDES

## PROS

- Only contain naturally occurring substances
- Break down rapidly in sunlight & water
- Least risk to non-target species
- Fast-acting

## CONS

- Multiple applications may be required
- Exempt from EPA review
- No data on long-term risks or efficacy
- May not be mass produced for commercial use

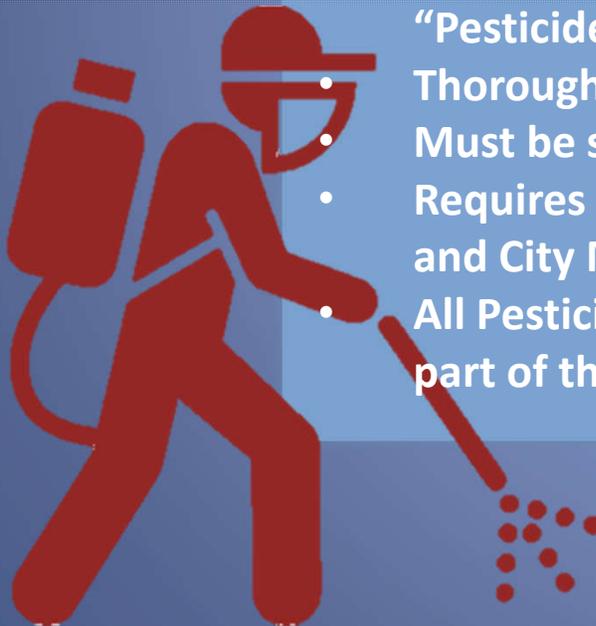


# NEW & “RESTRICTED” PESTICIDES

- It is recommended to keep every possible “IPM tool” in the toolbox
- “Restricted ” pesticides are to be avoided
- Be prepared for extenuating circumstances
- Incorporate new products as they are available

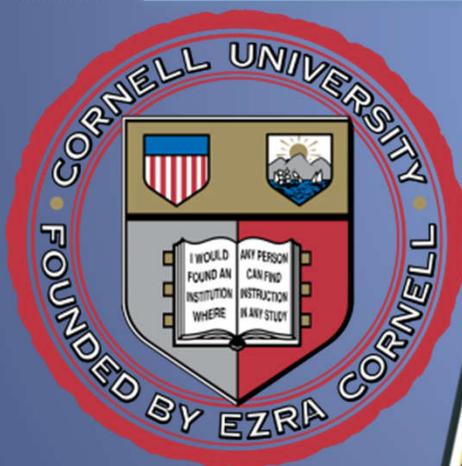
## PESTICIDE EXEMPTION FORM

- The use of any new or “Restricted“ pesticide requires a “Pesticide Exemption Form”
- Thorough justification for its use is required
- Must be submitted 4 days prior to application.
- Requires IPM Coordinator, Leisure Services Director, and City Manager signatures
- All Pesticide Exemption Forms will be incorporated as part of the annual review process



# ENVIRONMENTAL IMPACT QUOTIENT (EIQ)

$$\text{EIQ} = \{C[(DT*5)+(DT*P)] + [(C*((S+P)/2)*SY)+(L)] + [(F*R)+(D*((S+P)/2)*3)+(Z*P*3)+(B*P*5)]\} / 3$$



- toxicity to humans
- leachability to groundwater
- runoff potential
- soil persistence
- wildlife toxicity
- risk to pollinators
- effects on aquatic species

# FIELD USE (EIQ) RATING

$$\text{EIQ FIELD USE RATING} = \text{EIQ} \times \% \text{ ACTIVE INGREDIENT} \times \text{APPLICATION RATE}$$

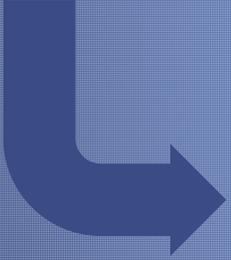
- Better comparison among pesticides when more applications are required of one pesticide vs. less applications required of another
- Assess the reduction in impacts over long periods of time





RECORD  
KEEPING

- All data forms and purchase orders are submitted to IPM Coordinator monthly
- Program transparency



EVALUATE  
EFFECTIVENESS

- Compile Data into an annual report each March
- Sub-Committee reconvenes to assess
- Report data and assessment to Boards and City Council



Return to  
INSPECTION &  
MONITORING

**FOR MORE INFORMATION  
REGARDING THE  
IPM SUB-COMMITTEE,  
PLEASE CONTACT:**

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