

Thrips and Iris Yellow Spot Virus...

or a little story about managing
them on your farm not just in your
onions

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Onion Thrips



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Thrips Damage

- Feeding and IYSV – Plant stress
- Reduce Photosynthesis
- Reduce Bulb Size and Yield





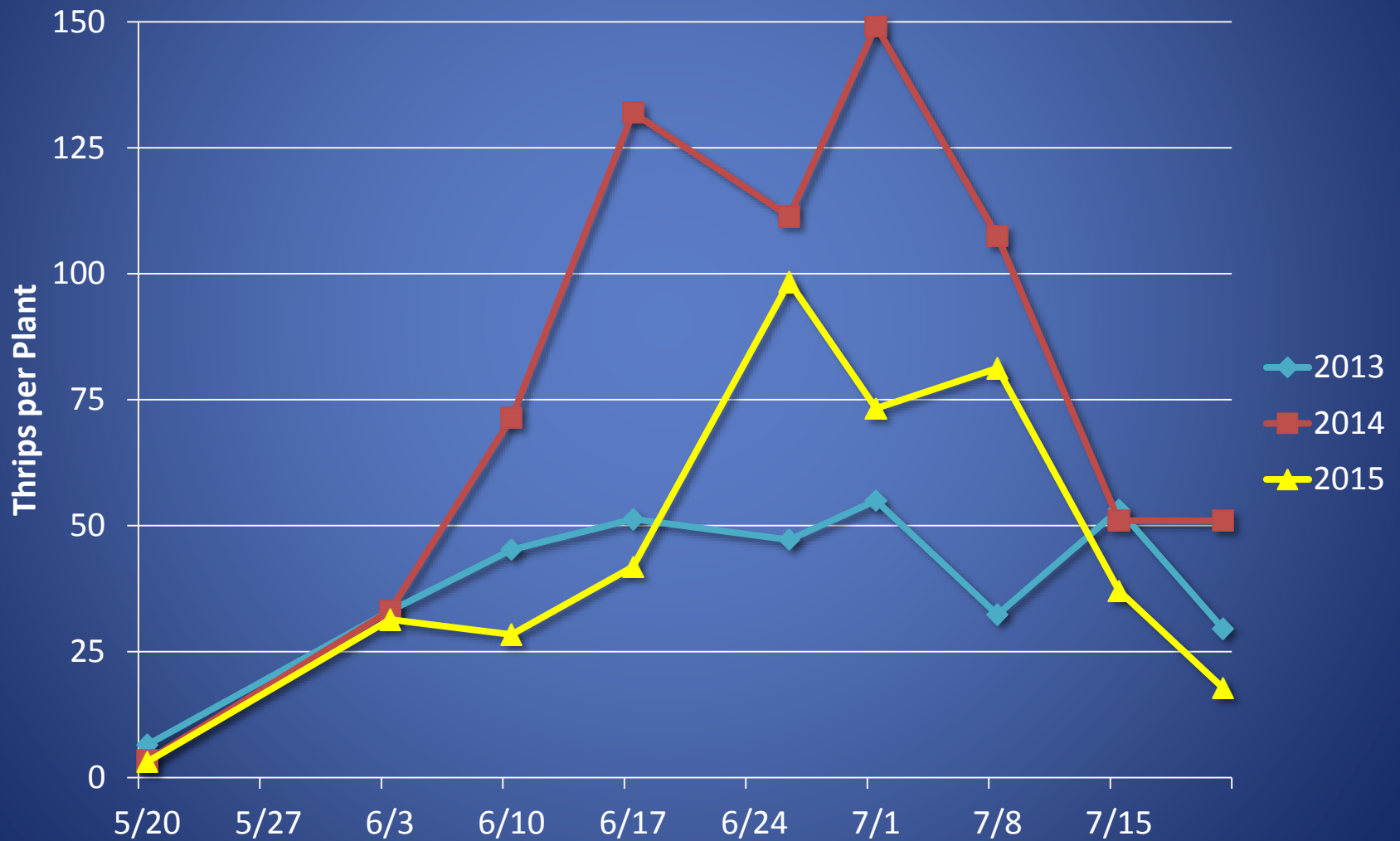
Howard Schwartz, CSU

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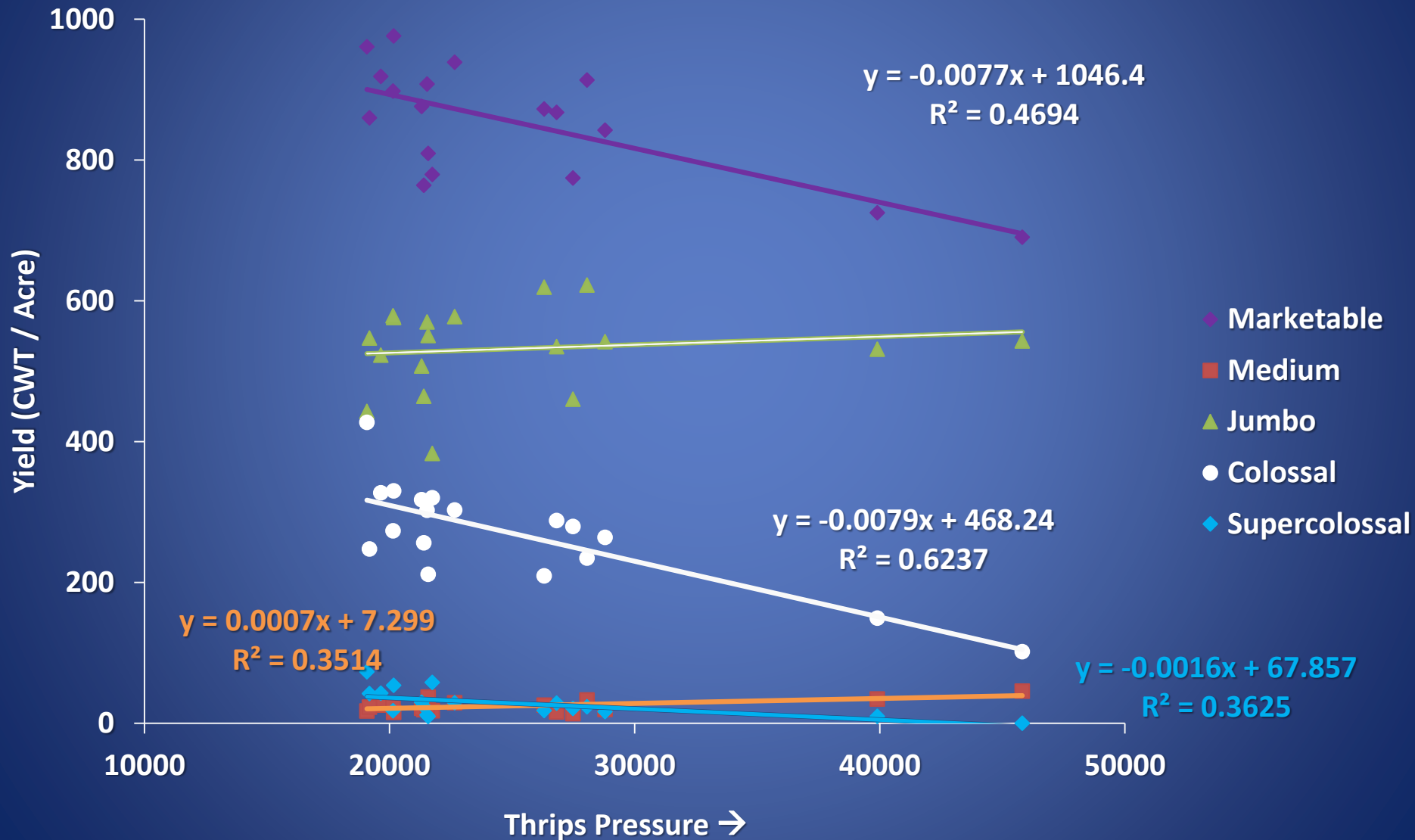
Iris Yellow Spot Virus on Onion



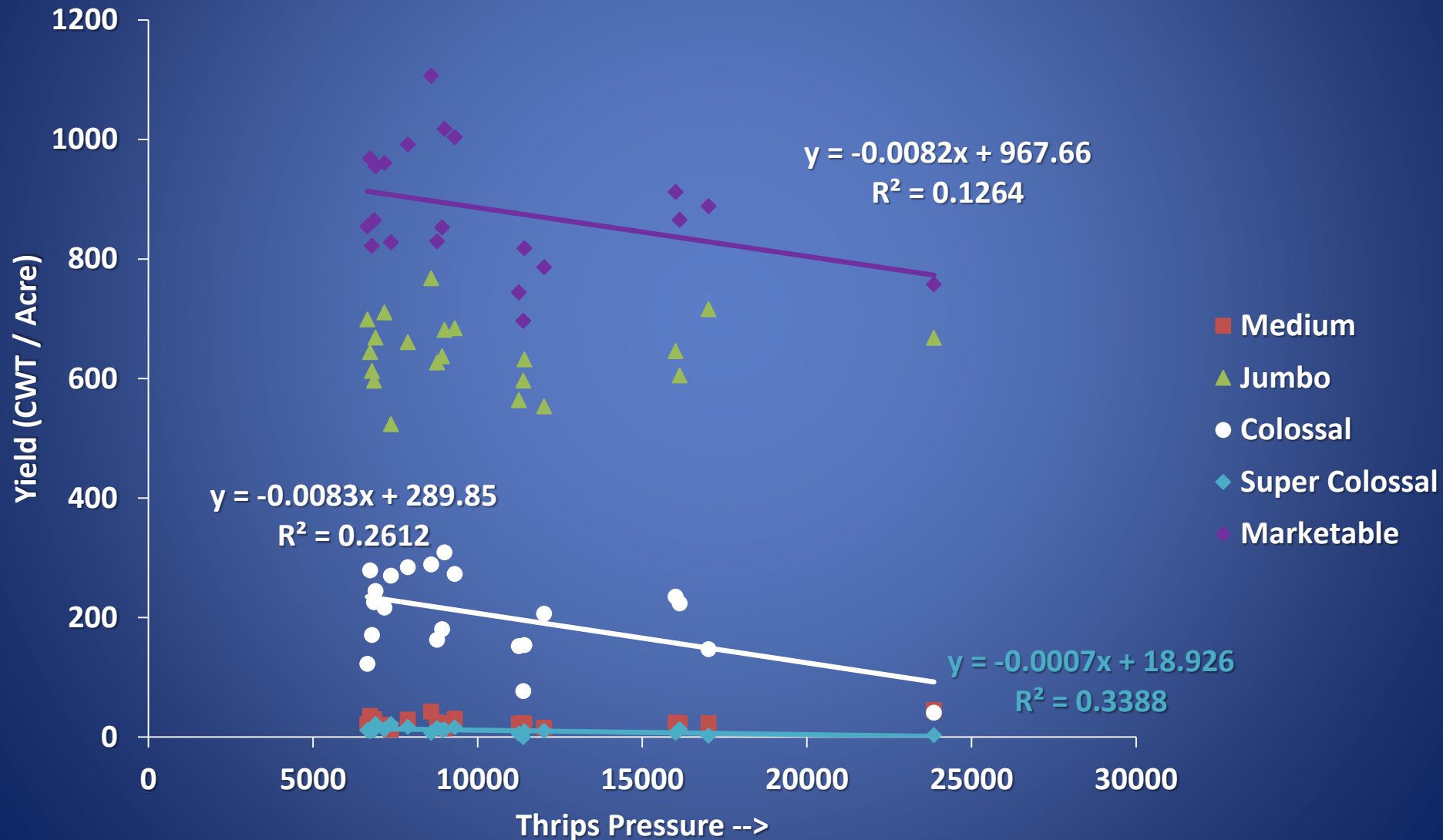
Treasure Valley



Thrips Effect on Yield - 2014



Thrips Effect on Yield - 2015





Virus Transmission



Female
Adult



Egg

Virus Acquisition



1st Instar



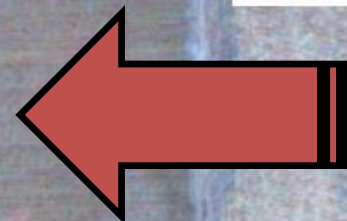
2nd Instar

Virus Transmission



Onion Bulb Field

Onion Seed Field



M. Trent



© Peter Smith

UGA1334126

Wheat



Thrips hosts,
but not virus hosts

Alfalfa



Alfalfa Cutting

- Proximity of alfalfa to onions?
- Thrips populations in alfalfa?
 - Onion thrips
 - Western flower thrips
- Time cutting so onions can be protected

Thrips and IYSV Sources

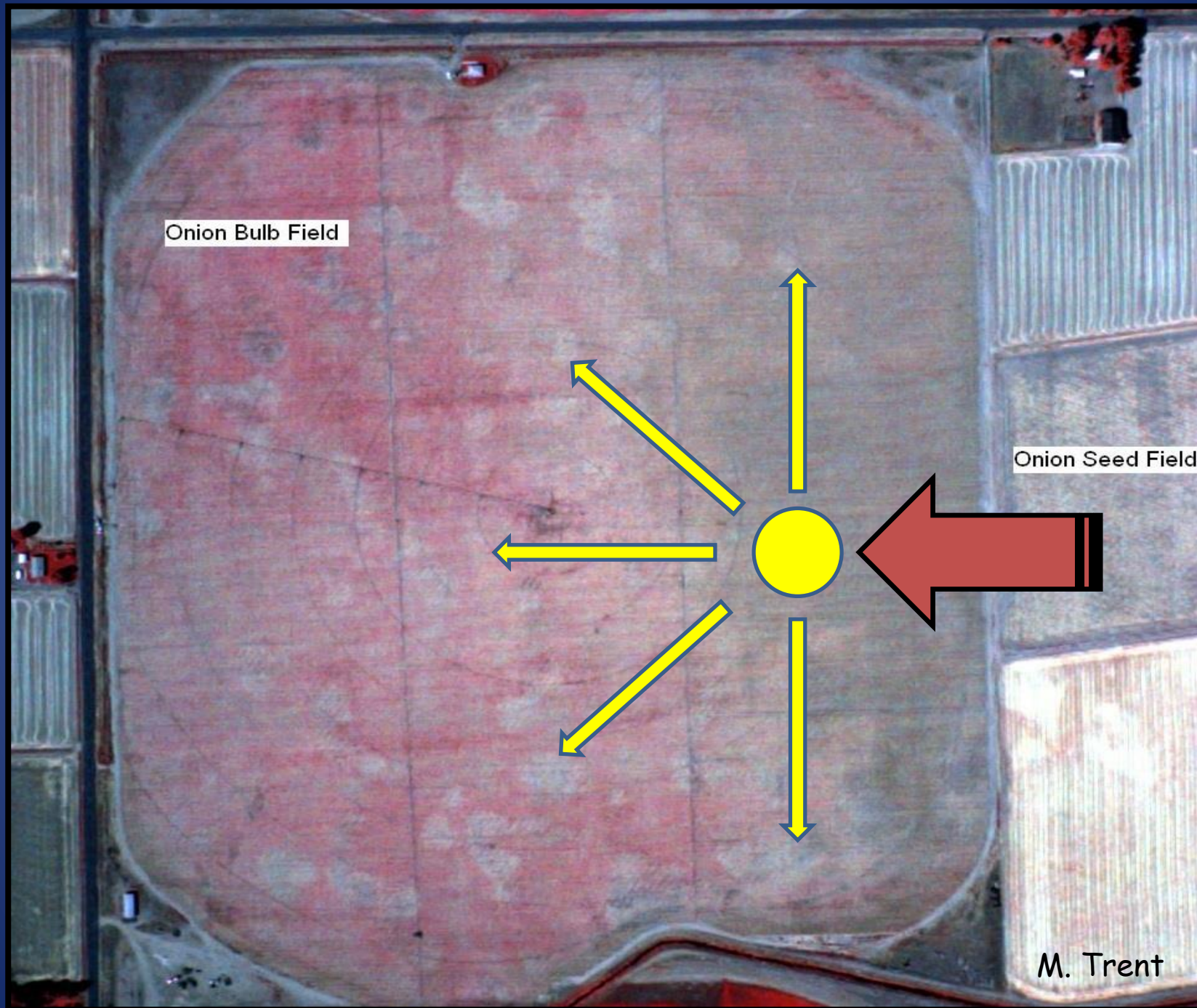
- Weeds
 - Burdock
 - Dandelion
 - Curly Dock
 - Prickly Lettuce
 - Green Foxtail
 - Shepherd's purse
 - Kochia
 - Russian Thistle





Volunteer Onions

- 2013 – many culls left in fields
- Spring 2014 Survey
 - 1000 – 1500 volunteers / acre
 - 80 – 100 thrips per volunteer
 - Volunteers – often infected with virus



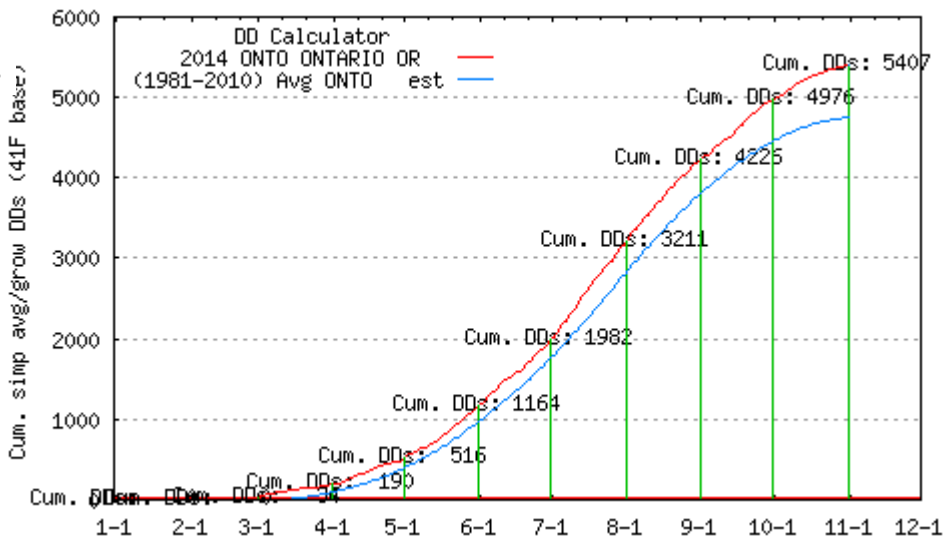
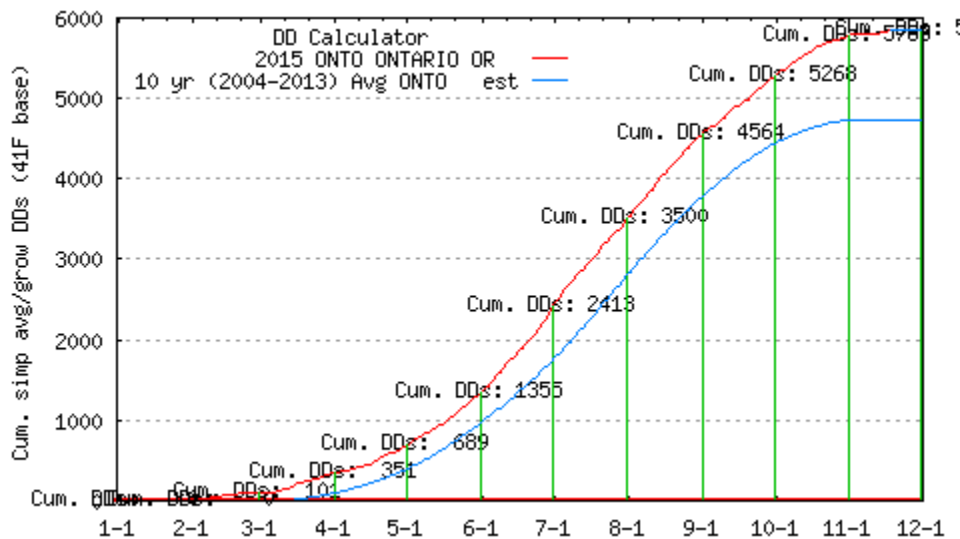
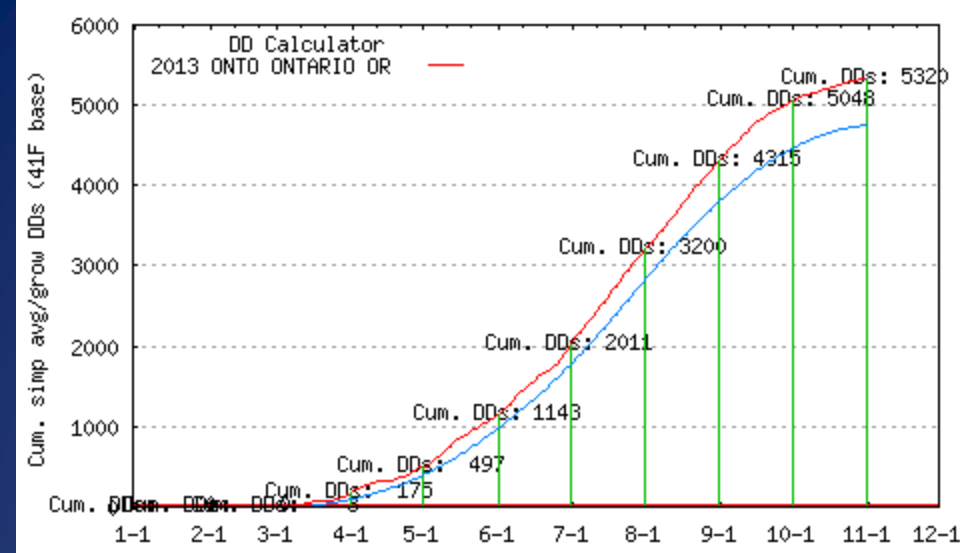
Onion Bulb Field

Onion Seed Field

M. Trent



2013



2014

2015

Onion Thrips Population Growth

	Number of Females		
Date	68 ⁰ F		
July 1	1		
July 8			
July 15			
July 22			
July 29			
August 5			
August 12			
August 19	210		
August 26			
September 2			
Number generations	1		

Onion Thrips Population Growth

	Number of Females		
Date	68 ⁰ F	77 ⁰ F	
July 1	1	1	
July 8			
July 15			
July 22			
July 29		165	
August 5			
August 12			
August 19	210		
August 26			
September 2		27,225	
Number generations	1	2	

Onion Thrips Population Growth

	Number of Females		
Date	68 ⁰ F	77 ⁰ F	86 ⁰ F
July 1	1	1	1
July 8			
July 15			63
July 22			
July 29		165	3,969
August 5			
August 12			250,047
August 19	210		
August 26			15,752,961
September 2		27,225	
Number generations	1	2	4

Factors Affecting Thrips Pressure

- Temperature
- Variety
 - Leaf color
 - Yellow-green, glossy – less attractive
 - Blue-green, waxy – more attractive
 - Plant structure
 - Open neck – less suitable
- Fertilization
- Plant vigor
- Nearby crops



Thrips and IYSV

- Thrips and virus stress the plant
- Damage accumulates over the season
- Thrips management – “race against time”

Insecticides

- Management – Not control
- Get the product to where the thrips are
- Resistance Management

Rotations

- Identify patterns of insecticides that would provide “best” thrips and IYSV management, thus producing “best” marketable yields
- Preserve long-term efficacy of insecticides



MOVENTO®

Net Contents:
1 Gallon

GROUP 23 INSECTICIDE

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

FOR ADDITIONAL PRECAUTIONARY STATEMENTS: See Inside Booklet.

For **PRODUCT USE** Information Call
1-866-99BAYER (1-866-992-2937)

For **MEDICAL AND TRANSPORTATION** Emergencies
ONLY Call 24 Hours A Day 1-800-334-7577

STOP - Read the label before use

Produced for:
Bayer CropScience LP
P.O. Box 12014, 2 TW Alexander Drive
Research Triangle Park, North Carolina 27709
MOVENTO is a registered trademark
©2011 Bayer CropScience
Product of Germany

US 79306989C 11/05/02C 09/1

Group
23

Group 5

Specimen Label

Dow AgroSciences

Radiant™ SC

Insecticide

© 2008 Dow AgroSciences LLC

For control or suppression of lepidopterous larvae (worms, caterpillars), dipterous leafminers, thrips, and certain psyllids in asparagus, bulb vegetables, cereal grains (except rice), cole crops, corn (field corn, sweet corn, popcorn), and leafy vegetables (lettuce, spinach, chard, collards, fruiting vegetables (tomato, pepper, and eggplant) and okra, herbs, leafy vegetables and leaves of root and tuber and legume vegetables, legume vegetables (succulent and dried beans and peas), mint, peanut, potatoes and tuberous and corn vegetables, root vegetables, soybeans, and strawberry.

Group	5	INSECTICIDE
Active Ingredient:		
iprodione: a mixture of (1R,4S)-isomers of 1-(4-oxo-2-oxo-1,3-dioxane-5-yl)-2-methyl-2-oxo-1,3-dioxane-5-carboxylic acid and (1R,4S)-isomers of 1-(4-oxo-2-oxo-1,3-dioxane-5-yl)-2-methyl-2-oxo-1,3-dioxane-5-carboxylic acid	98.23%	
Other Ingredients:	11.77%	
Total:	100.00%	

Contains 1 lb of active ingredient per gallon (120 g/gallon)

EPA Reg. No. 82719-546

**Keep Out of Reach of Children
CAUTION**

Precautionary Statements

Hazards to Humans and Domestic Animals

Causes Moderate Eye Irritation

Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco.

Personal Protective Equipment (PPE):

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

First Aid

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 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 the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-368-5744 for emergency medical treatment information.

Environmental Hazards

This product is toxic to aquatic invertebrates. Do not apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters. Do not apply where runoff is likely to occur. Do not apply when weather conditions favor drift from treated areas. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Apply this insecticide only as specified on the label.

This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area.

Notice: Read the entire label. Use only according to label directions. Before using this product, read **Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies** elsewhere on this label. If items are unacceptable, return at once unopened.


In case of emergency involving health or the environment involving this product, call 1-800-368-5744. If you wish to obtain additional product information, visit our web site at www.dowagrosciences.com.

Shake Well Before Use - Avoid Freezing

PULL HERE TO OPEN

RESTRICTED USE PESTICIDE
 TOXIC TO FISH, MAMMALS, AND AQUATIC ORGANISMS
 FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION, AND ONLY FOR THOSE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION.

GROUP 6 INSECTICIDE



Agri-Mek®

O.15EC

Miticide/Insecticide

Active Ingredient: Abamectin¹ 2.0%*

Other Ingredients: 98.0%

Total: 100.0%

¹CAS No. 65195-56-4 and No. 65195-55-3
*1 gal. contains 0.15 lb. abamectin

**KEEP OUT OF REACH OF CHILDREN.
WARNING/AVISO**

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

See additional precautionary statements and directions for use in booklet.

EPA Reg. No. 100-898 Product of China
EPA Est. 39578-TX-1 Formulated in the USA

SCP 898A-L2Q 0909
299248

1 gallon
Net Contents

syngenta®

Group
6


Group
1A

RESTRICTED USE PESTICIDE

Due to High Acute Toxicity to Humans.

For retail sale and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification. Direct supervision for this product requires the certified applicator to review federal and supplemental label instructions with all personnel prior to application, mixing, loading, or repair or cleaning of application equipment.

GROUP 1A INSECTICIDE



DuPont™

Lannate® LV

insecticide

Water Soluble Liquid
Contains 2.4 lbs active ingredient per gallon.

Active Ingredient	By Weight
Methomyl (S-methyl-N-(methylcarbamoyl)-D-thioester)	2.9%
Other Ingredients	97.1%
TOTAL	100%

EPA Reg. No. 352-384
EPA Est. No. _____

**KEEP OUT OF REACH OF CHILDREN
DANGER POISON**

PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand this label, find someone to explain it to you in detail.)

FIRST AID

This Product is an N-Methyl Carbamate insecticide.

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 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 INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for further treatment advice.

ATROPINE IS AN ANTIDOTE - SEEK MEDICAL ATTENTION AT ONCE IN ALL CASES OF SUSPECTED POISONING.

If poisoning symptoms appear (see POISONING SYMPTOMS), get medical attention.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-441-3657 for emergency medical treatment information.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER! FATAL IF SWALLOWED, CONTAINS METHOMYL, MAY CAUSE BLINDNESS.

CORROSIVE, CAUSES IRREVERSIBLE EYE DAMAGE.

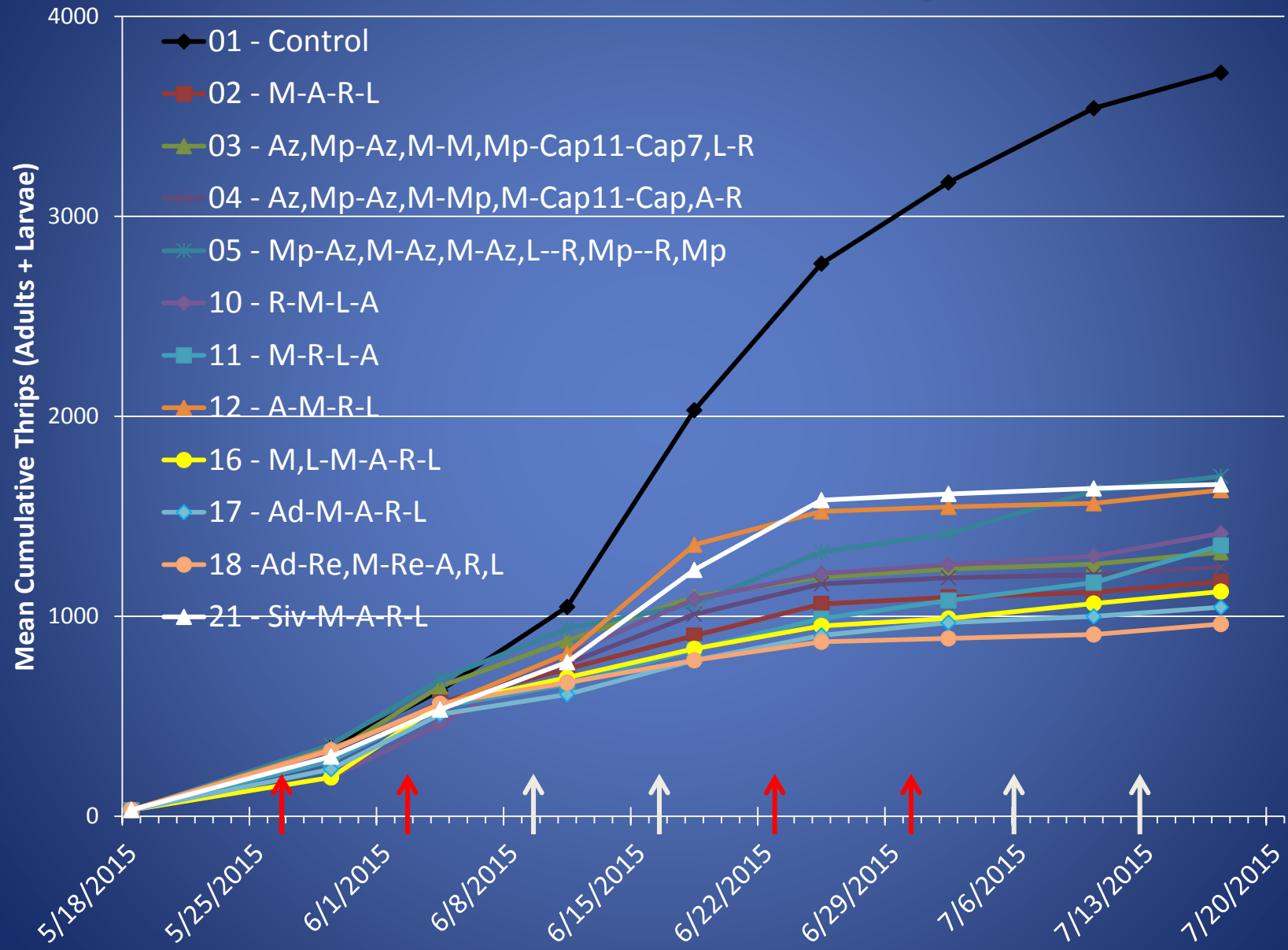
Do not get in eyes, or on clothing. Wear protective eyewear. Harmful if inhaled or absorbed through skin. Avoid contact with skin or breathing spray mist. Wash hands thoroughly with soap and water after handling.

("PRECAUTIONARY STATEMENTS" Continued on next page)

Treatment Sequences

Date	26-May	2-Jun	9-Jun	16-Jun	23-Jun	30-Jun	6-Jul	13-Jul
Treatment	1st	2nd	3rd	4th	5th	6th	7th	8th
1	Control	-	-	-	-	-	-	-
2	Movento	Movento	Agri-Mek	Agri-Mek	Radiant	Radiant	Lannate	Lannate
3	Mpede+ Azadirect	Azadirect + Movento	M-Pede + Movento	Captiva(11)	Captiva(7) + Lannate	Captiva(7) + Lannate	Radiant	Radiant
4	Mpede+ Azadirect	Azadirect + Movento	M-Pede + Movento	Captiva(11)	Captiva(7) + Agri-Mek	Captiva(7) + Agri-Mek	Radiant	Radiant
5	Mpede+ Azadirect	Azadirect + Movento	Azadirect + Movento	Lannate	-	Radiant + M-Pede	-	Radiant + M-Pede
10	Radiant	Radiant	Movento	Movento	Lannate	Lannate	Agri-Mek	Agri-Mek
11	Movento	Movento	Radiant	Radiant	Lannate	Lannate	Agri-Mek	Agri-Mek
12	Agri-Mek	Agri-Mek	Movento	Movento	Radiant	Radiant	Lannate	Lannate
16	Movento + Lannate	Movento	Agri-Mek	Agri-Mek	Radiant	Radiant	Lannate	Lannate
17	Movento (Admire)	Movento	Agri-Mek	Agri-Mek	Radiant	Radiant	Lannate	Lannate
18	Movento + Requiem (Admire)	Movento + Requiem	Agri-Mek + Requiem	Agri-Mek + Requiem	Radiant	Radiant	Lannate	Lannate
21	Movento (Sivanto)	Movento	Agri-Mek	Agri-Mek	Radiant	Radiant	Lannate	Lannate

Cumulative Thrrips



Better Performing Programs

Date	26-May	2-Jun	9-Jun	16-Jun	23-Jun	30-Jun	6-Jul	13-Jul
Treatment	1st	2nd	3rd	4th	5th	6th	7th	8th
2	Movento	Movento	Agri-Mek	Agri-Mek	Radiant	Radiant	Lannate	Lannate
3	Mpede+ Azadirect	Azadirect + Movento	M-Pede + Movento	Captiva(11)	Captiva(7) + Lannate	Captiva(7) + Lannate	Radiant	Radiant
4	Mpede+ Azadirect	Azadirect + Movento	M-Pede + Movento	Captiva(11)	Captiva(7) + Agri-Mek	Captiva(7) + Agri-Mek	Radiant	Radiant
10	Radiant	Radiant	Movento	Movento	Lannate	Lannate	Agri-Mek	Agri-Mek
16	Movento + Lannate	Movento	Agri-Mek	Agri-Mek	Radiant	Radiant	Lannate	Lannate

What Works?

- Mid season / bulb initiation - critical window
- Radiant (5)
- Lannate (1A)
- Movento (23)
- AgriMek (6)-Good early or late season choice
- Azadirect + MPede
- Good Adjuvants/Surfactants
- pH



Things to Consider

- Control volunteers & weeds
- Effects on thrips pressure
 - Temperature
 - Variety
 - Onion stress
- Scout often
 - Before & After applications
- Begin applications before thrips populations spike
- Systemic / Translaminar Insecticides
- Use appropriate adjuvants



Adjuvants?

- Do not tank mix BRAVO with insecticides
- Why?
- Spreader/Sticker Adjuvant
- Penetrating Adjuvants

Some Optimum pH Levels

- Radiant pH 6.0 – 8.0
- Agri-Mek pH 6.0 – 7.0
- Aza-Direct pH 5.5 - 6.5
- Lannate pH 5.0 – 7.0
- Vydate pH 5.0
- Movento pH 6.0 – 7.0
- Exirel pH 5.0

Minimizing Risk of Resistance

- Only using insecticides when necessary
 - Monitor before and after applications
- Correct Use
 - Recommended application rate
 - Avoid low rates with marginal pest control
 - Thorough coverage
- No more than 2 applications of any insecticide
- Rotate different Modes of Action

Acknowledgments

- Amber Parks, Jessica Roland, Ian Trenkel, Kay Hadley, Emily Fisher, Jillian Nielsen
- Idaho-Eastern Oregon Onion Research Committee
- Industry Support

