Invasive Species Workshop

Presented by:

Six Rivers Cooperative Invasive Species Management Area

Escambia • Holmes • Okaloosa • Santa Rosa • Walton • Washington • Baldwin (AL) • Escambia (AL) • Covington (AL)

August 25, 2022
9:00 am to 3:00 pm CT
UF/IFAS Okaloosa County Extension Office

Funding for this workshop is provided by Florida Department of Agriculture and Consumer Services Florida Forest Service, Florida Sustainable Forestry Initiative Implementation Committee, and the generosity of other sponsors listed on the back.

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Agenda:

9:00 am	**Sign-in, meet & greet**
9:15	**Welcome & Introduction**, Sheila Dunning, UF/IFAS Extension Okaloosa County; Kristal Walsh, Florida Fish and Wildlife Conservation Commission (FWC); and Chris Demers, UF/IFAS School of Forest, Fisheries, and Geomatics Sciences
9:25	**What's Going on in the Plant and Soil when Using Glyphosate and Imazapyr: Application Techniques that can Improve Results**, Mark Mauldin, UF/IFAS Extension Washington County
10:15	**Break**
10:30	**Integrated Control Strategies for Cogongrass**, Emma McKee, The Longleaf Alliance
11:30	**Information Gains from Early Detection and Rapid Response (EDRR)**, Rick O'Connor, UF/IFAS Extension Sea Grant; and Kristal Walsh, Florida Fish and Wildlife Conservation Commission
12:30 pm	**Lunch**
1:15	**Working with Florida Fish and Wildlife Conservation Commission (FWC) Landowner Assistance Program to Control Invasive Species**, Arlo Kane and Kristal Walsh, FWC
2:00	**Six Rivers CISMA Update**, CISMA Representatives
2:30	**Evaluation, CEUs, CFEs, adjourn**

FDACS Pesticide Applicator CEUs approved: 2.0 487/482 General Standards/Core, Forest Pest Ctrl, Nat. Areas Weed Mgmt, Private Applicator Ag Pest Ctrl, Right-of-Way Pest Ctrl, Ornamental and Turf Pest Ctrl, Commercial Lawn and Ornamental, and others.

SAF CFEs approved: 3.5 Cat. 1

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Workshop Presenter and Partner Contacts

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Sheila Dunning Extension Agent III UF/IFAS Okaloosa County Extension (850) 689-5850 sdunning@ufl.edu	**Emma McKee** Cogongrass Coordinator The Longleaf Alliance (850) 225-5242 emma@longleafalliance.org	**Kristal Walsh** Biological Scientist Florida Fish and Wildlife Conservation Commission (850) 851-8065 Kristal.Walsh@MyFWC.com
Arlo Kane Regional Landowner Assistance Coordinator Florida Fish and Wildlife Conservation Commission (850) 767-3616 Arlo.Kane@myfwc.com		**Darryl Williams** District Conservationist USDA Natural Resources Conservation Service (850) 682-3714 ext. 3 Darryl.Williams@fl.usda.gov

Understanding & Effectively Delivering
Glyphosate, Imazapyr, & Triclopyr

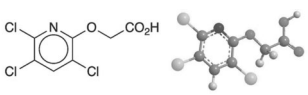
Mark Mauldin
UF/IFAS Extension, Washington County

Characteristics of Glyphosate

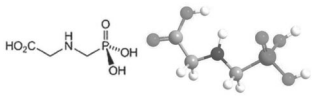
- Excels on softer vegetation and perennial grasses.
- Weaker (alone) on trees and heavy brush.
- Lack of soil activity and requirement of green leaves allows for some degree of "selectivity"

Why These Active Ingredients???

- They are 3 of our best tools for battling invasive species.
- Controlling Invasive Plants in North Florida Forests – a great resource
  - 45 specific herbicide recommendations, only 8 of them did not involve one or more of these active ingredients.



Triclopyr



Glyphosate

Images from acs.org

Glyphosate Products

- Over 750 glyphosate products for sale in the USA
- Products should first be selected based on labeled sites – it is illegal to use a pesticide in a location/site that is inconsistent with the label.
  - Terrestrial vs. Aquatic
  - Other Specified Locations

Characteristics of Glyphosate

- Non-selective
- Non-persistent
- Foliar Absorbed
  - Can be used for cut stump treatments
- Systemic
- Amino acid synthesis inhibitor
- Slow acting
  - First visible symptoms at growth points

Accord® XRT II

HERBICIDE

®Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

- A non-selective broad spectrum systemic herbicide for control of annual and perennial weeds and woody plants in
- Conservation Reserve Program (CRP), rangeland and permanent grass pastures
- forest sites, conifer plantations;- airports, barrow ditches, communication transmission lines, electrical power and utility rights-of-way, fencerows, gravel pits, industrial sites, military lands, mining and drilling areas, non-irrigation ditch banks, oil and gas pads, ornamental sites, parking lots, petroleum tank farms, pipelines, railroads, roadsides, storage areas, storm water retention areas, substations, unimproved rough turf grasses, sod or turfgrass seed farms, vacant lots and other non-crop residential areas;
- natural areas (open space) for example, campgrounds, parks, prairie management, trails and trailheads, recreation areas, wildlife openings and wildlife habitat and management areas;
- in and around seasonally dry wetlands;
- including grazed areas on all of these listed sites

Avoid contact of herbicide with foliage, green stems, exposed non-woody roots or fruit of crops, desirable plants and trees, because severe injury or destruction may result.

Group	9	HERBICIDE

Active Ingredient:

glyphosate: N-(phosphonomethyl)glycine, dimethylamine salt	50.2%
Other Ingredients	49.8%
Total	100.0%

Contains 5.07 lb per gallon glyphosate, dimethylamine salt (4 lb per gallon glyphosate acid).

Rodeo®

HERBICIDE

® ™ Trademarks of Dow AgroSciences, DuPont or Pioneer and their affiliated companies or respective owners

For control of annual and perennial weeds and woody plants in natural and production (plantations), forests for site preparation, mid-rotation release treatments, timber stand improvement activities, noncrop sites including industrial sites, rights-of-way (including roadsides, electric utility and communication transmission lines, pipelines, railroads, airports), irrigation and drainage ditches, canals, reservoirs, natural areas (including wildlife management areas, wildlife openings, wildlife habitats and refuges, parks and recreational areas, campgrounds, trailheads and trails), rangeland, and in and around aquatic sites and wetlands; also for perennial grass release, and grass growth suppression and grazed areas on these sites.

Avoid contact of herbicide with foliage, green stems, exposed non-woody roots or fruit of crops, desirable plants and trees, because severe injury or destruction may result.

Active Ingredient:

glyphosate† N-(phosphonomethyl)glycine, isopropylamine salt	53.8%
Other Ingredients	46.2%
Total	100.0%

†Contains 5.4 lb per gallon glyphosate, isopropylamine salt (4 lb per gallon glyphosate acid).

BAYER

Roundup QuikPRO®

SC TOTAL Herbicide

RESIDUAL NON-SELECTIVE HERBICIDE

Non-selective control of emerged and pre-emerged grasses and broadleaf weeds in Non-Crop Areas including, Paths, Parking Lots, Curbs, Sidewalks, Driveways, Around Buildings, Gravel Areas, Loading Ramps, Educational Facilities, Storage Yards, Vacant Lots, Fence Rows, Parks, Hardscapes (including crack and crevice), Municipal, Mulched Areas, Landscape Ornamental Beds, and Government Sites.

- **Dual Action FORMULA Kills EXISTING WEEDS & GRASSES PLUS Prevents New Weeds & GRASSES for up to 6 Months**
- **Rainproof in 30 minutes**
- **Visible Results in Hours**
- **Simple, Convenient, Easy to use**
- **An easier way to manage large areas of unwanted weeds & grasses**

ACTIVE INGREDIENTS:

Indaziflam	0.089%
Diquat dibromide	0.890%
Glyphosate isopropylamine salt	20.460%
OTHER INGREDIENTS:	78.561%
TOTAL:	100.00%

Contains 1.87 lbs Glyphosate isopropylamine salt, 0.08 lbs Diquat dibormide and 0.008 lbs Indaziflam per gal

Broadleaf Weeds • Grass Weeds

TRANSORB® 2 TECHNOLOGY

Roundup WeatherMAX® HERBICIDE

Complete Directions for Use

Herbicide for Roundup Ready® Crops

Selective broad-spectrum weed control in Roundup Ready® crops

Non-selective, broad-spectrum weed control for many agricultural systems and farmsteads

CROPSAVER Specially formulated for Roundup Ready® Crops

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1.0 INGREDIENTS

ACTIVE INGREDIENT:

*Glyphosate, N-(phosphonomethyl)glycine, in the form of its potassium salt	48.8%
OTHER INGREDIENTS:	51.2%
	100.0%

*Contains 660 grams of the active ingredient glyphosate, in the form of its potassium salt, per liter or 5.5 pounds per U.S. gallon, which is equivalent to 540 grams of the acid, glyphosate, per liter or 4.5 pounds per U.S. gallon (39.8% by weight).

For a list of patents, if any, covering this product or its use, please go to www.monsantobtechnology.com.

2.0 IMPORTANT PHONE NUMBERS

1. FOR PRODUCT INFORMATION OR ASSISTANCE USING THIS PRODUCT, CALL TOLL-FREE, 1-866-99BAYER (1-866-992-2937)
2. IN CASE OF AN EMERGENCY INVOLVING THIS HERBICIDE PRODUCT, OR FOR MEDICAL ASSISTANCE, CALL COLLECT, DAY OR NIGHT, 1-800-334-7577

3.0 PRECAUTIONARY STATEMENTS

3.1 Hazards to Humans and Domestic Animals

Keep out of reach of children

CAUTION

Causes moderate eye irritation
Harmful if inhaled
Avoid contact with eyes, skin, or clothing
Avoid breathing vapor or spray mist

FIRST AID	
IF IN EYES	• Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses if present after the first 5 minutes then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
IF ON SKIN OR CLOTHING	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 to 20 minutes. • Call a poison control center or doctor for treatment advice.
IF INHALED	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. • Call a poison control center or doctor for treatment advice.

Glyphosate Products

- Many formulations
  - 7 different salts (at least)
    - monoammonium salt
    - diammonium salt
    - dimethylamine salt
    - isopropylamine salt
    - potassium salt
    - sodium salt
    - trimesium salt
  - All containing the same acid (the acid is what works in the plant)

Active Ingredient:
glyphosate: N-(phosphonomethyl)glycine,
dimethylamine salt 50.2%
Other Ingredients 49.8%
Total 100.0%
Contains 5.07 lb per gallon glyphosate, dimethylamine salt (4 lb per gallon glyphosate acid).

Active Ingredient:
glyphosate† N-(phosphonomethyl)glycine,
isopropylamine salt 53.8%
Other Ingredients 46.2%
Total 100.0%
†Contains 5.4 lb per gallon glyphosate, isopropylamine salt (4 lb per gallon glyphosate acid).

Glyphosate Products

- Due to the variety of salts used in glyphosate products, **acid equivalency** is the most meaningful way to compare products.
  - Pounds of the acid glyphosate per gallon
  - Common formulations used in invasive species management include AE of
    - 3lbs
    - 3.7lbs
    - 4lbs
    - 4.5lbs
    - 4.8lbs

GlyStar® Plus

AVOID CONTACT OF HERBICIDE WITH FOLIAGE, GREEN STEMS, EXPOSED NON-WOODY ROOTS OR FRUIT OF CROPS, DESIRABLE PLANTS AND TREES, BECAUSE SEVERE INJURY OR DESTRUCTION MAY RESULT.

Read the "CONDITIONS OF SALE AND WARRANTY" statement at the end of the label before buying or using this product. If terms are not acceptable, return at once unopened.

ACTIVE INGREDIENT:
*Glyphosate, N-(phosphonomethyl)glycine, in the form of its isopropylamine salt 41.0%
OTHER INGREDIENTS 59.0%
TOTAL 100.0%
*Contains 480 grams per litre or 4 pounds per U.S. gallon of the active ingredient, glyphosate, in the form of its isopropylamine salt. Equivalent to 356 grams per litre or 3 pounds per U.S. gallon of the acid, glyphosate.

EPA Reg. No. 42750-61 EPA Est. No. 42750-MO-001

Active Ingredient:
glyphosate: N-(phosphonomethyl)glycine,
dimethylamine salt 50.2%
Other Ingredients 49.8%
Total 100.0%
Contains 5.07 lb per gallon glyphosate, dimethylamine salt (4 lb per gallon glyphosate acid).

Pounds of the Acid Glyphosate Applied Per Acre Based on Product Rate and Formulation

Pounds of **Acid Equivalent** Per Gallon of Product (Formulations)	Amount of Product Applied Per Acre							
	8oz.	1 Pint (16oz)	1.5 Pints (24oz)	1 Quart (32oz)	1.5 Quarts (48oz)	2 Quarts (64oz)	3 Quarts (96oz)	1 Gallon (128oz)
3	0.188	0.375	0.563	0.75	1.125	1.5	2.25	3
3.7	0.231	0.466	0.694	0.925	1.388	1.85	2.775	3.7
4	0.25	0.5	0.75	1	1.5	2	3	4
4.5	0.281	0.563	0.844	1.125	1.688	2.25	3.375	4.5
4.8	0.3	0.6	0.9	1.2	1.8	2.4	3.6	4.8

Glyphosate formulation (lbs ai/gal)	Glyphosate formulation (lbs ae/gal)	0.75 lbs ae/acre Standard 1x dose	1.13 lbs ae/acre 1.5x dose	1.5 lbs ae/acre 2x dose
		- - Glyphosate application rate fl oz/acre - -		
4	3	32	48	64
5	3.7	26	39	52
5.4	4	24	36	48
5	4.17	24	34	48
5.5	4.5	22	32	44
6	5	20	30	40

From: Herbicide How-To: Maximizing Glyphosate Activity. M. Manuchehri & S. Lancaster; OSU Extension

Using Glyphosate, Adjuvants

- For foliar applications Glyphosate benefits from the inclusion of a non-ionic surfactant (80/20) at 0.25% to 1% v/v
  - 0.25% = 1qt per 100gallons of spray solution
- Do not use crop oil (COC) or methylated seed oil (MSO) with glyphosate
- Adding ammonium sulfate (AMS) as a water conditioner is generally beneficial
  - AMS must be included prior to adding the glyphosate
  - 8.5 to 17lbs of dry, spray grade AMS per 100 gallons of spray solution
  - Liquid AMS – do the math
  - UAN (28-0-0) is not a water conditioner

Characteristics of Imazapyr

- Non-selective
- Persistent
- Foliar Absorbed & Root Absorbed
- Systemic
- Amino acid synthesis inhibitor
- Slow Acting

Using Glyphosate – Foliar Applications

- Best on young annual weeds
- Perennials need to be "happy" actively growing plants with **lots of green leaves**.
- Beware of re-growth from old root systems
- Coverage is crucial but runoff is a waste
  - Zero soil activity/root uptake

Characteristics of Imazapyr

- Excels in controlling most hardwood trees/shrubs and hard-to-kill perennial grasses
- Weaker on legumes
- Generally, not used on softer vegetation or where selectivity is needed

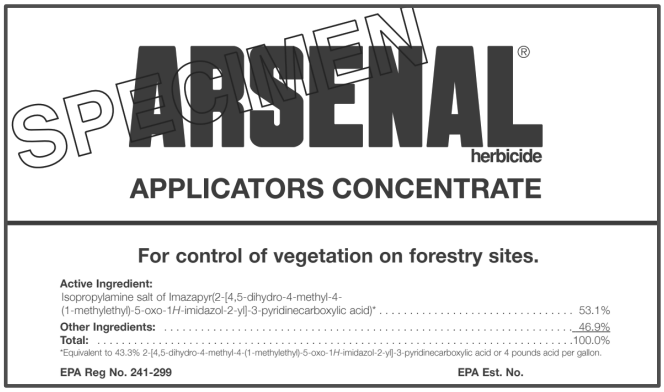
Using Glyphosate – Delivery Methods

- Broadcast Foliar Applications (oz/ac)
  - Generally, between 32 and 128oz/ac
- Backpack Foliar Applications (%v/v)
  - Generally, between 2 and 5% v/v (2.5 to 6.5oz product / gallon spray solution)
- Cut Stump Treatments
  - Mix 50/50 with water
  - Only on freshly cut stumps

- Huge variations in use rate depending on situation

Imazapyr Products

- Aquatic & Terrestrial products available
- Forestry only vs. Multi site
  - Labels are very specific and different
  - Never residential areas
- 2lb AE and 4lb AE products available
- Some formulations will not mix with oil, *Chopper & Stalker* will.


SPECIMEN

ARSENAL®

herbicide

APPLICATORS CONCENTRATE

For control of vegetation on forestry sites.

Active Ingredient:

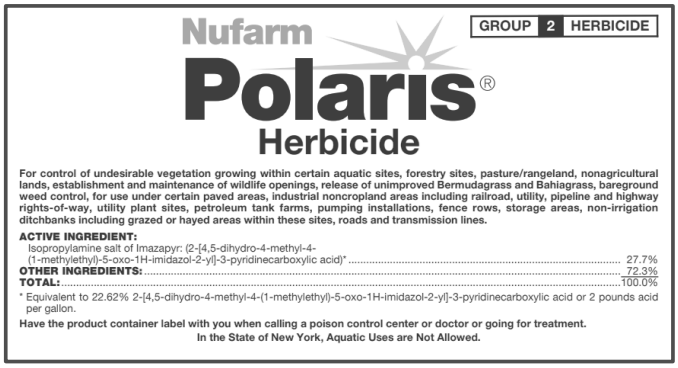
Isopropylamine salt of Imazapyr(2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-3-pyridinecarboxylic acid)* 53.1%

Other Ingredients: 46.9%

Total: 100.0%

*Equivalent to 43.3% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-3-pyridinecarboxylic acid or 4 pounds acid per gallon.

EPA Reg No. 241-299 **EPA Est. No.**


Nufarm

GROUP 2 HERBICIDE

Polaris®

Herbicide

For control of undesirable vegetation growing within certain aquatic sites, forestry sites, pasture/rangeland, nonagricultural lands, establishment and maintenance of wildlife openings, release of unimproved Bermudagrass and Bahiagrass, bareground weed control, for use under certain paved areas, industrial noncropland areas including railroad, utility, pipeline and highway rights-of-way, utility plant sites, petroleum tank farms, pumping installations, fence rows, storage areas, non-irrigation ditchbanks including grazed or hayed areas within these sites, roads and transmission lines.

ACTIVE INGREDIENT:

Isopropylamine salt of Imazapyr: (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)* 27.7%

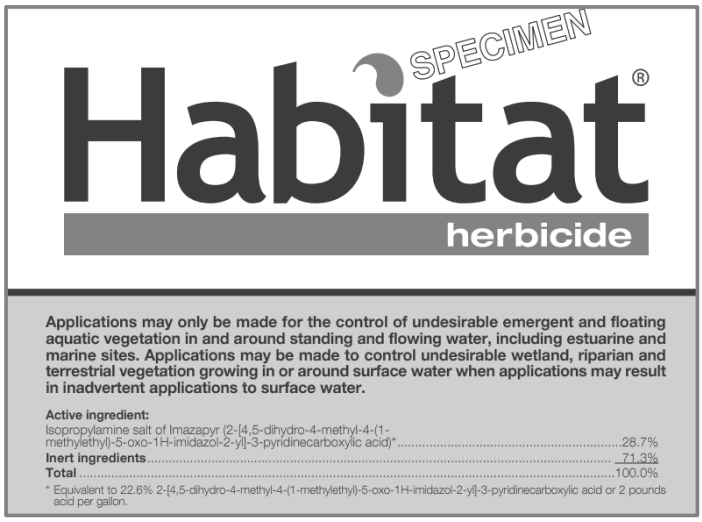
OTHER INGREDIENTS: 72.3%

TOTAL: 100.0%

* Equivalent to 22.62% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid or 2 pounds acid per gallon.

Have the product container label with you when calling a poison control center or doctor or going for treatment.

In the State of New York, Aquatic Uses are Not Allowed.


SPECIMEN

Habitat®

herbicide

Applications may only be made for the control of undesirable emergent and floating aquatic vegetation in and around standing and flowing water, including estuarine and marine sites. Applications may be made to control undesirable wetland, riparian and terrestrial vegetation growing in or around surface water when applications may result in inadvertent applications to surface water.

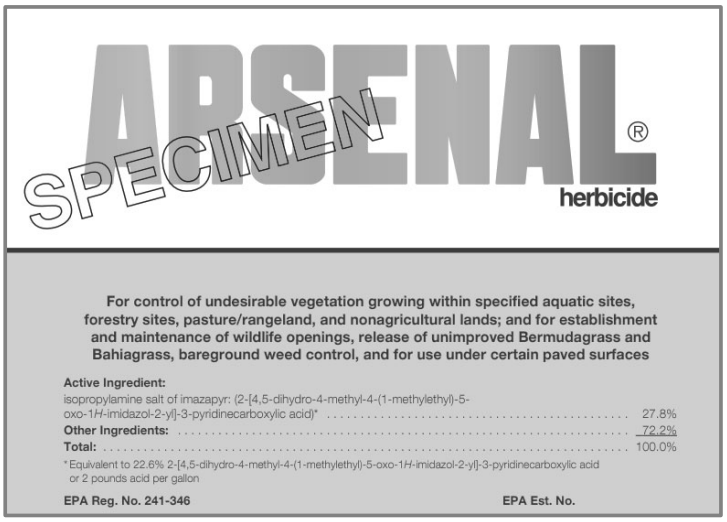
Active ingredient:

Isopropylamine salt of Imazapyr (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)* 28.7%

Inert ingredients 71.3%

Total 100.0%

* Equivalent to 22.6% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid or 2 pounds acid per gallon.


SPECIMEN

ARSENAL®

herbicide

For control of undesirable vegetation growing within specified aquatic sites, forestry sites, pasture/rangeland, and nonagricultural lands; and for establishment and maintenance of wildlife openings, release of unimproved Bermudagrass and Bahiagrass, bareground weed control, and for use under certain paved surfaces

Active Ingredient:

isopropylamine salt of imazapyr: (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-3-pyridinecarboxylic acid)* 27.8%

Other Ingredients: 72.2%

Total: 100.0%

*Equivalent to 22.6% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-3-pyridinecarboxylic acid or 2 pounds acid per gallon

EPA Reg. No. 241-346 **EPA Est. No.**

Using Imazapyr

- Imazapyr has “some” preemergence activity but is best applied to actively growing plants.
- Absorbed through leaves and **roots.**
  - Soil pH above 5, imazapyr remains available to plants longer…
  - Rotational crops can be planted after 1 year + a successful bioassay
  - Imazapyr is slow acting and **slow to break down in plants** (very effective in trees).
    - Active imazapyr can be moved with soil and/or plant tissue (intact or decomposing)
    - Plants may actively exude imazapyr from their roots making it available to other plants
    - Eventually eliminated via microbial degradation; expected half-life of 1-7 months

Using Imazapyr

- Adjuvant use varies with formulation and application technique.

- Conifers tend to have some tolerance of imazapyr, but susceptibility varies considerably by species.

- Keep imazapyr well away from desirable plants, especially hard wood trees (stay at least twice the diameter of the dripline away).

Using Imazapyr – Delivery Methods

- Broadcast foliar
- Backpack foliar
- Cut Stem
- Cut Stump
- Basal Bark
- Tree Injection

Characteristics of Triclopyr

- Excels on softer broadleaf weeds and woody brush (not trees) via foliar application
- Excellent for basal bark and cut stump treatments
- Virtually no impact on (mature) grasses

Glyphosate & Imazapyr

- Frequently used together for broadcast and/or backpack foliar treatments.
- In aquatic settings, both are only active on emergent vegetation

Triclopyr Products

- Amine – triclopyr acid molecule + triethylamine salt
- Ester – triclopyr acid molecule + butoxyethylester
- Choline – triclopyr acid molecule + choline salt
- Acid – triclopyr acid molecule

Characteristics of Triclopyr

- Broadleaf selectivity – generally safe on grasses
- Short term persistence???
- Foliar Absorbed
  - Can also enter through thin/smooth bark
- Systemic
- Synthetic Auxin – mimics growth hormone, causes uncontrolled and disorganized plant growth
  - FL Organo-Auxin Law
- Begins acting relatively quickly

Amine

- *Garlon 3A, Element 3, Triclopyr 3, Renovate, etc.*
- Water Soluble
- More stable than ester but generally less efficacy, the salt has difficulty entering leaves

GROUP 4 HERBICIDE

CORTEVA™ agriscience

Garlon® 3A

HERBICIDE

®™ Trademarks of Dow AgroSciences, DuPont or Pioneer and their affiliated companies or respective owners

For the control of woody plants, broadleaf weeds in range and pasture, forests and non-crop areas, including manufacturing and storage sites, rights-of-way such as electrical power lines, communication lines, pipelines, roadsides, railroads, fence rows, non-irrigation ditch banks, and around farm buildings; and applications to grazed areas, and establishment and maintenance of wildlife openings, and in Christmas tree plantations and aquatic sites.

For use in New York State, comply with Section 24(c) Special Local Need labeling for Garlon 3A, SLN NY-110005.

Active Ingredient:
Triclopyr: 2-[(3,5,6-trichloro-2-pyridinyl)oxy] acetic acid, triethylamine salt 44.4%
Other Ingredients 55.6%
Total 100.0%

Acid equivalent: triclopyr - 31.8% - 3 lb/gal

Renovate® 3
SPECIALTY HERBICIDE

SPECIMEN

SePRO

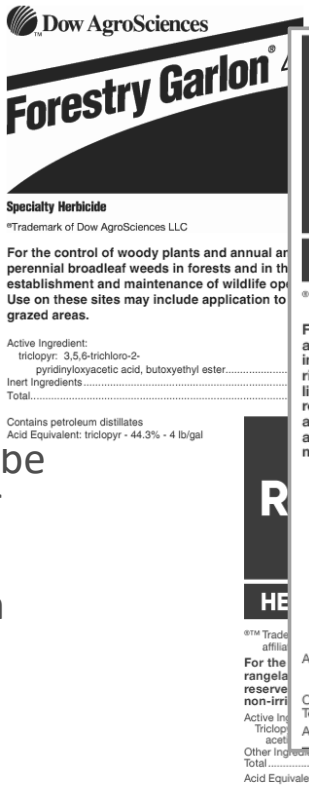
GROUP 4 HERBICIDE

Aquatic Sites: For control of emersed, submersed and floating aquatic plants in aquatic sites such as ponds, lakes, reservoirs, non-irrigation canals, seasonal irrigation waters and ditches which have little or no continuous outflow, marshes and wetlands, including broadleaf and woody vegetation on banks and shores within or adjacent to these and other aquatic sites.

Active Ingredient:
Triclopyr: 2-[(3,5,6-trichloro-2-pyridinyl)oxy] acetic acid, triethylamine salt 44.4%
Other Ingredients 55.6%
Total 100.0%
Acid equivalent: triclopyr - 31.8% - 3 lb/gal

Ester

- *Garlon 4 Element 4 Remedy Pathfinder II Garlon XRT etc*
- Oil Souluble; can be mixed with water
- Increased drift/vaporization risk compared to Amine; more efficacy



Dow AgroSciences

Forestry Garlon®

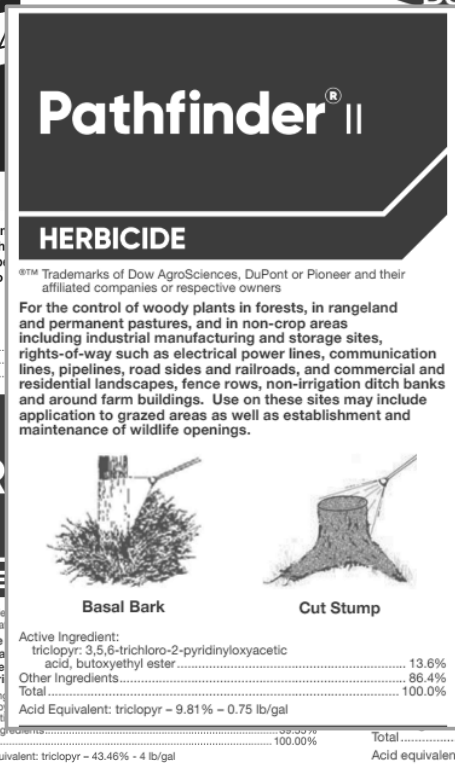
Specialty Herbicide

®Trademark of Dow AgroSciences LLC

For the control of woody plants and annual ar perennial broadleaf weeds in forests and in th establishment and maintenance of wildlife op Use on these sites may include application to grazed areas.

Active Ingredient:
triclopyr: 3,5,6-trichloro-2-pyridinyloxyacetic acid, butoxyethyl ester .....
Inert Ingredients .....
Total .....

Contains petroleum distillates
Acid Equivalent: triclopyr - 44.3% - 4 lb/gal



Pathfinder® II

HERBICIDE

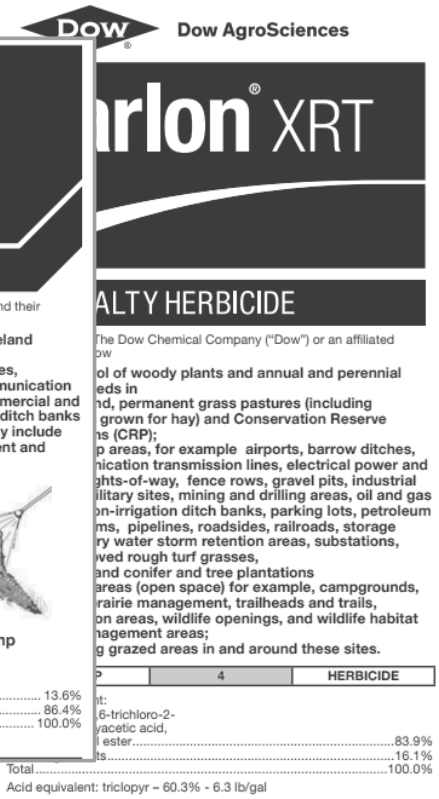
®™ Trademarks of Dow AgroSciences, DuPont or Pioneer and their affiliated companies or respective owners

For the control of woody plants in forests, in rangeland and permanent pastures, and in non-crop areas including industrial manufacturing and storage sites, rights-of-way such as electrical power lines, communication lines, pipelines, road sides and railroads, and commercial and residential landscapes, fence rows, non-irrigation ditch banks and around farm buildings. Use on these sites may include application to grazed areas as well as establishment and maintenance of wildlife openings.

Basal Bark Cut Stump

Active Ingredient:
triclopyr: 3,5,6-trichloro-2-pyridinyloxyacetic acid, butoxyethyl ester 13.6%
Other Ingredients 86.4%
Total 100.0%

Acid Equivalent: triclopyr – 9.81% – 0.75 lb/gal



DOW Dow AgroSciences

rlon® XRT

ALTY HERBICIDE

The Dow Chemical Company ("Dow") or an affiliated ow

ol of woody plants and annual and perennial eeds in nd, permanent grass pastures (including grown for hay) and Conservation Reserve ns (CRP); p areas, for example airports, barrow ditches, nication transmission lines, electrical power and ghts-of-way, fence rows, gravel pits, industrial ilitary sites, mining and drilling areas, oil and gas on-irrigation ditch banks, parking lots, petroleum ms, pipelines, roadsides, railroads, storage ry water storm retention areas, substations, wed rough turf grasses, and conifer and tree plantations areas (open space) for example, campgrounds, rairie management, trailheads and trails, on areas, wildlife openings, and wildlife habitat nagement areas; g grazed areas in and around these sites.

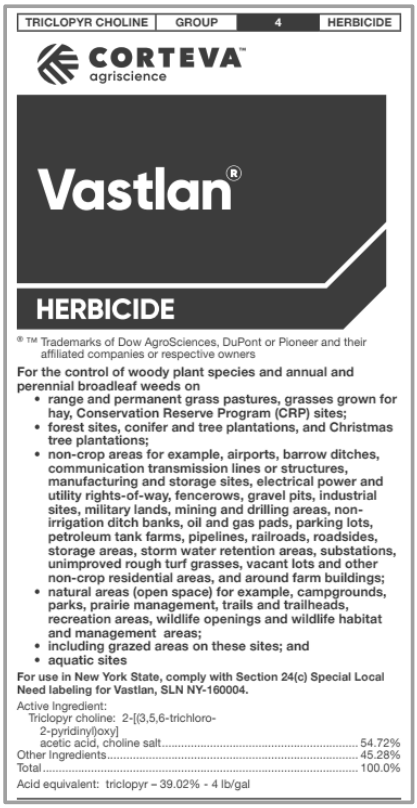
P 4 HERBICIDE

t:
,6-trichloro-2-
yacetic acid,
l ester 83.9%
ts 16.1%
Total 100.0%

Acid equivalent: triclopyr – 60.3% - 6.3 lb/gal

Choline

- *Vastlan*
- Water Soluble
- Reduced volatility risk compared to Ester. Increased efficacy compared to Amine.



TRICLOPYR CHOLINE | GROUP 4 | HERBICIDE

CORTEVA™ agriscience

Vastlan®

HERBICIDE

® ™ Trademarks of Dow AgroSciences, DuPont or Pioneer and their affiliated companies or respective owners

For the control of woody plant species and annual and perennial broadleaf weeds on

- **range and permanent grass pastures, grasses grown for hay, Conservation Reserve Program (CRP) sites;**
- **forest sites, conifer and tree plantations, and Christmas tree plantations;**
- **non-crop areas for example, airports, barrow ditches, communication transmission lines or structures, manufacturing and storage sites, electrical power and utility rights-of-way, fencerows, gravel pits, industrial sites, military lands, mining and drilling areas, non-irrigation ditch banks, oil and gas pads, parking lots, petroleum tank farms, pipelines, railroads, roadsides, storage areas, storm water retention areas, substations, unimproved rough turf grasses, vacant lots and other non-crop residential areas, and around farm buildings;**
- **natural areas (open space) for example, campgrounds, parks, prairie management, trails and trailheads, recreation areas, wildlife openings and wildlife habitat and management areas;**
- **including grazed areas on these sites; and**
- **aquatic sites**

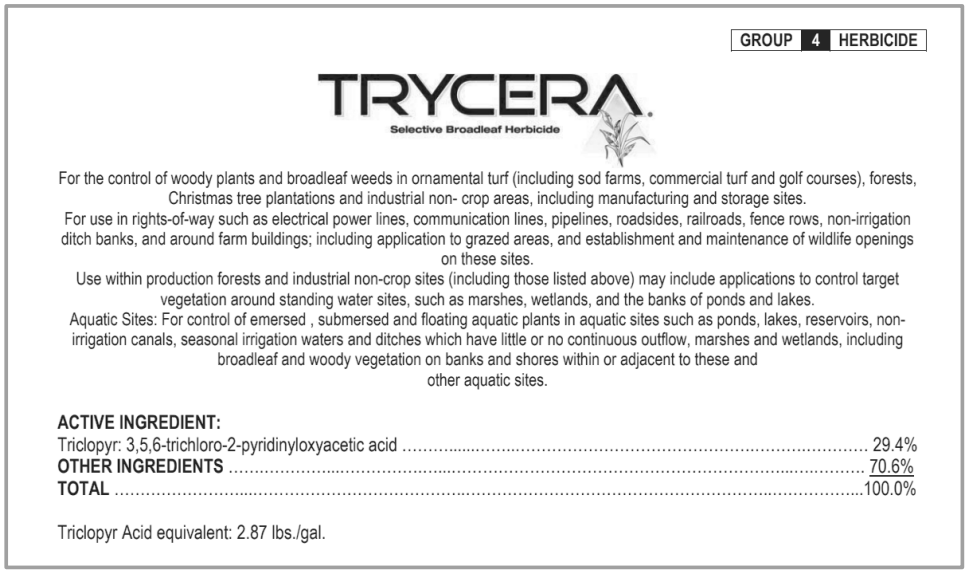
For use in New York State, comply with Section 24(c) Special Local Need labeling for Vastlan, SLN NY-160004.

Active Ingredient:
Triclopyr choline: 2-[(3,5,6-trichloro-2-pyridinyl)oxy] acetic acid, choline salt 54.72%
Other Ingredients 45.28%
Total 100.0%

Acid equivalent: triclopyr – 39.02% - 4 lb/gal

Acid

- Trycera
- Water and oil soluble



GROUP 4 HERBICIDE

TRYCERA

Selective Broadleaf Herbicide

For the control of woody plants and broadleaf weeds in ornamental turf (including sod farms, commercial turf and golf courses), forests, Christmas tree plantations and industrial non- crop areas, including manufacturing and storage sites.
For use in rights-of-way such as electrical power lines, communication lines, pipelines, roadsides, railroads, fence rows, non-irrigation ditch banks, and around farm buildings; including application to grazed areas, and establishment and maintenance of wildlife openings on these sites.
Use within production forests and industrial non-crop sites (including those listed above) may include applications to control target vegetation around standing water sites, such as marshes, wetlands, and the banks of ponds and lakes.
Aquatic Sites: For control of emersed , submersed and floating aquatic plants in aquatic sites such as ponds, lakes, reservoirs, non-irrigation canals, seasonal irrigation waters and ditches which have little or no continuous outflow, marshes and wetlands, including broadleaf and woody vegetation on banks and shores within or adjacent to these and other aquatic sites.

ACTIVE INGREDIENT:
Triclopyr: 3,5,6-trichloro-2-pyridinyloxyacetic acid 29.4%
OTHER INGREDIENTS 70.6%
TOTAL 100.0%

Triclopyr Acid equivalent: 2.87 lbs./gal.

Using Triclopyr – Delivery

	Foliar	Basal Bark	Cut Stump Fresh	Cut Stump Calloused	Hack and Squirt
AMINE	**YES**	**NO**	**YES**	**NO**	**YES**
ESTER	**YES***	**YES**	**YES**	**YES**	**NO**
CHOLINE	**YES**	**NO**	**YES**	**NO**	**YES**
ACID	**YES**	**YES**	**YES**	**YES**	**YES**

* Pathfinder II should not be used for foliar applications

Questions???

Mark Mauldin
UF/IFAS Extension, Washington County
mdm83@ufl.edu
352-317-7799

WELCOME

Emma McKee

Invasive Species Coordinator

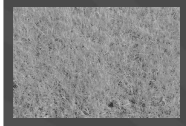
The Longleaf Alliance

BIOLOGICAL

-Little success when using natural pests

-Studies in East Asia and Africa show some stem borers and gall-forming midges that may have restricted host ranges

-Least effective



Integrated Control Strategies for Cogon Grass

Five Common Strategies For Invasive Management

CULTURAL

When cogongrass has been eradicated

1) allow natives to slowly take over
2) plant desirable plants such as soybeans, wheat, legumes, or typical turf grass such as Bermuda

- Few natives or desirable plant species
- Cogongrass is very competitive for space and nutrients
- Minimize soil disturbance, will take the opportunity faster then most natives to take root in open areas

PREVENTATIVE

-EDUCATION
-PROPER IDENTIFICATION
-MATERIAL MOVEMENT
-EARLY DETECTION
-RAPID RESPONSE

Younger the rhizomes
=
Higher probability of eradication

MECHANICAL

-Three forms of mechanical treatment
1)Tilling and Disking
2)Burning
3)Mowing

Burning is only effective with removing thatch
- Extremely dangerous
- **NOT** effective for eradication

Mowing only helps maintain thickness
- **NOT** effective for eradication

Repeated and aggressive tilling and disking is effective
- 6 inches minimal in depth
- Only useful in open non-forested areas

*** High risk of transporting rhizomes**

CHEMICAL

There are two main herbicides that have been proven effective for cogongrass control:

glyphosate and **imazapyr**

Always read the label for proper mixing instructions and recommended personal protection equipment

COMPARISONS

Imazapyr requires a once-a-year treatment for a minimum of 2 years; varies with rhizome density.

- primarily used in areas such as rights-of-ways, railroads, and fence lines
- soil nearly sterile for that year, thus long-term dead zone

Spray August/September and April/May for best results

- Spray while the leaf blade is above 32 or below 100 degrees Fahrenheit.

Glyphosate requires a twice a year treatment plan for a minimum of 2 years

- varies with rhizome density
- primarily used in agriculture areas or where re-growth of vegetation is time sensitive

GLYPHOSATE

-Foliar active
-Non-selective
-Quick above ground kill rate, browning of leave withing 1 to 2 weeks

- One of the two herbicides used for treating cogongrass
- 4% rate is the typical recommendation
- * I use a 5% rate and have found higher necrosis after one application *

Example:
MAKAZE
~Rain window of 30 minutes
~Average $80.00 for 2.5 gallons
~Includes surfactants within the mixture
-Leci-Tech Technology getting To, On & In the plant, providing superior penetration into the leaf surface enabling greater uptake, translocation and rain fastness for a complete kill.

INTEGRATED EFFORTS

1)MOW
2)BURN
3)TILL
4)HERBICIDE
5)CULTURAL

Combining 4 of the 5 standard plant management practices together can increase chances of eradication in less time

These management practices are highly variable depending on the environment and habitat of the location.

- Using a combination of methods requires access to multiple resources,
- And meeting certain requirements and standards with each step

IMAZAPYR

- Soil active
- Non-selective
- Slower kill rate than lyphosate, some yellowing in 2 weeks
- rhizomes being to feel mushy after 2 weeks

-The only other herbicide known to eradicate cogongrass
-Typically used at a 1% rate

Example:
ALLIGARE
~Pre and post emergent
~ Rain window of 60 minutes
~Targets broad range of species including, but not limited to; grasses, vines, and trees
~ Average $150.00 for one gallon

INTEGRATED EFFORTS (cont.)

- Combining burning, tilling, and chemical application has shown best results
- Burning and mowing can be interchangeable, both have high risks to safety and spread
- Helps reduce thatch density
- Tilling initiates rhizomes regrowth and reduces rhizome biomass
- Following with cultural method of either planting native/desired species or give nature a chance

Proper Steps:

1. Begin with burning or mowing
2. then wait until leaves have re-grown between 18 and 24 inches
3. then follow with either tilling or herbicide.

The very last step is promoting desired and/or native species in place of where the cogongrass was.

- This should take place at minimum one month after herbicide application or after tilling has succeeded in eradication

PLANNING and PREPARATION

Many variables to consider when formulating a management plan
-BUDGET
-ENVIRONMENT
-CAPABILITY
-EQUIPMENT

There are many resources for landowners to request assistance

REFRENCES and CONTACT INFO

Emma McKee
Cell phone: (850) 225-5242
Email: emma@longleafalliance.org

https://edis.ifas.ufl.edu/entity/topic/cogongrass

https://www.youtube.com/watch?v=N0zPtxZo9ms

https://www.forestrydistributing.com/makaze-herbicide-loveland-products

EXAMPLE

Cogongrass in an agriculture field primarily used for hay, 3 patches of cogon grass throughout, all smaller then 1/2 acre but with a height of 5 feet.

- The owner wants to be able to still grow hay within the same growing season, no desirable trees in the way and the ground is mostly flat. However, there is a pond used for drainage and fishing. What should the landowners next steps be?

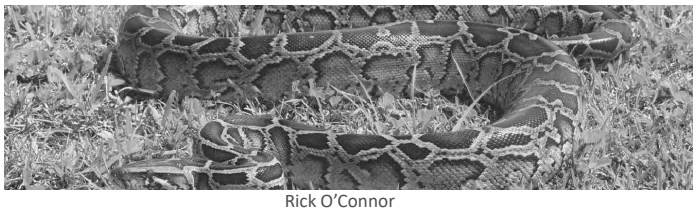
- Mow away the thatch
- discing attachment that reaches 6 inches into the ground
- Allow for regrowth to 18 inches and follow with tilling once to twice a month for a year.

CONCLUSION

- Cogongrass is a gnarly plant - aggressive, selfish, and kills anything is its path
- Improper treatment will result in the plant going into defense mode, more difficult to eradicate.
- With all the different management methods it can be difficult formulating a plan on your own

Please feel free to contact me anytime M-F, 7 a.m. to 3 p.m.

Information Gains from Early Detection and Rapid Response



Rick O'Connor
Florida Sea Grant
UF IFAS Escambia Extension
Escambia County

UF IFAS UNIVERSITY of FLORIDA

INVASIVE SPECIES COUNCIL

1. Non-native

What is the issue with invasive species?

UF IFAS UNIVERSITY of FLORIDA

INVASIVE SPECIES COUNCIL

1. Non-native
2. Introduced by humans

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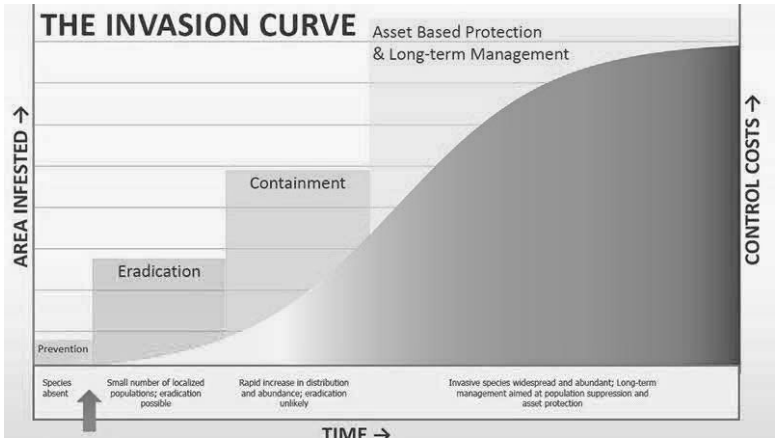
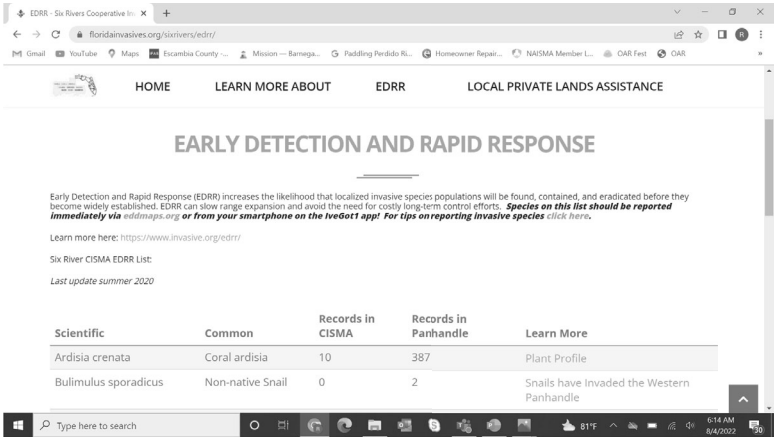
INVASIVE SPECIES COUNCIL

1. Non-native
2. Introduced by humans
3. Causing a problem

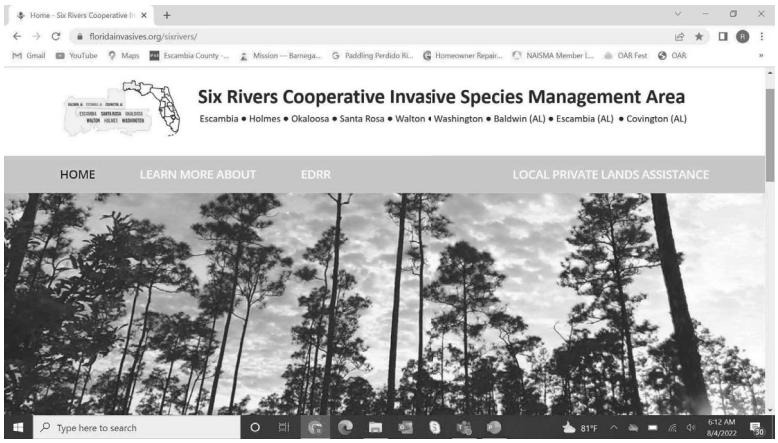




Six Rivers CISMA

https://www.floridainvasives.org/sixrivers/

EDRR Species	Records in Six Rivers	Records in FL Panhandle
Eurasian milfoil	8	20
Giant salvinia	10	12
Water hyacinth	21	277
Hydrilla	7	35
Swamp morning glory	2	2
Coral ardisia	25	449
Natal grass	31	52
Skunk vine	1	17
Guinea grass	17	22
Callery (Bradford) pear	165	170
Beach vitex	82	87
Cuban treefrog	13	37
Bulimulus	0	0
Green mussel	1	1
Channeled apple snail	0	2
Black & White tegu	10	22
Greenhouse treefrog	5	7
TOTAL	**398**	**1,212**



EDRR Fact Sheets
contact me:

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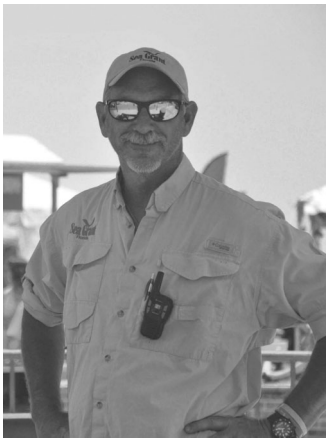
850-475-5230
roc1@ufl.edu



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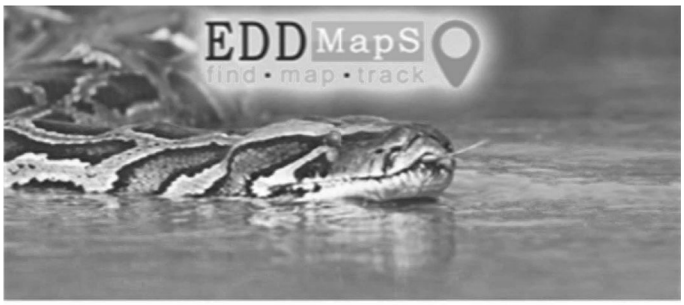
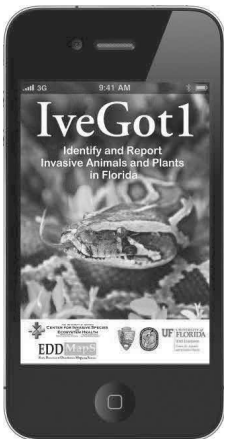


Navigating EDDMapS



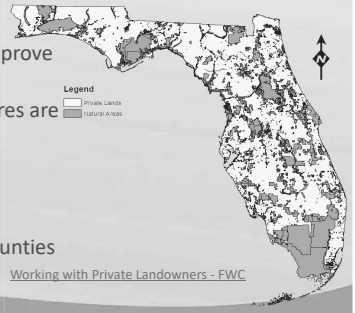
Working with the Florida Fish and Wildlife Conservation Commission (FWC)

Landowner Assistance Program to Control Invasive Species

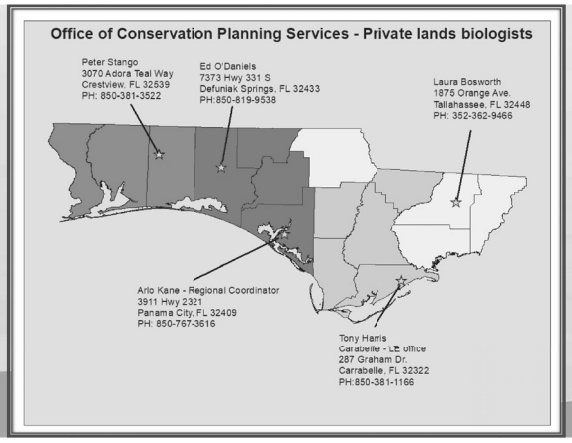
Arlo H. Kane, Regional Coordinator, FWC
Kristal Walsh, Land Use Planning Biologist, FWC

Landowner Assistance Program
Private Lands Management in Northwest Florida

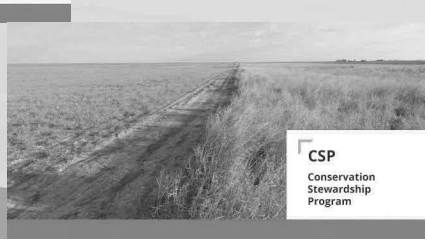
- Assists Florida's private landowners to improve habitat conditions for fish and wildlife
- Over half of Florida's nearly 35 million acres are held in private ownership
- 40% of landowners are setting aside land specifically for wildlife habitat or other conservation purposes
- Five biologists - >600 landowners – 16 counties



Working with Private Landowners - FWC



Landowner Assistance Program
How we work with invasive species management



NRCS Cost-share Practices commonly used in Florida Forest Lands

- 314 – Brush Management
- 315 – Herbaceous Weed Control
- 327 – Conservation Cover
- 338 – Prescribe burning
- 342 – Critical Area Planting
- 386 – Field Border
- 394 – Fire lines
- 420 – Wildlife Habitat Planting
- 490 – Tree/shrub Site Preparation
- 612 – Tree/shrub Establishment
- 644 – Wetland Wildlife Habitat Management
- 645 – Upland Wildlife Habitat Management
- 649 – Structures for Wildlife
- 666 – Forest Stand Improvement

314 – Brush Management

- Mechanical
- Chemical
- Combination chemical + mechanical
- Small shrubs, large shrubs
- Light, medium, or heavy infestation

$31 - $389/ac

- Invasive (FLEPPC Category 1 only) $643/ac

315 – Herbaceous Weed Control

- Chemical, Spot treatment $50.71/ac
- Chemical, Ground $28.68/ac
- Chemical invasive $229.79/ac (FLEPPC Category 1 only)
- Chemical, mechanical invasive $528.50/ac (FLEPPC Category 1 only)

CATEGORY I

Invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. This definition does not rely on the economic severity or geographic range of the problem, but on the documented ecological damage caused.

Scientific Name	Common Name	Zone
Abrus precatorius	rosary pea	C, S
Acacia auriculiformis	earleaf acacia	C, S
Albizia julibrissin	mimosa, silk tree	N, C
Albizia lebbeck	woman's tongue	C, S
Ardisia crenata	coral ardisia	N, C, S
Ardisia elliptica	shoebutton ardisia	C, S
Asparagus aethiopicus	asparagus fern	N, C, S
Bauhinia variegata	orchid tree	C, S
Bischofia javanica	bishopwood	C, S
Calophyllum antillanum	Santa Maria	S
Casuarina equisetifolia	Australian-pine	N, C, S
Casuarina glauca	suckering Australian-pine	C, S
Cenchrus purpureus (*Pennisetum purpureum*)	elephantgrass, Napier grass	N, C, S
Cinnamomum camphora	camphor-tree	N, C, S
Colocasia esculenta	wild taro	N, C, S
Colubrina asiatica	latherleaf	S
Cupaniopsis anacardioides	carrotwood	C, S
Deparia petersenii	Japanese false spleenwort	N, C
Dioscorea alata	winged yam	N, C, S
Dioscorea bulbifera	air potato	N, C, S
Dolichandra unguis-cati (*Macfadyena unguis-cati*)	cat's-claw vine	N, C, S
Eichhornia crassipes	water-hyacinth	N, C, S
Eugenia uniflora	Surinam cherry	C, S
Ficus microcarpa[1]	laurel fig	C, S
Hydrilla verticillata	hydrilla	N, C, S
Hygrophila polysperma	green hygro	N, C, S
Hymenachne amplexicaulis	West Indian marsh grass	N, C, S
Imperata cylindrica	cogongrass	N, C, S
Ipomoea aquatica	water-spinach	C
Jasminum dichotomum	Gold Coast jasmine	C, S
Jasminum fluminense	Brazilian Jasmine	C, S
Lantana strigocamara[2]	lantana, shrub verbena	N, C, S
Ligustrum lucidum	glossy privet	N, C
Ligustrum sinense	Chinese privet	N, C, S
Lonicera japonica	Japanese honeysuckle	N, C, S
Ludwigia peruviana	Peruvian primrosewillow	N, C, S
Lumnitzera racemosa	black mangrove	S
Luziola subintegra	Tropical American watergrass	S
Lygodium japonicum	Japanese climbing fern	N, C, S
Lygodium microphyllum	Old World climbing fern	N, C, S
Manilkara zapota	sapodilla	S
Melaleuca quinquenervia	melaleuca, paper bark	C, S

Scientific Name	Common Name	Zone
Melinis repens	Natalgrass	C, S
Microsorum grossum[4]	serpent fern, wart fern	S
Microstegium vimineum	Japanese stiltgrass	N
Mimosa pigra	catclaw mimosa	C, S
Nandina domestica	heavenly bamboo, nandina	N, C
Nephrolepis brownii	Asian sword fern	C, S
Nephrolepis cordifolia	sword fern	N, C, S
Neyraudia reynaudiana	Burma reed	S
Nymphoides cristata	crested floatingheart	C, S
Paederia cruddasiana	sewer vine	S
Paederia foetida	skunk vine	N, C, S
Panicum repens	torpedograss	N, C, S
Pistia stratiotes	water-lettuce	N, C, S
Psidium cattleianum	stawberry guava	C, S
Psidium guajava	guava	C, S
Pueraria montana var. *lobata*	kudzu	N, C, S
Rhodomyrtus tomentosa	downy rose-myrtle	C, S
Ruellia simplex	Mexican petunia	N, C, S
Salvinia minima	water spangles	N, C, S
Scaevola taccada	beach naupaka, half-flower	N, C, S
Schefflera actinophylla	schefflera, umbrella tree	C, S
Schinus terebinthifolia	Brazilian pepper	N, C, S
Scleria lacustris	Wright's nutrush	C, S
Scleria microcarpa[*]	tropical nutrush	C, S
Senna pendula var. *glabrata*	Christmas senna, climbing cassia	C, S
Solanum tampicense	wetland night shade	C, S
Solanum viarum	tropical soda apple	N, C, S
Sporobolus jacquemontii	West Indian dropseed	C, S
Syngonium podophyllum	arrowhead vine	N, C, S
Syzygium cumini	Java plum	C, S
Tectaria incisa	incised halberd fern	S
Thelypteris opulenta	jeweled maidenhair fern	S
Thespesia populnea	seaside mahoe	C, S
Tradescantia fluminensis	small-leaf spiderwort	N, C
Tradescantia spathacea	oyster plant	C, S
Triadica sebifera (*Sapium sebiferum*)	Chinese tallow-tree	N, C, S
Urena lobata	Caesar's weed	N, C, S
Urochloa mutica	paragrass	N, C, S
Vitex rotundifolia	beach vitex	N

[1] Does not include *Ficus microcarpa* var. *fuyuensis*, which is sold as "green island ficus".
[2] Historically this non-native has been referred to as *Lantana camara*, a species not known to occur in Florida.
[3] Does not include the native endemic *Spermacoce neoterminalis*.
[4] *Microsorum grossum* has been previously misidentified as *Microsorum scolopendria*.
[*] Added to the FLEPPC List of Invasive Species in 2019.
Plant names are those published in the Atlas of Florida Plants (http://www.florida.plantatlas.usf.edu). For historical species nomenclature see "Guide to Vascular Plants of Florida Third Edition." Wunderlin and Hansen, University of Florida Press. 2011.

CATEGORY II

Invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category 1 species. These species may become Category 1 if ecological damage is demonstrated.

Scientific Name	Common Name	Zone
Adenanthera pavonina	red sandalwood	S
Agave sisalana	sisal hemp	C, S
Alstonia macrophylla	devil tree	S
Alternanthera philoxeroides	alligatorweed	N, C, S
Antigonon leptopus	coral vine	N, C, S
Ardisia japonica	Japanese ardisia	N
Aristolochia elegans (*Aristolochia littoralis*)	calico flower	N, C, S
Asystasia gangetica	Ganges primrose	C, S
Begonia cucullata	wax begonia	N, C, S
Broussonetia papyrifera	paper mulberry	N, C, S
Bruguiera gymnorrhiza	large-leafed mangrove	S
Callisia fragrans	Inch plant	C, S
Casuarina cunninghamiana	river sheoak	C, S
Cecropia palmata	trumpet tree	S
Cenchrus polystachios (*Pennisetum polystachios*)	mission grass	S
Cenchrus setaceus (*Pennisetum setaceum*)	fountain grass	S
Cestrum diurnum	day jessamine	C, S
Chamaedorea seifrizii	bamboo palm	S
Clematis terniflora	Japanese clematis	N, C
Cocos nucifera	coconut palm	S
Crassocephalum crepidioides	redflower ragleaf	C, S
Cryptostegia madagascariensis	Madagascar rubbervine	C, S
Cyperus involucratus	umbrella plant	C, S
Cyperus prolifer	dwarf papyrus	C, S
Dactyloctenium aegyptium	Durban crow's-foot grass	C, S
Dalbergia sissoo	Indian rosewood, sissoo	C, S
Dalechampia scandens[*]	spurge-creeper	S
Distimake tuberosus (*Merremia tuberosa*)	Spanish arbor vine, wood-rose	C, S
Dracaena hyacinthoides (*Sansevieria hyacinthoides*)	bowstring hemp	C, S
Elaeagnus pungens	silverthorn, thorny olive	N, C
Elaeagnus umbellata	autumn olive, silverberry	N
Epipremnum pinnatum cv. 'Aureum'	pothos	C, S
Eulophia graminea	Chinese crown orchid	C, S
Ficus altissima	council tree, false banyan	S
Flacourtia indica	governor's plum	S
Hemarthria altissima	limpograss	C, S
Heteropterys brachiata	redwing	S
Hyparrhenia rufa	jaragua	N, C, S
Ipomoea carnea subsp *fistulosa*	shrub morning-glory	C, S
Kalanchoe x houghtonii	mother of millions	N, C, S
Kalanchoe pinnata	life plant	C, S

Scientific Name	Common Name	Zone
Koelreuteria elegans subsp. *formosana*	flamegold tree	C, S
Landoltia punctata	spotted duckweed	N, C, S
Leucaena leucocephala	leadtree	N, C, S
Limnophila sessiliflora	Asian marshweed	N,C, S
Livistona chinensis	Chinese fan palm	C, S
Macroptilium lathyroides	wild bushbean	N, C, S
Melaleuca viminalis (*Callistemon viminalis*)	bottlebrush	C, S
Melia azedarach	Chinaberry	N, C, S
Melinis minutiflora	molasses grass	C S
Mikania micrantha	mile-a-minute vine	S
Momordica charantia	balsam-apple	N, C, S
Murraya paniculata	orange-jessamine	S
Myriophyllum spicatum	Eurasian water-milfoil	N, C, S
Passiflora biflora	twin-flowered passion vine	S
Phoenix reclinata	Senegal date palm	C, S
Phyllostachys aurea	golden bamboo	N, C
Pittosporum pentandrum	Taiwanese cheesewood	S
Platycerium bifurcatum	staghorn fern	S
Praxelis clematidea	praxelis	C
Pteris vittata	Chinese brake, ladder brake	N, C, S
Ptychosperma elegans	solitary palm	S
Richardia grandiflora	largeflower Mexican clover	N, C, S
Ricinus communis	castorbean	N, C, S
Rotala rotundifolia	dwarf rotala, roundleaf toothcup	S
Ruellia blechum	green shrimp plant	N, C, S
Sesbania punicea	rattlebox	N, C, S
Sida planicaulis	mata-pasto	C, S
Solanum diphyllum	twinleaf nightshade	N, C, S
Solanum torvum	turkey berry	N, C, S
Spermacoce verticillata[3]	shrubby false buttonweed	C, S
Sphagneticola trilobata	wedelia	N, C, S
Stachytarpheta cayennensis	nettle-leaf porterweed	S
Syagrus romanzoffiana	queen palm	C, S
Syzygium jambos	Malabar plum, rose-apple	N, C, S
Talipariti tiliaceum	mahoe, sea hibiscus	C, S
Terminalia catappa	tropical-almond	C, S
Terminalia muelleri	Australian–almond	C, S
Tribulus cistoides	puncture vine, burr-nut	N, C, S
Urochloa maxima (*Panicum maximum*)	Guineagrass	N, C, S
Vernicia fordii	tung-oil tree	N, C, S
Vitex trifolia	simple-leaf chastetree	C, S
Washingtonia robusta	Washington fan palm	C, S
Wisteria sinensis	Chinese wisteria	N, C
Xanthosoma sagittifolium	malanga, elephant ear	N, C, S

https://floridainvasivespecies.org/plantlist.cfm

Commonly Treated FLEPPC Category 1 Woody Invasives

Chinese Privet

Chinese Tallow

Mimosa

Coral Ardisia

Kudzu

Camphor Tree

Nandina

Commonly Treated FLEPPC Category 1 Herbaceous Invasives

Cogongrass

Japanese Climbing Fern

Wild Taro

Torpedo Grass

Tropical Soda Apple

Farm Bill Funding

Environmental Quality Incentives Program (EQIP)
Conservation Stewardship Program (CSP)

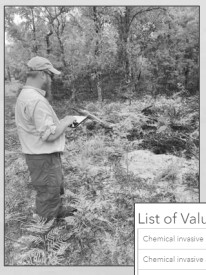
NRCS Natural Resources Conservation Service

Applications received anytime but…
Batched in October

→ Wildlife and Forestry applications → FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION → Meets with Landowner → Develops plan

→ NRCS Natural Resources Conservation Service — Ranked by March → Funded by June most years

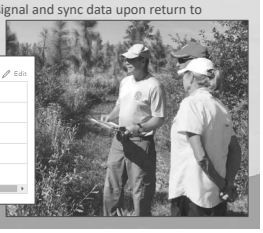
Invasive Species Data Management



Cost share practices were translated for use in a geographic information system (GIS) using ArcGIS Online.

Field mapping allows biologists to

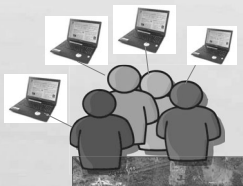
- easily find boundaries and improve accuracy of data collection
- follow the progress of treatments and contracts over several years
- Work in areas where there is no cell signal and sync data upon return to the office



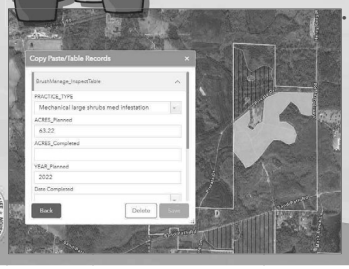
List of Values (Domain) Edit

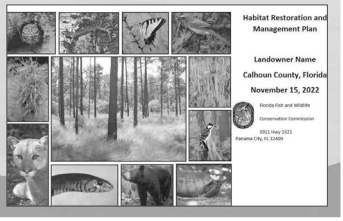
- Chemical invasive
- Chemical invasive and mechanical
- Chemical spot
- Chemical ground
- Chemical broad band

Back in the Office…

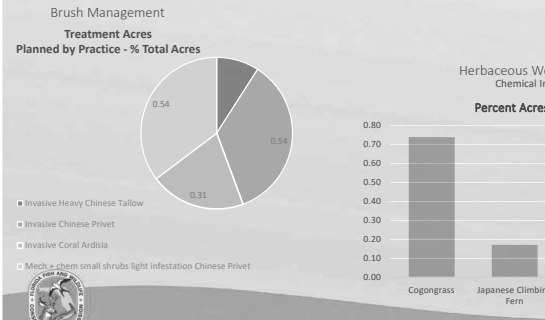


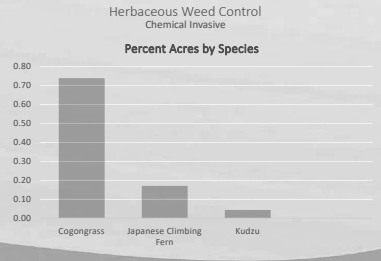
- Preserve the interaction with the landowner
- Invasive species data is evaluated with other environmental data, contributing to final management plan recommendations
- Data trends contribute to identification of regional hot spots for invasive species





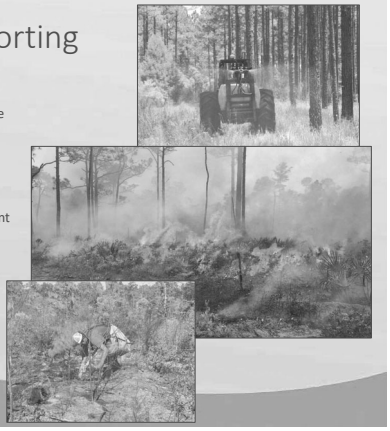
Invasive Species Data Trends



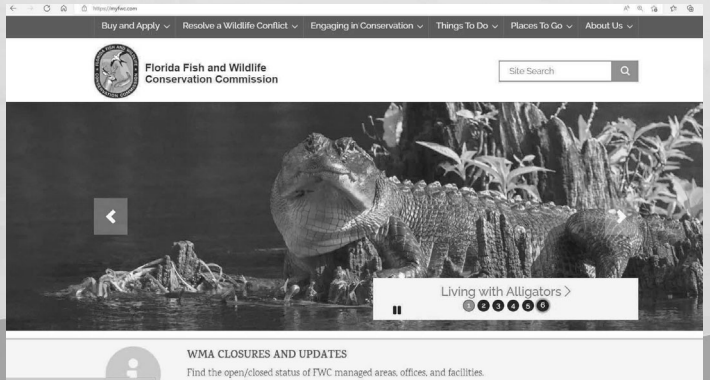


Need for Accurate Reporting

- Assistance for wildlife and habitat management and implementation of conservation practices is funded by the legislature;
- Reporting demonstrates the connection between listed species and restoration of longleaf ecosystems;
- Reporting documents the loss of habitat from development and conversion of agriculture and timber lands;
- Landowner assistance links landscapes and removes gaps between managed and unmanaged communities



How to get help from FWC



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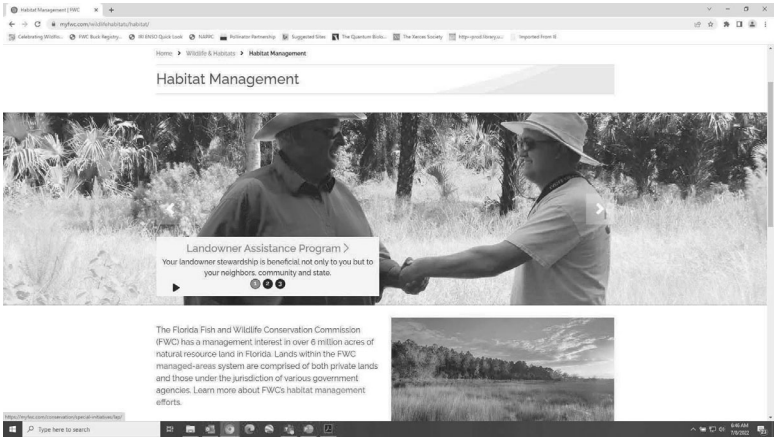

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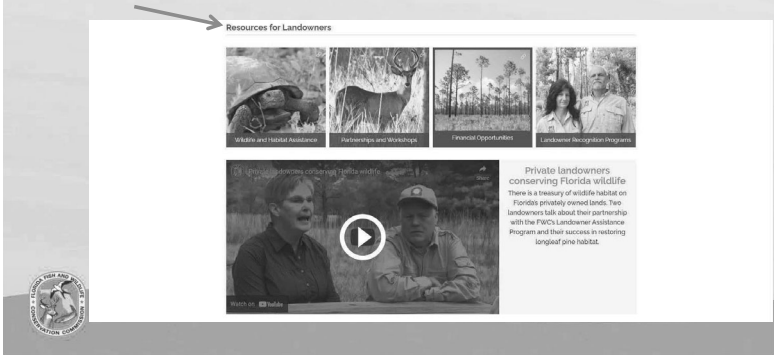
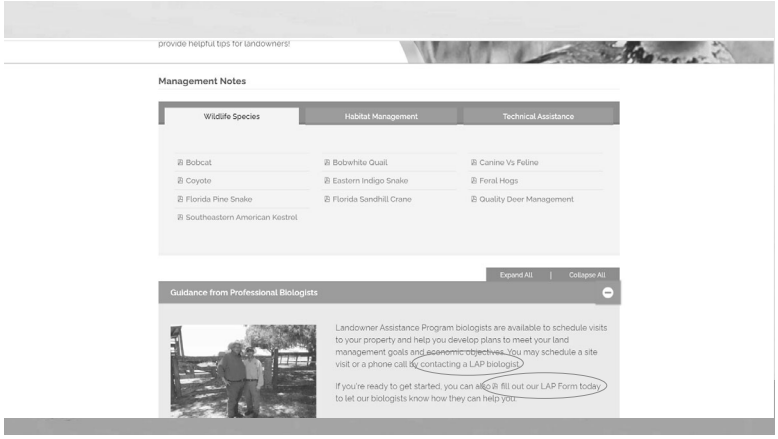
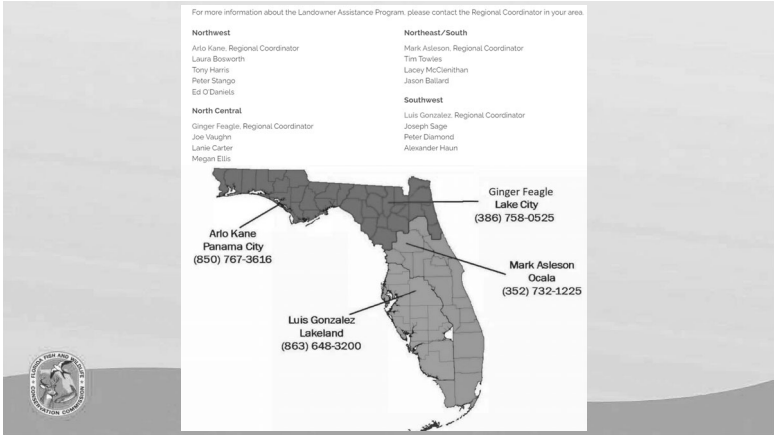
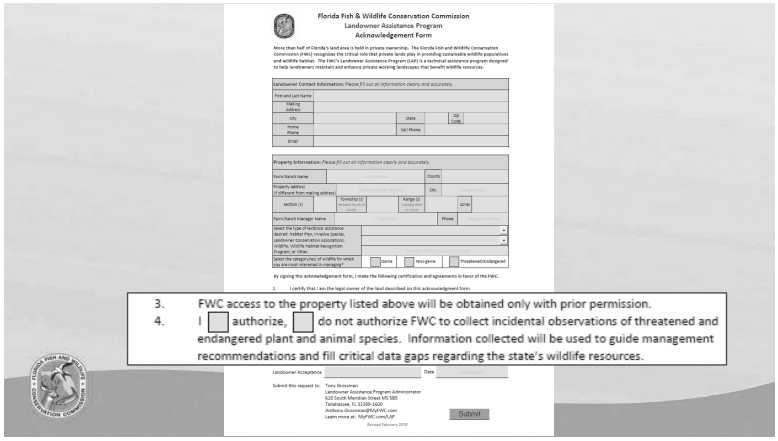


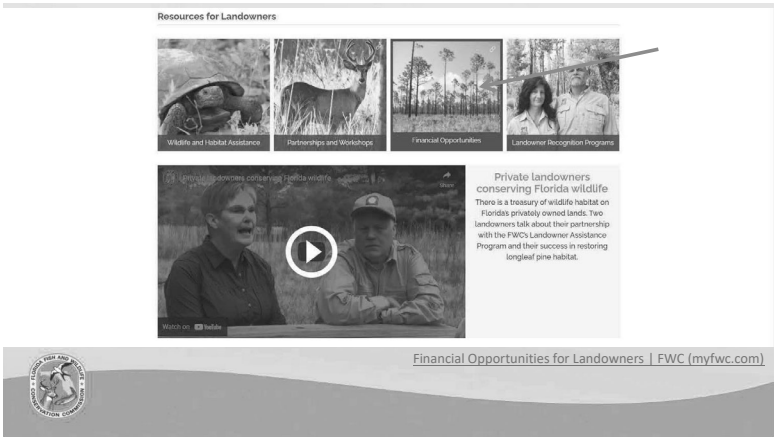






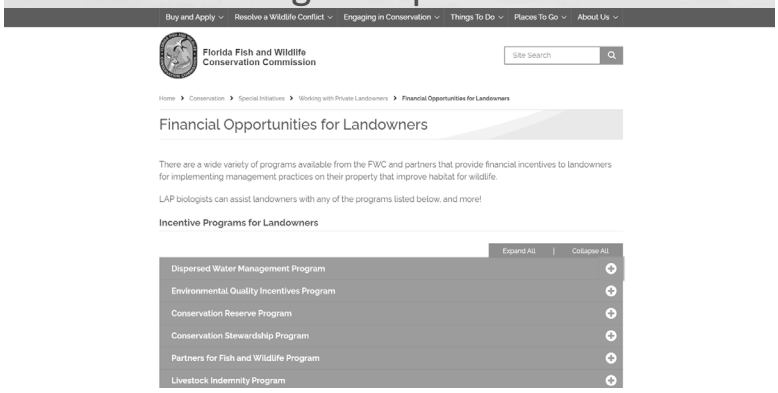
Florida Fish & Wildlife Conservation Commission
Landowner Assistance Program
Acknowledgement Form

3. FWC access to the property listed above will be obtained only with prior permission.
4. I ☐ authorize, ☐ do not authorize FWC to collect incidental observations of threatened and endangered plant and animal species. Information collected will be used to guide management recommendations and fill critical data gaps regarding the state's wildlife resources.



Financial Opportunities for Landowners | FWC (myfwc.com)

How to get help from FWC



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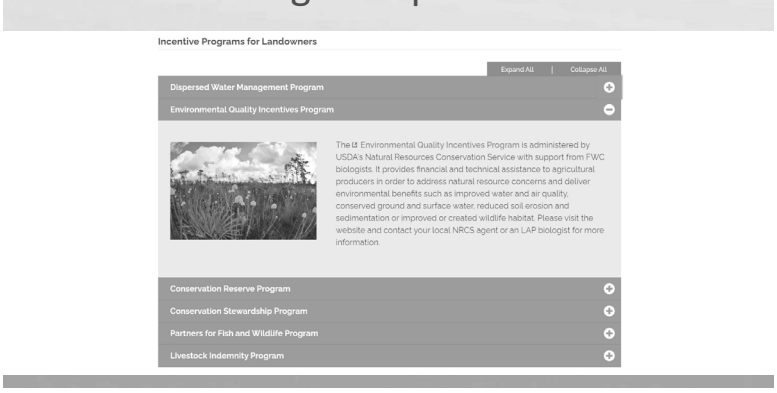
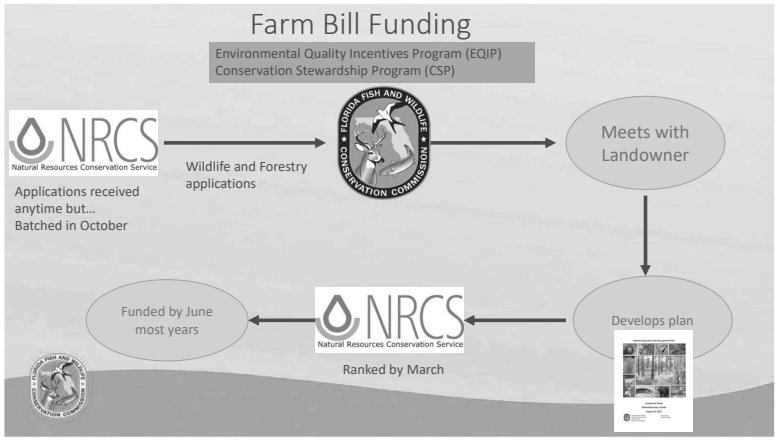
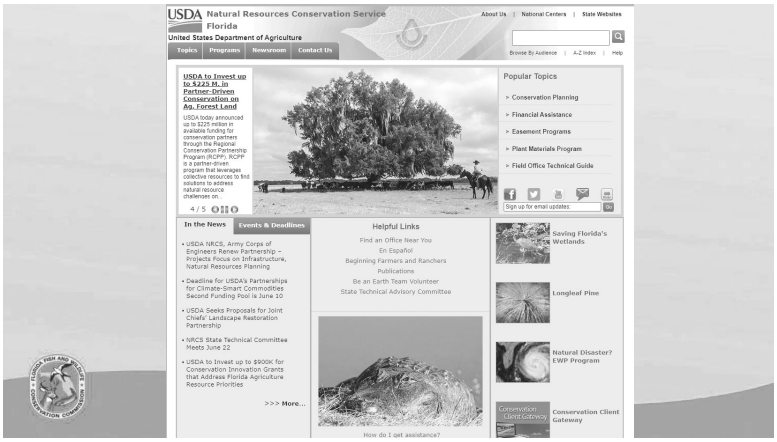
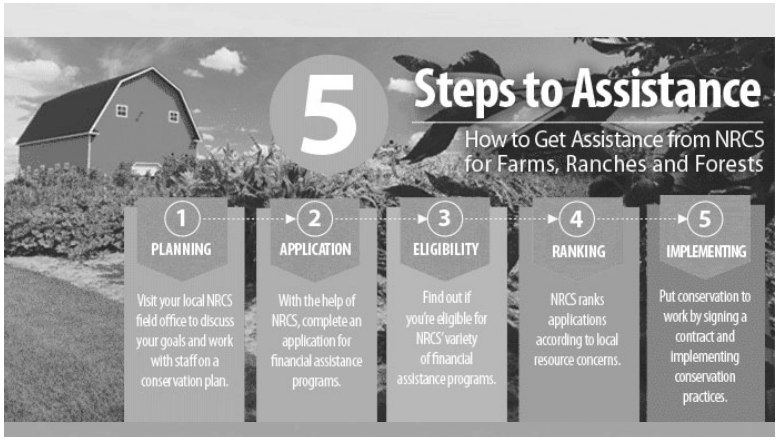


Farm Bill Funding

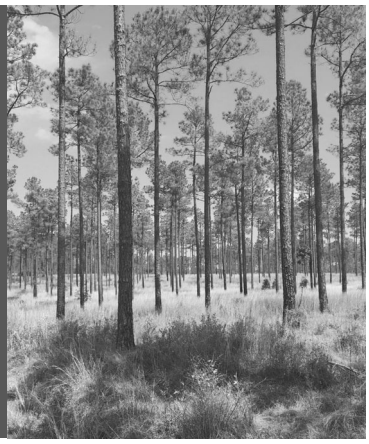
Environmental Quality Incentives Program (EQIP)
Conservation Stewardship Program (CSP)



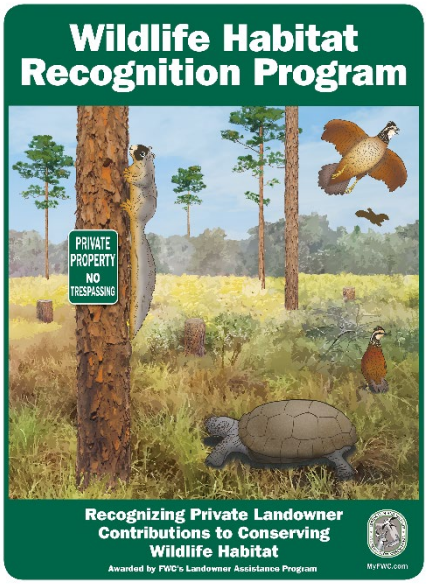



5
Steps to Assistance
How to Get Assistance from NRCS for Farms, Ranches and Forests
1
PLANNING
Visit your local NRCS field office to discuss your goals and work with staff on a conservation plan.
2
APPLICATION
With the help of NRCS, complete an application for financial assistance programs.
3
ELIGIBILITY
Find out if you're eligible for NRCS' variety of financial assistance programs.
4
RANKING
NRCS ranks applications according to local resource concerns.
5
IMPLEMENTING
Put conservation to work by signing a contract and implementing conservation practices.

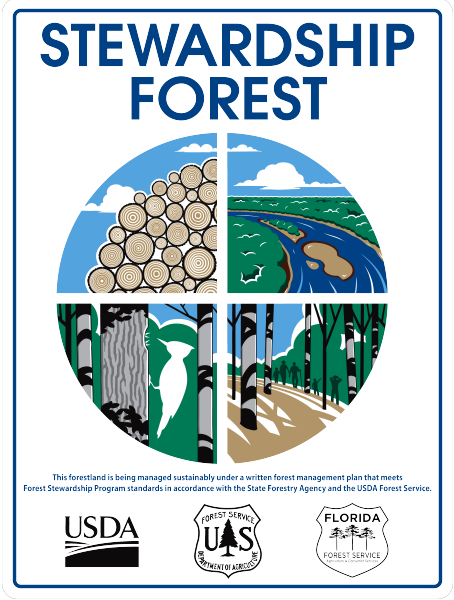
- QUESTIONS?



Assistance and Recognition Programs for Landowners



Private lands play a critically important role in the fate of Florida's vast wildlife resources. The efforts of private landowners to manage their land to benefit wildlife by providing food, water, shelter, and space will help ensure that future generations have the opportunity to experience and enjoy wildlife as much as, or even more than, we do today. To show appreciation for the accomplishments by landowners to conserve our state's wildlife, FWC's Landowner Assistance Program (LAP) created the **Wildlife Habitat Recognition Program**. This program honors landowners who have satisfactorily completed habitat management practices that benefit wildlife and/or their habitat by awarding them with a sign to display on their property and a certificate recognizing their habitat restoration efforts. For more information, please contact your region's FWC LAP Coordinator on the contact page.



The **Forest Stewardship Program**, developed by state forestry agencies, like the Florida Forest Service, provides educational and technical assistance for private landowners. Forestry and natural resource professionals cooperate to help private forest landowners develop and implement a plan designed to increase the economic value of their forestland while maintaining its wildlife habitat value and environmental integrity for future generations. Landowners who demonstrate good forest stewardship are recognized with a Stewardship Forest sign. For more information, please contact your Florida Forest Service county forester, consultant, or FWC LAP biologist. See the contact page.

The **American Tree Farm System (ATFS)** Standards of Sustainability guide and ensure that forest benefits are enhanced and available for future generations. Landowners can enroll and be certified in the ATFS to improve access to sustainable forest product markets and educational opportunities. The Florida Tree Farm Program is a nonprofit organization and state affiliate of the ATFS that promotes sustainable forest management and educational outreach to private forest landowners. For more information, please contact your Florida Forest Service county forester, consultant, or FWC LAP biologist. See the contact page.

Got Invasives? Get Assistance.

Invasive species problem?
Find assistance at FloridaInvasives.org.

Have an invasive species problem on your property? Use FloridaInvasives.org to find private land owner assistance programs and connect with your local Cooperative Invasive Species Management Area (CISMA).

FloridaInvasives.org is hosted by the Florida Invasive Species Partnership (FISP) with the goal of connecting landowners with information and resources to help in their fight against problematic species. This resource takes the guesswork out of finding the agencies or organizations offering assistance and will direct you to available programs.

Why was FloridaInvasives.org developed?

Public and private land managers have identified the high ecological and economic cost of invasive species as a statewide problem in Florida. FISP is a collaboration of federal, state, and local agencies, along with nongovernment organizations, formed to link efforts at preventing and controlling infestations of invasive species across agency and property boundaries. FISP has developed and maintains an online Landowner Assistance page of available programs to make it easier for landowners and land managers to find them.

How does FloridaInvasives.org help you?

Each year, multiple agencies and organizations provide cost-share programs, grants, and/or technical assistance to help landowners and land managers with various agriculture or natural resource management practices. Invasive species management is an important practice covered within many of these programs.

The Landowner Assistance page at FloridaInvasives.org provides the information to connect you directly with available assistance programs all in one location for your convenience.

FloridaInvasives.org also serves to connect you with your regional CISMA, a local network of agency, non-profit, and private land managers actively working on invasive species issues. CISMAs address prevention, early detection and rapid response, monitoring, management, and education and awareness on the local level and are a great resource for information and technical assistance.

Go to FloridaInvasives.org to find out more.

Species Shown from top to bottom:
Mexican Petunia, mimosa, Boston Fern, cogongrass, camphor

FISP
Florida Invasive Species Partnership

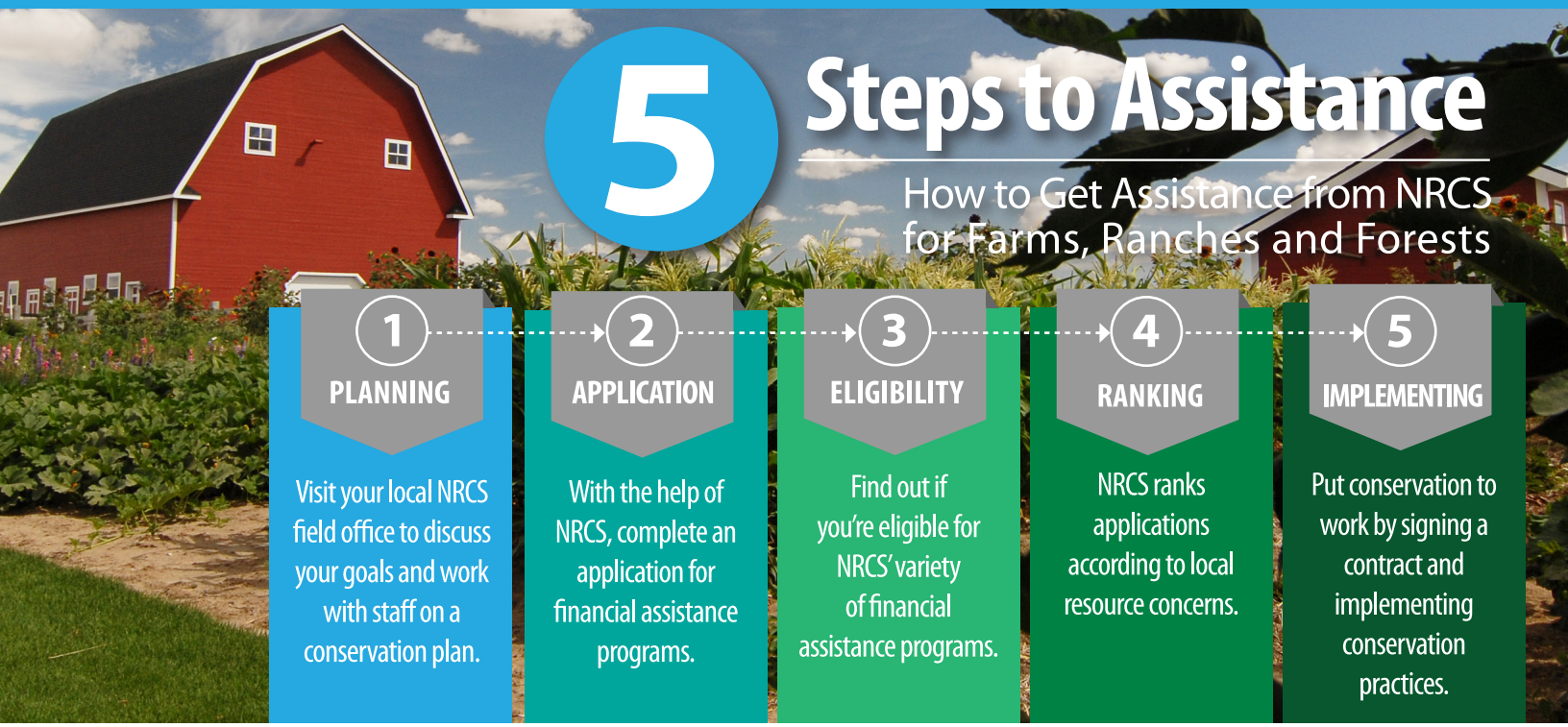
Think Locally, Act Neighborly

invasive species know no boundaries!

Type here]

USDA United States Department of Agriculture

Natural Resources Conservation Service



5 Steps to Assistance

How to Get Assistance from NRCS for Farms, Ranches and Forests

1. **PLANNING** — Visit your local NRCS field office to discuss your goals and work with staff on a conservation plan.
2. **APPLICATION** — With the help of NRCS, complete an application for financial assistance programs.
3. **ELIGIBILITY** — Find out if you're eligible for NRCS' variety of financial assistance programs.
4. **RANKING** — NRCS ranks applications according to local resource concerns.
5. **IMPLEMENTING** — Put conservation to work by signing a contract and implementing conservation practices.

Get Started with NRCS

Do you farm or ranch and want to make improvements to the land that you own or lease?

Natural Resources Conservation Service offers technical and financial assistance to help farmers, ranchers and forest landowners.

1 Planning

To get started with NRCS, we recommend you stop by your local NRCS field office. We'll discuss your vision for your land.

NRCS provides landowners with free technical assistance, or advice, for their land. Common technical assistance includes: resource assessment, practice design and resource monitoring. Your conservation planner will help you determine if financial assistance is right for you.

2 Application

We'll walk you through the application process. To get started on applying for financial assistance, we'll work with you:

- To fill out an AD 1026, which ensures a conservation plan is in place before lands with highly erodible soils are farmed. It also ensures that identified wetland areas are protected.
- To meet other eligibility certifications.

Once complete, we'll work with you on the application, or CPA 1200.

Applications for most programs are accepted on a continuous basis, but they're considered for funding in different ranking periods. Be sure to ask your local NRCS district conservationist about the deadline for the ranking period to ensure you turn in your application in time.

USDA is an equal opportunity provider and employer.

3 Eligibility

As part of the application process, we'll check to see if you are eligible.

To do this, you'll need to bring:

- An official tax ID (Social Security number or an employer ID)
- A property deed or lease agreement to show you have control of the property; and
- A farm tract number.

If you don't have a farm tract number, you can get one from USDA's Farm Service Agency. Typically, the local FSA office is located in the same building as the local NRCS office. You only need a farm tract number if you're interested in financial assistance.

4 Ranking

NRCS will take a look at the applications and rank them according to local resource concerns, the amount of conservation benefits the work will provide and the needs of applicants.

5 Implementing

If you're selected, you can choose whether to sign the contract for the work to be done.

Once you sign the contract, you'll be provided standards and specifications for completing the practice or practices, and then you will have a specified amount of time to implement. Once the work is implemented and inspected, you'll be paid the rate of compensation for the work if it meets NRCS standards and specifications.

To find out more, go to: **www.nrcs.usda.gov/GetStarted**

Invasive Plants and Control Techniques

Management of invasive vegetation in natural areas requires control methods that will minimize damage to non-target vegetation and soil. Control methods include cultural, preventative, manual, and mechanical removal, biological control, physical controls, and herbicides. Generally, these tools are utilized as part of a comprehensive management plan that considers a wide range of issues to control invasive plants and protect the native plants of a given natural area. These tools are not silver bullets and cannot be expected to solve invasive plant problems with a one-time shot. Eradication, which is the complete elimination of all living propagules of a species, is extremely difficult and often infeasible for well-established invasive plants. Without a clear management plan and long-term commitment, most single invasive plant control efforts result in short-lived success.

Herbicide Application Techniques for Woody Plant Control:
https://edis.ifas.ufl.edu/ag245

Integrated Management of Nonnative Plants in Natural Areas of Florida:
http://edis.ifas.ufl.edu/wg209

Controlling Invasive Plants in North Florida Forests:
https://edis.ifas.ufl.edu/fr133

Invasive Landscape Plants and Trees:
https://edis.ifas.ufl.edu/topic_invasive_landscape

Biology and Control of Cogongrass (Imperata cylindrica) in Southern Forests:
https://edis.ifas.ufl.edu/FR411

Cogongrass (Imperata cylindrica) Biology, Ecology, and Management in Florida Grazing Lands: https://edis.ifas.ufl.edu/WG202

Efficacy of herbicide active ingredients against aquatic weeds:
https://edis.ifas.ufl.edu/ag262

UF/IFAS Center for Aquatic and Invasive Plants: http://plants.ifas.ufl.edu/

Cogongrass Control

Cogongrass (*Imperata cylindrical*) is a warm-season perennial grass species found throughout tropical and sub-tropical regions of the world. Native to Southeast Asia, cogongrass is an aggressive invasive plant that that has spread to all continents except Antarctica and is considered among the worst problematic weeds in the world. In the United States, it is naturalized in Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, and Oregon. It was first accidentally introduced in the United States near Mobile Alabama in 1912 and subsequently intentionally introduced from the Philippines into Mississippi as a forage crop in 1921. Early regional introductions contributed to the establishment of cogongrass in the Southeast. Cogongrass is regulated as a federal noxious weed.

Control of cogongrass is difficult because it spreads in two ways: by extensive rhizome systems and by seeds. Cogongrass rhizomes can comprise more than 60% of the total plant biomass. The rhizomes support rapid re-growth following mowing or burning.

Control in Pine Forests

Chemical control is required. Glyphosate, imazapyr, and combinations of the two herbicides are most effective. Eradication requires multiple applications. In many instances, selective control of cogongrass without damage to desired vegetation is not possible, but where the canopy of shrubs and trees is above that of cogongrass, glyphosate sprays may be directed to cogongrass in the understory with fair selectivity to the taller vegetation. Imazapyr, however, used in the quantities and at the application frequencies necessary to eradicate cogongrass, will kill hardwood trees and shrubs.

Control in Hardwood Forests

To avoid injury to hardwood trees or shrubs in mixed pine-hardwood stands, glyphosate alone is commonly used at 3 to 4 lb ai/acre (3 to 4 quarts per acre for many common 4 lb ai/gallon product formulations), and selectivity is obtained by spraying cogongrass in the understory and avoiding any spray contact near the crowns of trees and shrubs. Imazapyr will kill hardwood trees and shrubs.

Controlling Invasive Plants in North Florida Forests (various species including cogongrass): https://edis.ifas.ufl.edu/FR133

Biology and Control of Cogongrass in Southern Forests: https://edis.ifas.ufl.edu/fr411

Cogongrass Biology, Ecology, and Management in Florida Grazing Lands: https://edis.ifas.ufl.edu/WG202

UF/IFAS Stewardship Publications

- Assessment and Management of Hurricane Damaged Timberland
- Beyond the Trees: A Systems Approach to Understanding Forest Health in the Southeastern United States
- Florida's Forest Stewardship Program: An Opportunity to Manage Your Land for Now and the Future
- Forest Resource Information on the Internet: Connecting to Today's Online Resources
- Genetically Improved Pines for Reforesting Florida's Timberlands
- Improving, Restoring, and Managing Natural Resources on Rural Properties in Florida: Sources of Financial Assistance
- Improving, Restoring, and Managing Wildlife Habitat in Florida: Sources of Technical Assistance for Rural Landowners
- Longleaf Pine Regeneration
- Making the Most of Your Mast
- Marking First Thinnings in Pine Plantations: Potential for Increased Economic Returns
- Opportunities for Uneven-Aged Management in Second Growth Longleaf Pine Stands in Florida
- The Optimal Forest Management of an Even-Aged Stand: The Biological Rotation versus the Land Expectation Value
- Ownership Succession: Plan Now for the Future of Your Land
- Prepare Your Forest Property for Hurricane Season
- Selecting a Consulting Forester
- Steps to Marketing Timber
- Stewardship Ecosystem Services Study Series: Assessing Forest Water Yield and Regulation Ecosystem Services in the Lower Suwannee River Watershed, Florida
- Ten Tips for Encouraging the Use of Your Pine Plantations by Game Species
- Ten Tips for Increasing Wildlife Biodiversity in Your Pine Plantations
- Thinning Southern Pines—A Key to Greater Returns
- Tips for Integrating Land and Wildlife Management: Deer in Forests
- Tips for Integrating Land and Wildlife Management: Quail and Timber
- What Is in a Natural Resource Management Plan?
- What to Expect in a Forest Inventory

NOTES

NOTES

THANKS to these sponsors for their support of 2022 Florida Land Steward Educational Services

Florida Sustainable Forestry Initiative Implementation Committee

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