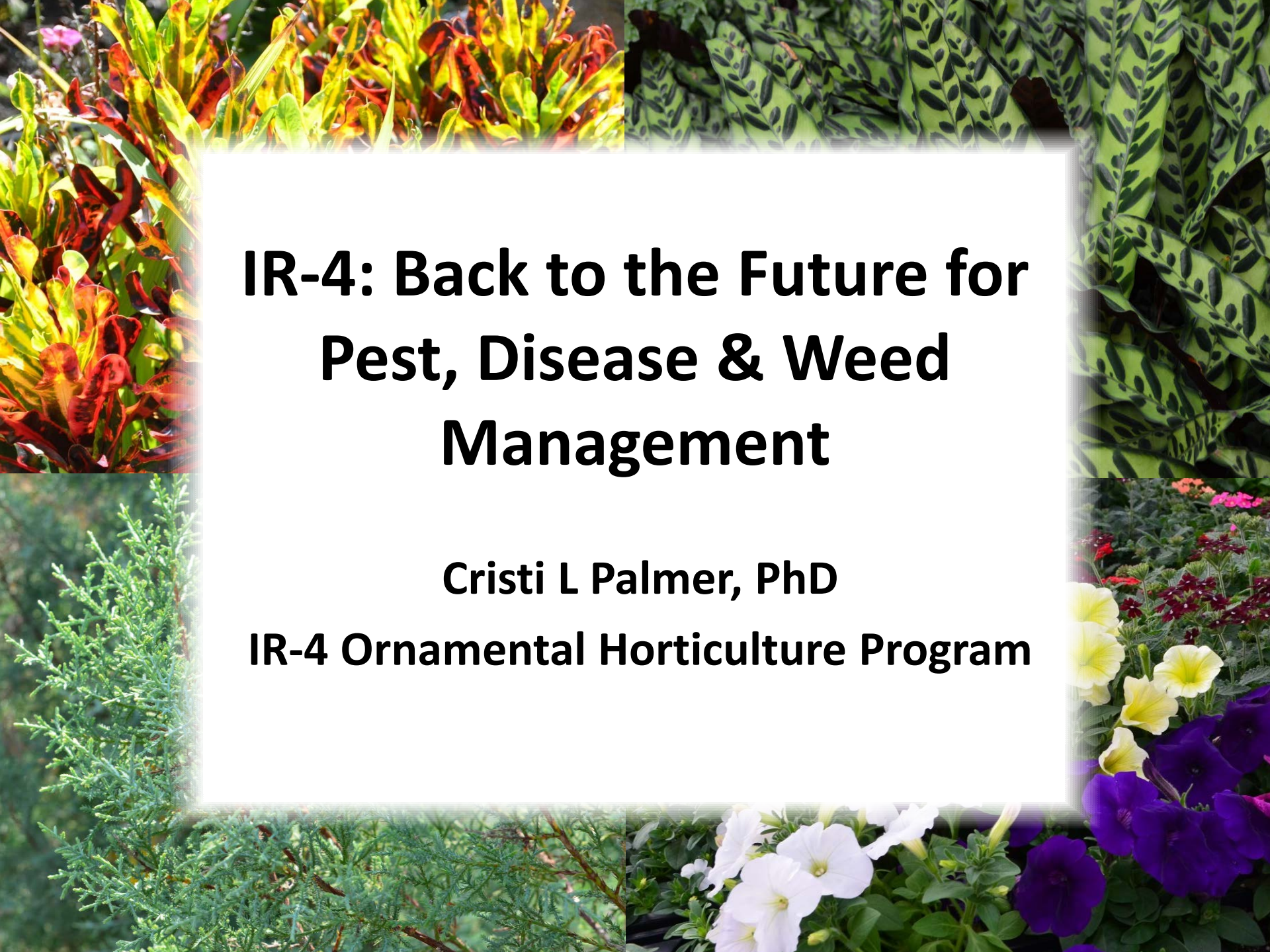




IR-4: Back to the Future for Pest, Disease & Weed Management

Cristi L Palmer, PhD

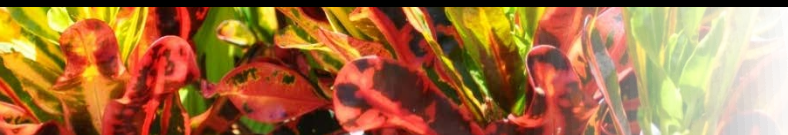
IR-4 Ornamental Horticulture Program

IR-4 Mission

Facilitate registration of
sustainable pest management
technology for specialty crops
and minor uses



Photo by Cristi Palmer

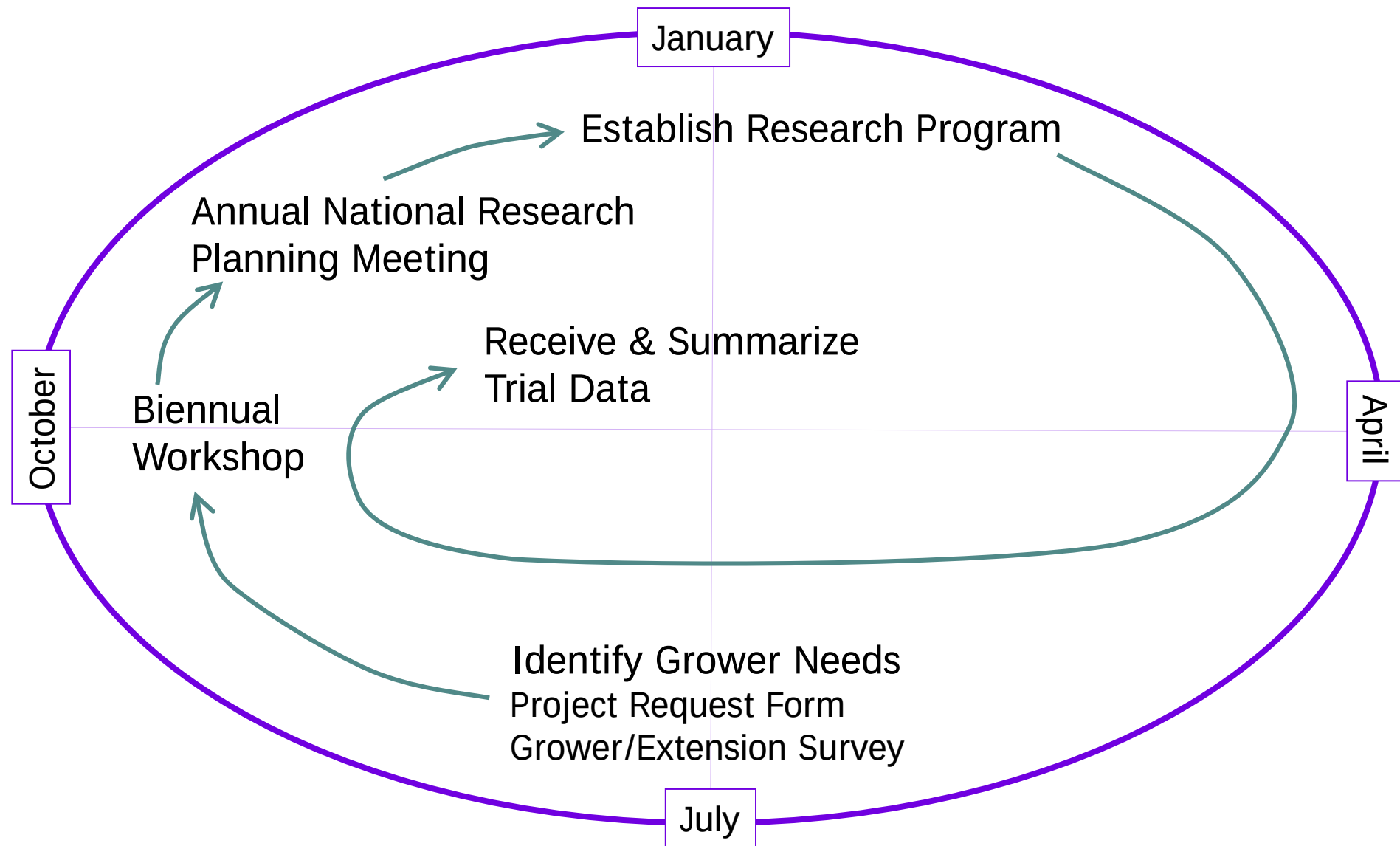




**IR-4 Activities on
behalf of the Green
Industry:**
Data development for
registration support

Photos by Cristi Palmer

Data development for registration support



January

Establish Research Program

Annual National Research
Planning Meeting

Receive & Summarize
Trial Data

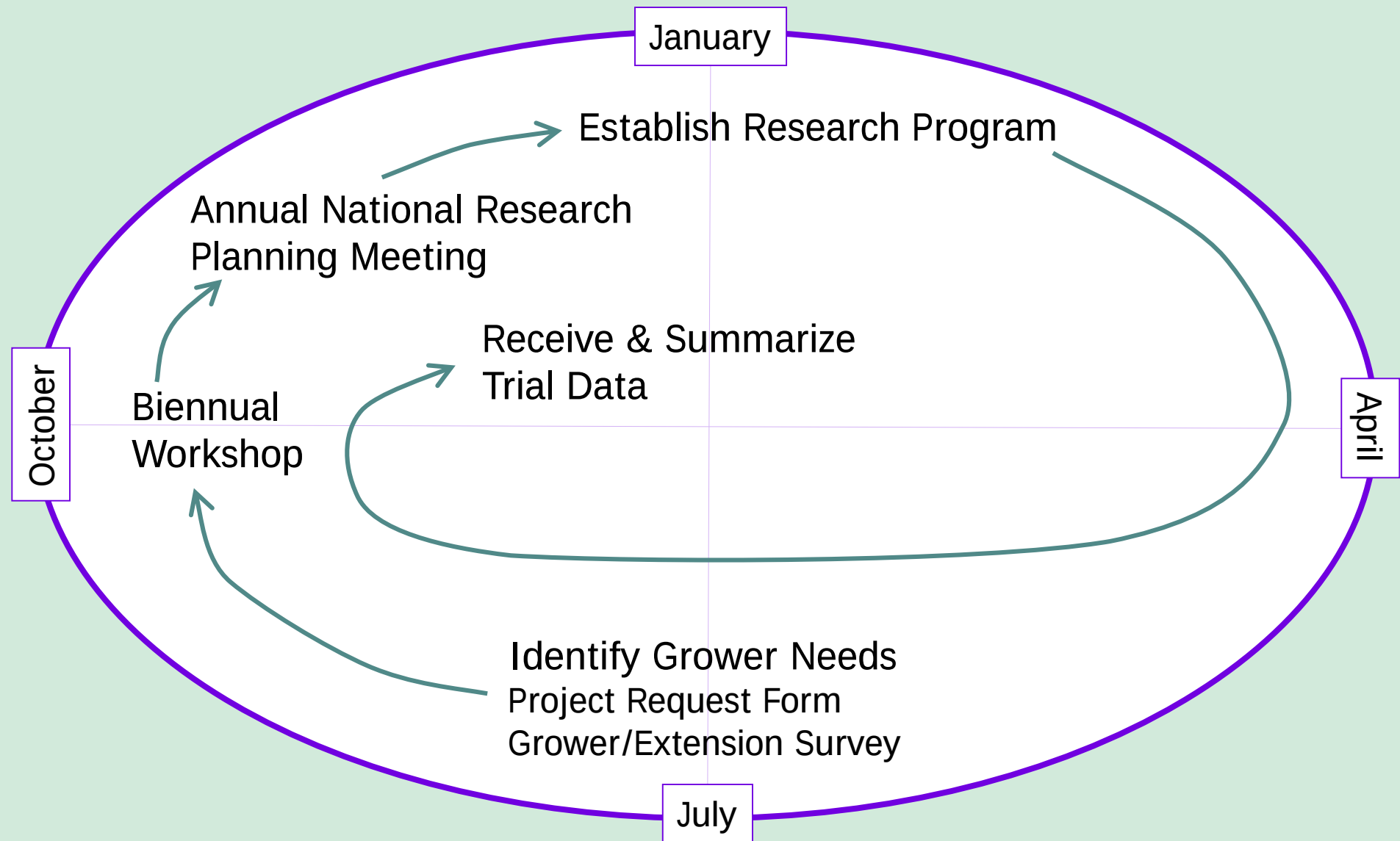
Biennial
Workshop

October

April

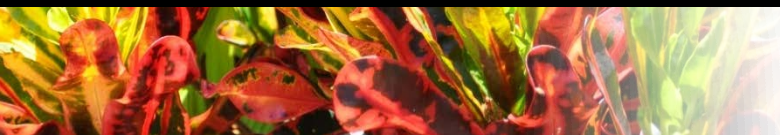
Identify Grower Needs
Project Request Form
Grower/Extension Survey

July



Project Pros and Cons

- Availability and effectiveness of alternative pest management tools
- Damage potential of target pest(s)
- Performance and crop safety of proposed product(s)
- Compatibility with IPM programs
- Manufacturer interest in labeling product(s)
- Economics





Disease Trends

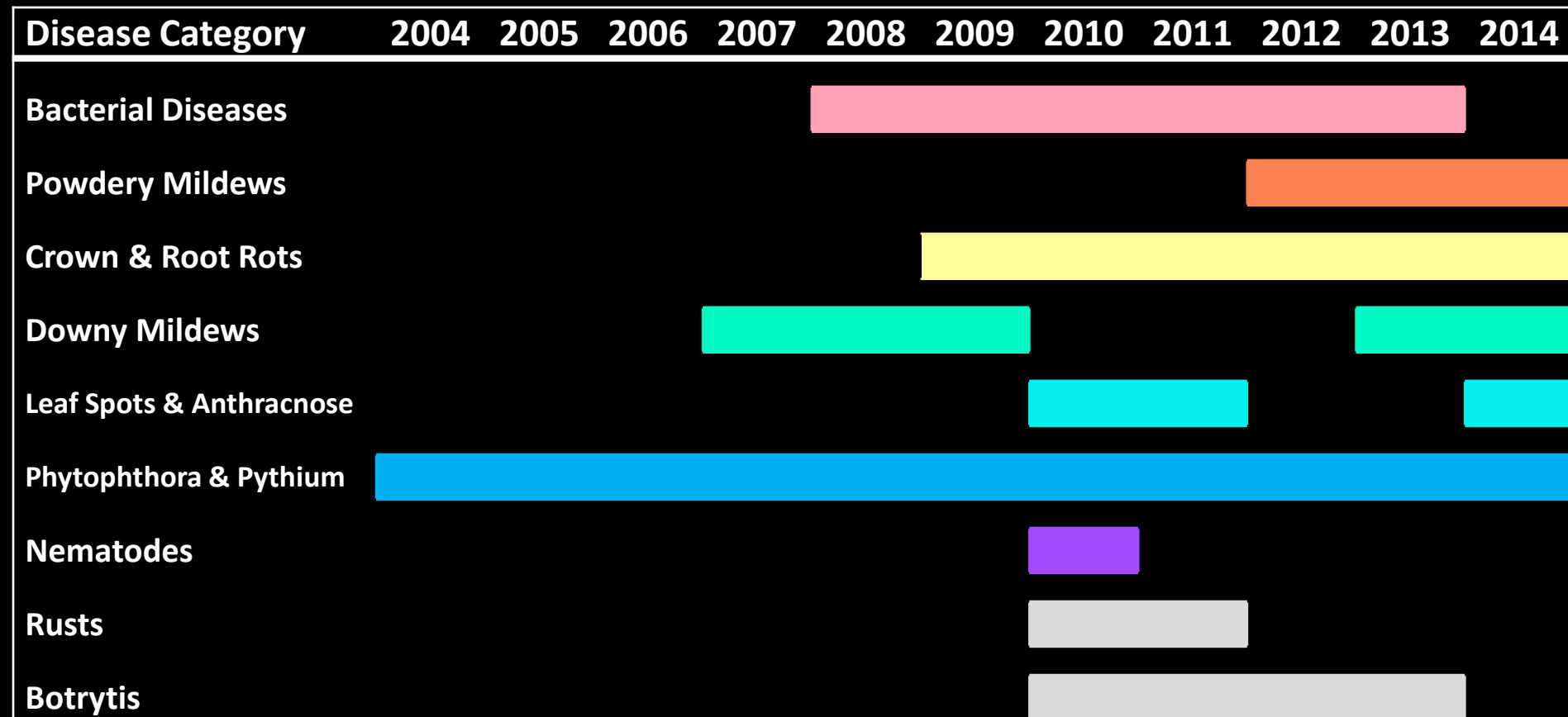
Photos by Cristi Palmer

Ranks of the disease categories from the annual and biennial grower and extension surveys from 2005 through 2013.

#	2005	2006	2007	2008/2009	2010/2011	2012/2013
1	Phytophthora & Pythium	Phytophthora & Pythium	Phytophthora & Pythium	Phytophthora & Pythium	Crown & Root Rots (non-oomycete)	Bacterial Diseases
2	Powdery Mildews	Crown & Root Rots (non-oomycete)	Powdery Mildews	Crown & Root Rots (non-oomycete)	Bacterial Diseases	Powdery Mildews
3	Leaf Spots & Anthracnose	Leaf Spots & Anthracnose	Leaf Spots & Anthracnose	Bacterial Diseases	Phytophthora & Pythium	Crown & Root Rots (non-oomycete)
4	Botrytis	Bacterial Diseases	Crown & Root Rots (non-oomycete)	Leaf Spots & Anthracnose	Leaf Spots & Anthracnose	Downy Mildews
5	Bacterial Diseases	Botrytis	Botrytis	Powdery Mildews	Powdery Mildews	Leaf Spots & Anthracnose
6	Crown & Root Rots (non-oomycete)	Powdery Mildews	Bacterial Diseases	Nematodes	Botrytis	Phytophthora & Pythium
7	Downy Mildew	Downy Mildew	Downy Mildews	Downy Mildews	Canker	Nematodes



Annual timing for national and regional disease research priorities



Registration Impacts for Diseases

Adorn[™]
FUNGICIDE

Micora[™]

Regalia[®]
Biofungicide Concentrate

ENDORSE[®]

orvego[™]
FUNGICIDE

Stature[™] SC
fungicide

Pageant[™]
Fungicide

Subdue[™]
MAXX[®]

FENSTOP[™]

RootShield[®] PLUS⁺ WP

Insignia[™]
FUNGICIDE

Palladium[™]

SEGWAY[™]
FUNGICIDE

Aliette

Cease

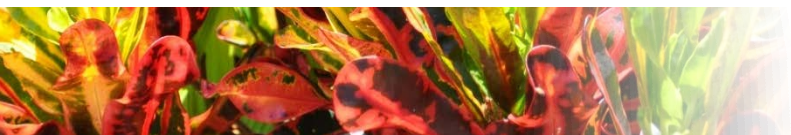
Compass

Disarm

Veranda O

Strike Plus

Trinity



The
IR-4
Project





Pest Trends

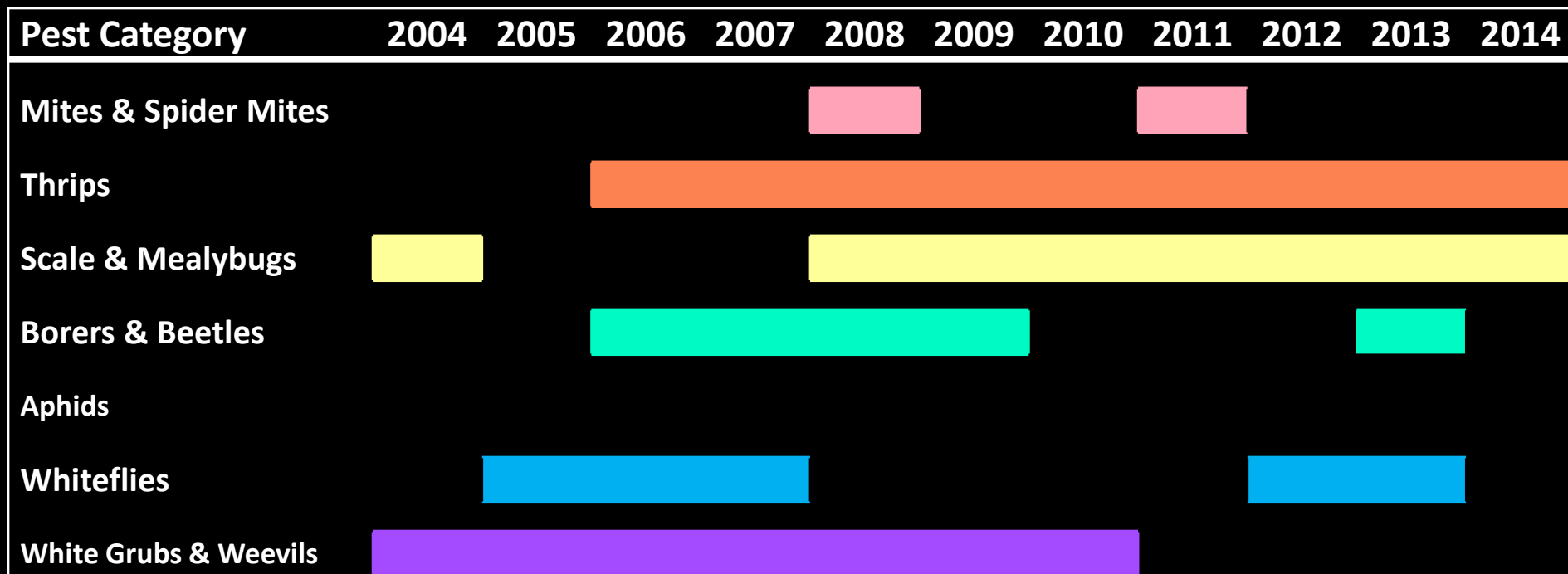
Photos by Cristi Palmer

Ranks of the pest categories from the annual and biennial grower and extension surveys from 2005 through 2013.

#	2005	2006	2007	2008/2009	2010/2011	2012/2013
1	Aphids	Scale & Mealybugs	Mites & Spider Mites	Thrips	Thrips	Mites & Spider Mites
2	Thrips	Mites & Spider Mites	Aphids	Mites & Spider Mites	Mites & Spider Mites	Thrips
3	Spider mites	Thrips	Thrips	Scale & Mealybugs	Scale & Mealybugs	Scale & Mealybugs
4	Borers/ Beetles/	Whiteflies	Scale & Mealybugs	Borers & Beetles	Borers & Beetles	Borers & Beetles
5	White Grubs *					
6	Whiteflies	Aphids	Whiteflies	Whiteflies	Aphids	Aphids
7	Scales	Borers & Beetles	Borers & Beetles	Aphids	White Grubs & Root Weevils	Whiteflies



Annual timing for national and regional pest research priorities



Registration Impacts for Pests

Aria

Flagship

GrandEvo

Mainspring

Met52

TickEx



KONTOSTM

PYLON

Orthene[®]
TURF, TREE & ORNAMENTAL WSP

Hachi-Hachi[®]
Insecticide

S a f a r i[®]
I N S E C T I C I D E

Overture[®]
I N S E C T I C I D E

JUDOTM
Miticide/Insecticide

Sanmite[®]
Miticide/Insecticide



The
IR-4
Project





Weed Trends

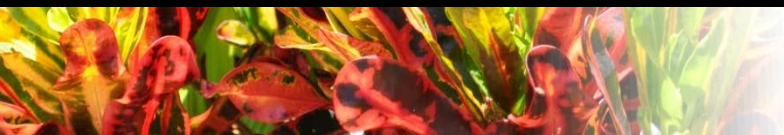
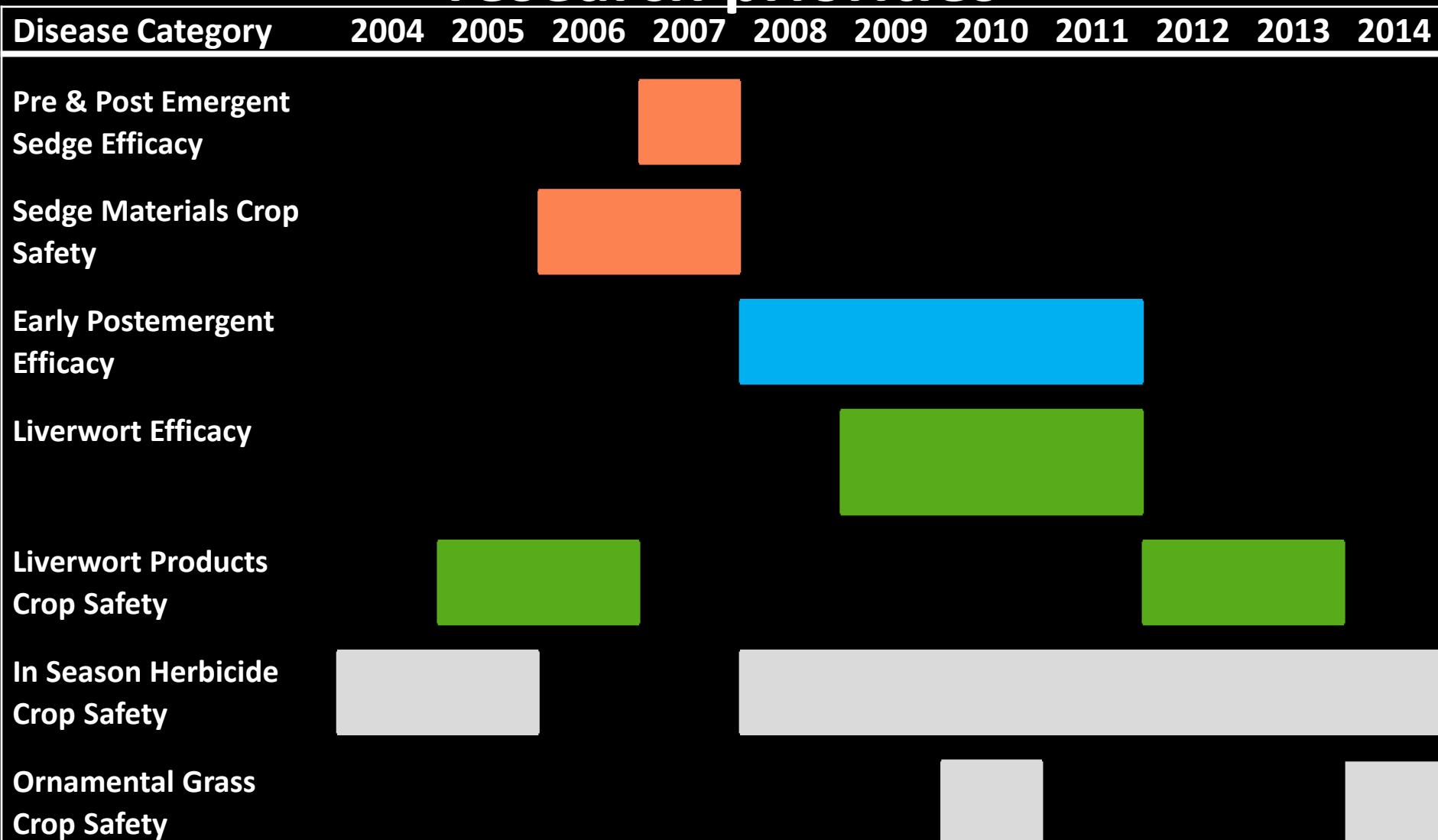
Photos by Cristi Palmer

Ranks of the weed categories from the annual and biennial grower and extension surveys from 2005 through 2013.

#	2005	2006	2007	2008/2009	2010/2011	2012/2013
1	Nutsedge	Nutsedge	Nutsedge	Nutsedge	Liverwort	Grasses
2	Bittercress	Spurge	Bittercress	Liverwort	Nutsedge	Nutsedge
3	Spurge	Bittercress	Spurge	Oxalis	Bittercress	Conyza
4	Grasses	Oxalis	Oxalis	Spurge	Moss	Liverwort
5	Oxalis	Eclipta	Grasses	Eclipta	Spurge	Oxalis
6	Chickweed	Crabgrass	Liverwort	Bittercress	Oxalis	Bittercress
7	Liverwort	Liverwort	Groundsel	Virginia Buttonweed	Thistle	Groundsel



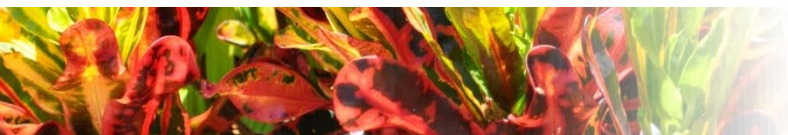
Annual timing for national and regional weed research priorities



Registration Impacts for Weeds



Basagran
Biathlon
Dimension
Gallery
Sedgehammer



**IR-4 contributes more than \$7.2 billion to GDP and
supports 104,650 jobs.**

-- The Center for Economic Analysis at MSU, 2011





**IR-4 Activities on
behalf of the Green
Industry:**
Coordination of
research teams for
invasive species

Photos by Cristi Palmer



Photo by Cristi Palmer

Arthropod Shipping

Research Team

Dr. Jim Bethke

Dr. Arnold Hara

Dr. Cindy McKensie

Dr. Lance Osborne



Photo by Lance Osborne

Arthropod Shipping

Research Goals

Duponchelia fovealis biology and management tools (conventional, biopesticide, predators)

Prevention of arthropod development during shipping with applications of biopesticides and biorational materials immediately before shipping



Photo by Lance Osborne



Impatiens Downy Mildew

Research Team

Dr. JoAnne Crouch

Ms. Margery Daughtrey

Dr. Mary Hausbeck

Dr. Lina Quesada

Dr. Aaron Palmateer

Dr. Nina Shishkoff

Photo by Cristi Palmer

Location: Cream Ridge, NJ

Date:

Impatiens Downy Mildew

Research Goals

- Overwintering of *Plasmopora obducens* oospores
- Fungicide screening and rotational strategies
- Sporangia and oospore development and epidemiology
- *Plasmopora obducens* population genetics
- Development of genetic tools for downy mildews including Impatiens Downy Mildew, Cucurbit Downy Mildew, Hops Downy Mildew, Basil Downy Mildew



Photos by Margery Daughtrey



**IR-4 Activities on
behalf of the Green
Industry:
Pollinator Protection
Activities**

Photos by Cristi Palmer

Ornamental Horticulture Pollinator Workshop

Dec 15-16, 2014

Cristi L Palmer

IR-4 Ornamental Horticulture
Program Manager



Ornamental Horticulture Pollinator Workshop

- **Outcomes**
- **Better understanding of risk assessment process and the data needed**
- **Identification of key knowledge gaps**
- **How scientific results are communicated is important**



The Debunking Handbook

John Cook & Stephan Lewandowsky

- A simple myth is more cognitively attractive than an overcomplicated correction.
- For those who are strongly fixed in their views, encountering counterarguments can cause them to strengthen their views.
- When you debunk a myth, you create a gap in the person's mind. To be effective, your debunking must fill that gap.



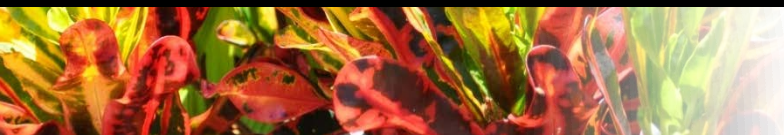
Distilling the message

Keep

It

Simple &

Short





**Green Industry
Activities on behalf of
IR-4:
Back to the future?**

Photos by Cristi Palmer

Green Industry Activities on behalf of IR-4

- Tell us your needs!
- Contact legislators to support increase in federal funding levels for IR-4 research activities
 - 2015 Strategic Plan => \$15.9 Million
 - FY2016 Proposed Budget => \$11.9 Million
 - Shortfall == \$4.0 Million
- Tell us how we are doing and how we can better serve you!



Thank you !



Funding for IR-4 Research:

USDA-NIFA
USDA-ARS
USDA-APHIS
Land Grant Institutions

Researchers:

All the wonderful researchers
throughout the US and
internationally!



IR-4 Personnel:

Susan Bierbrunner
Michelle Foo
Edith Lurvey
Satoru Miyazaki
Mika Pringle-Tolson
Becky Sisco
Ely Veá



Photo by Cristi Palmer

Thank you !