



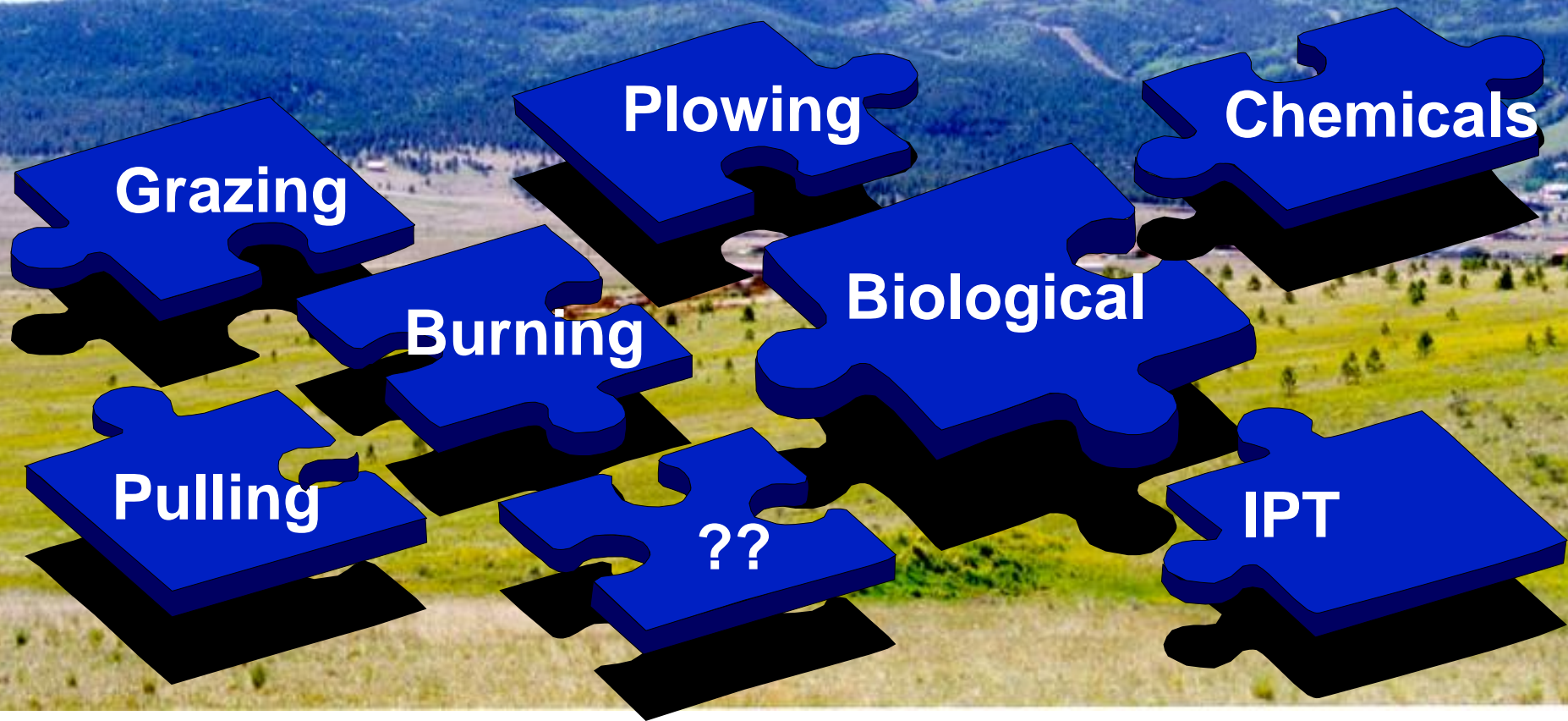
# Brush Management on Rangelands

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Drs. Charles Hart, Dow Agro Sciences  
and

Kirk McDaniel, Prof. Emeritus, NMSU

# Brush Management on Rangelands





# Brush Management on Rangelands

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A little bit about herbicides

Why we control brush and weeds

What happens after control

Recent findings

# How to decide if, when, where or why to spray





# Keys to Decision Making

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- Knowing your land and what you want
- Brush type
- Overstory/understory relationships
- Appreciating the time element
- Visualizing desired outcome

# Herbicide Activity

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**Creosotebush**

**Tebuthiuron**



**Soil**

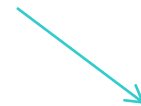


**Mesquite**

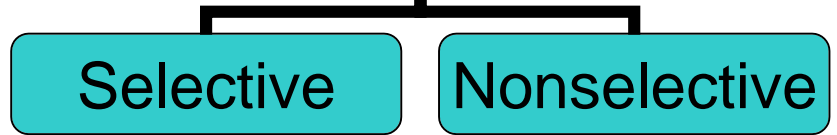
**Clopyralid**

**Aminopyralid**

**Triclopyr**



**Foliar**



## Trade Name

## Chemical Name

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- Creosotebush

- Spike

- Tebuthiuron

- Mesquite

- Transline
- Milestone
- Garlon

- Clopyralid
- Aminopyralid
- Triclopyr

- NEW –  
Sendero



## Trade Name

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- Creosotebush

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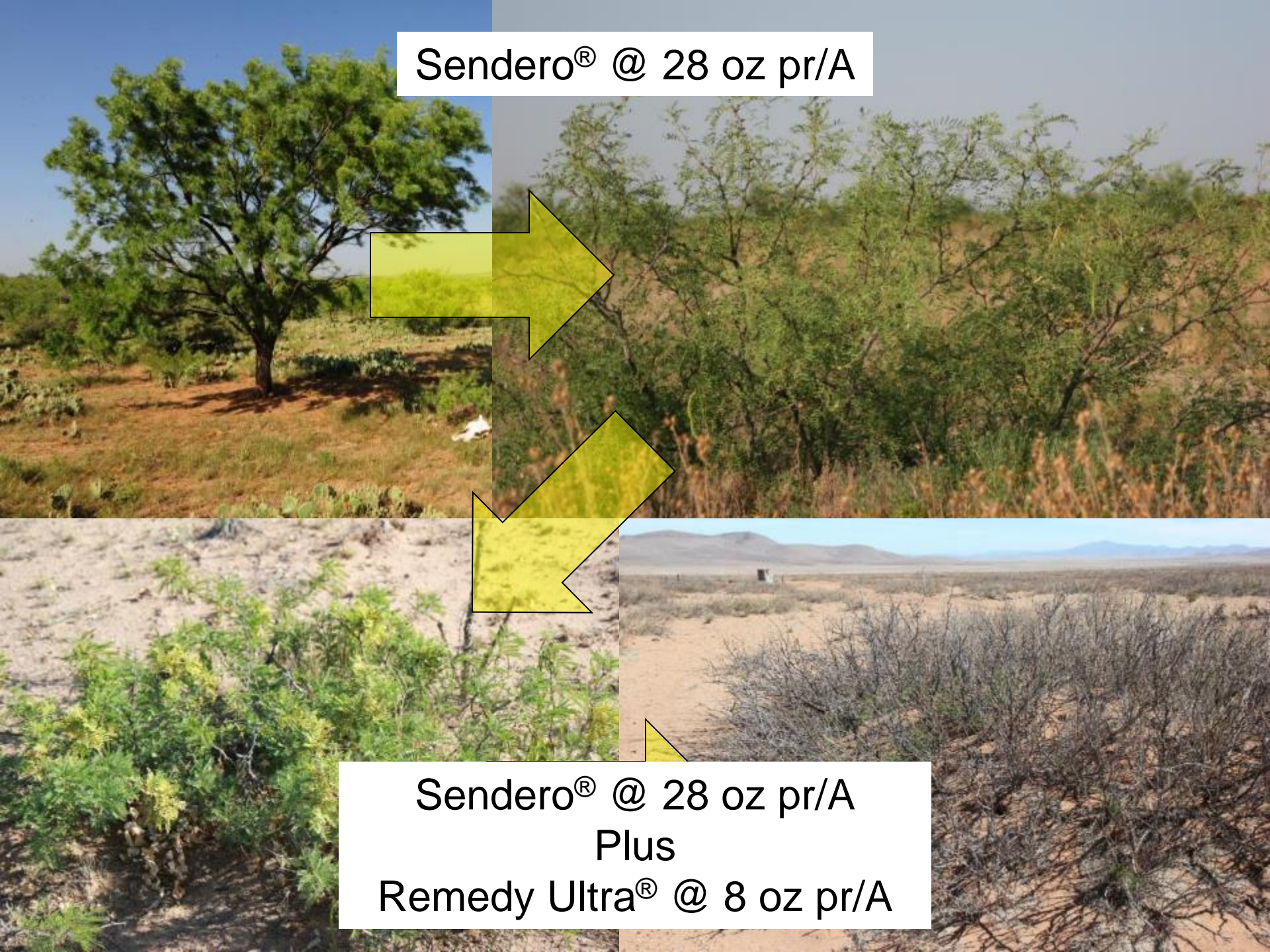
- Transline
- Milestone
- Garlon

- Clopyralid
- Aminopyralid
- Triclopyr

- NEW –  
Sendero



Sendero® @ 28 oz pr/A



Sendero® @ 28 oz pr/A  
Plus  
Remedy Ultra® @ 8 oz pr/A

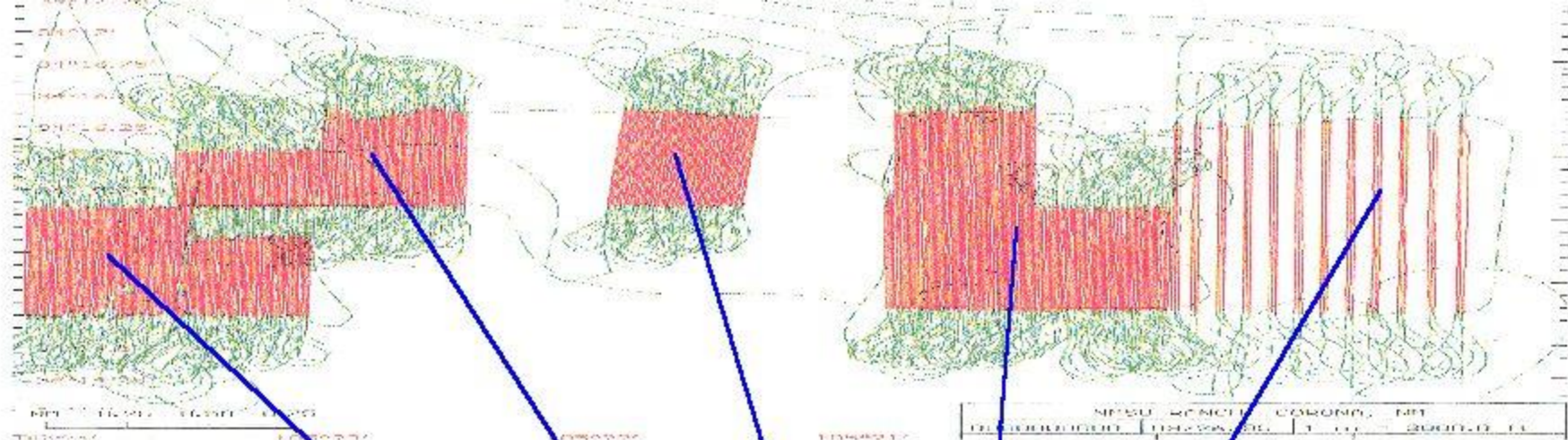




# GPS & GIS systems







- Juniper Type**
- cleared
  - invading
  - woodland

- Tebuthiuron Application**
- strip
  - total

# Corona Ranch

# Future – With new technology and innovation

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- Drones
- Robotics
- More precise spraying devices
- New herbicides
- Etc.





- U.S. FAA approves agricultural spraying with drones







# Why?







# Many Reasons Why

- Competition with desirable forage
- Minimize soil-water use and enhance watershed condition
- Eliminate a nuisance plant problem
- Create better wildlife habitat
- Restore historic plant communities and condition
- Increase land value
- Improve land appearance.....







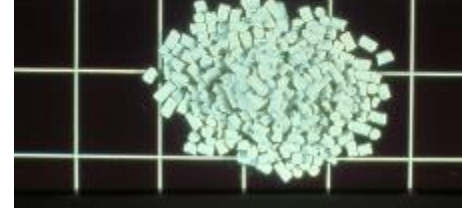
# Creosotebush and mesquite spraying

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Broke Tank Brush Control A  
December 19, 2000



# Study 1- Creosotebush



## - 20 yr. Response to Control

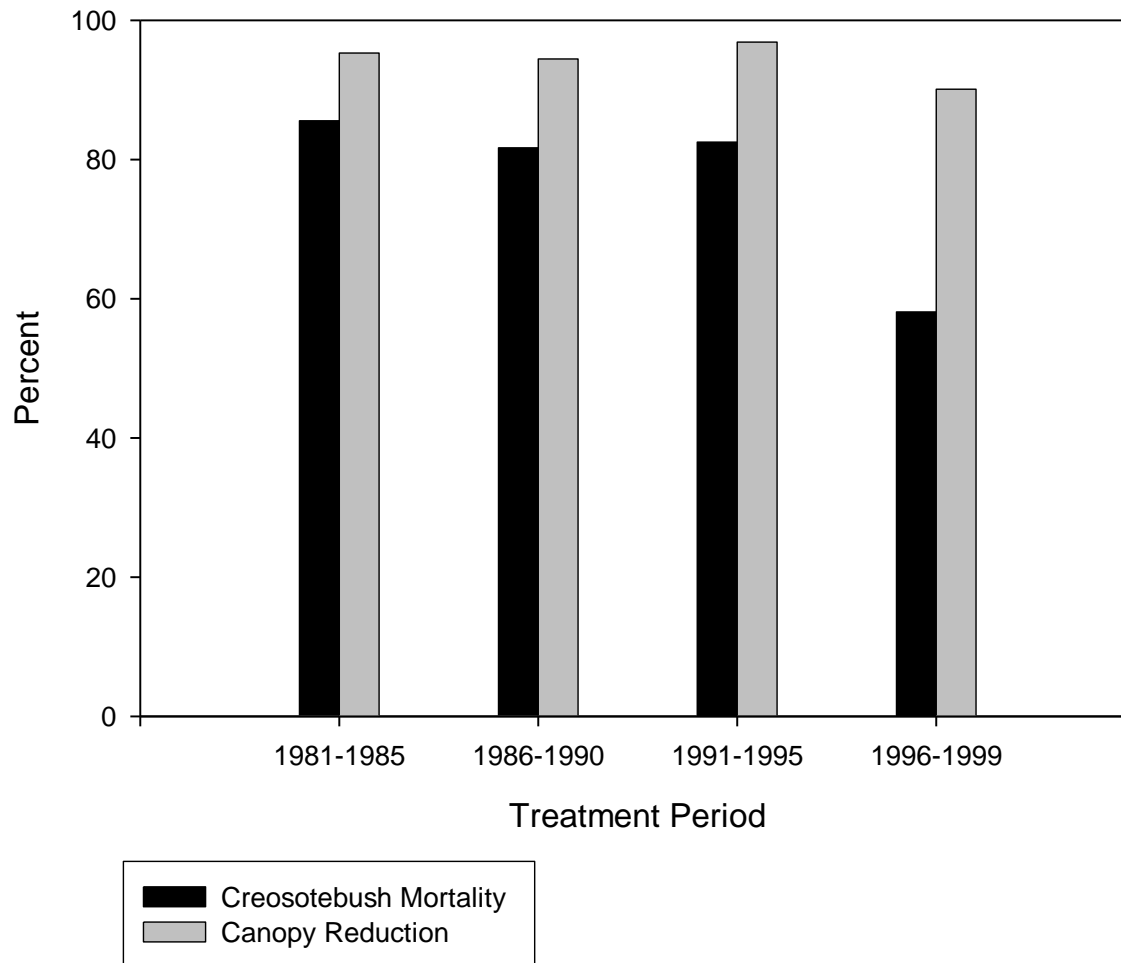
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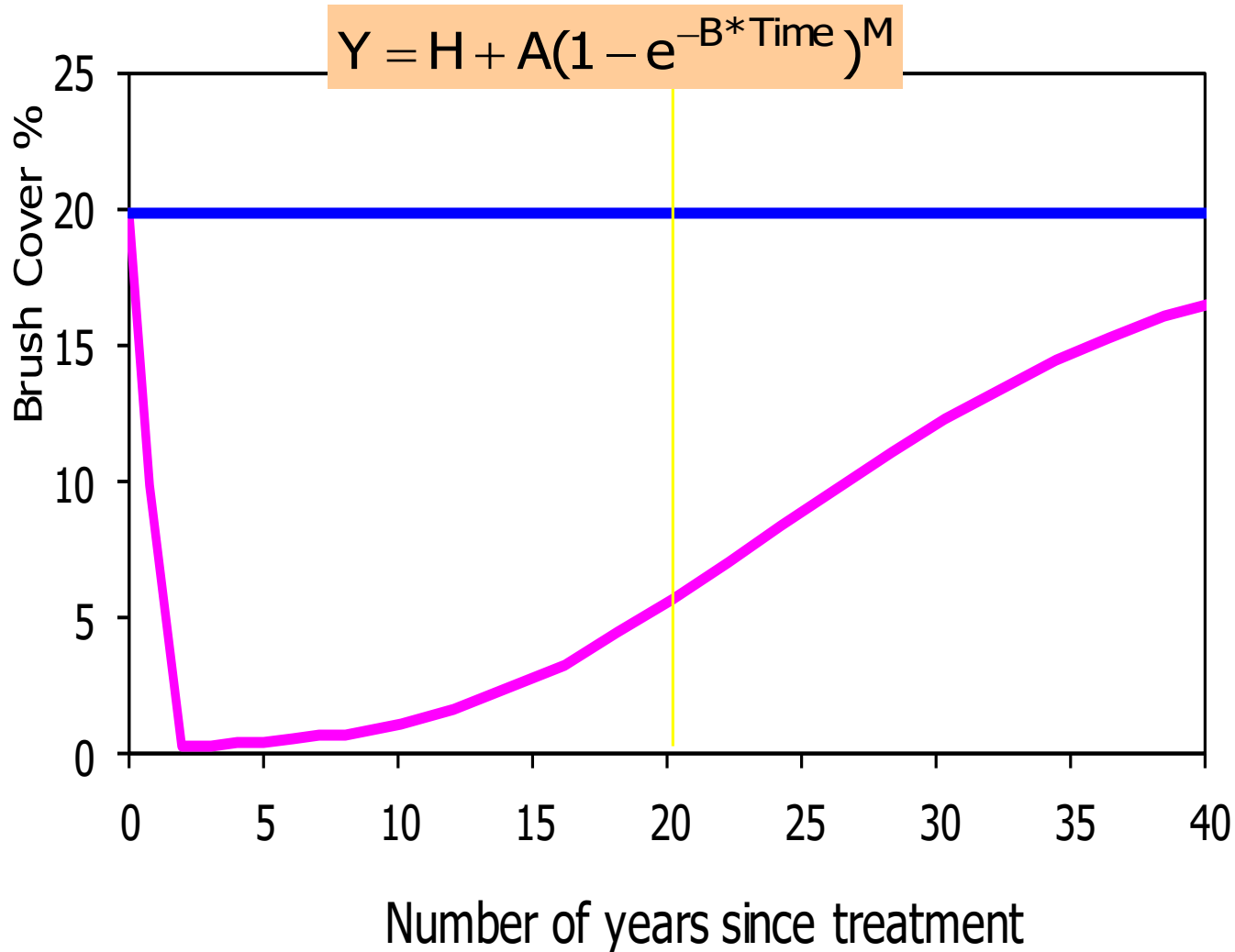
- 1981 to 2000
- 68 sites and 135,000 acres treated in Las Cruces
- 23 sites and 32,000 acres in Socorro
- Spike @ 0.5 lb/ac

# Creosotebush mortality – Long term average ~80%

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# Cresotebush Cover Change Through Time after Spraying





# Creosotebush / understory response

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untreated



2 yrs



8 yrs



# Mesquite - control in arid environments is a challenge

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Honey



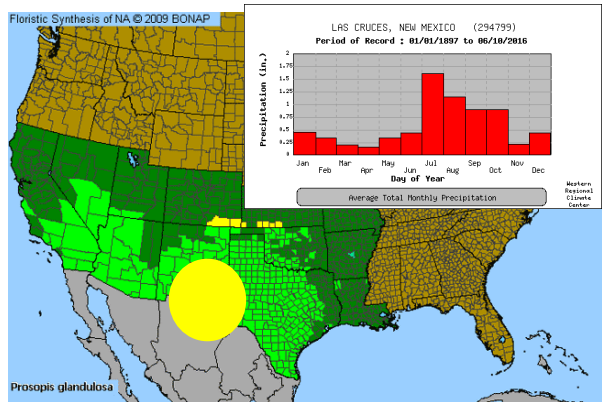
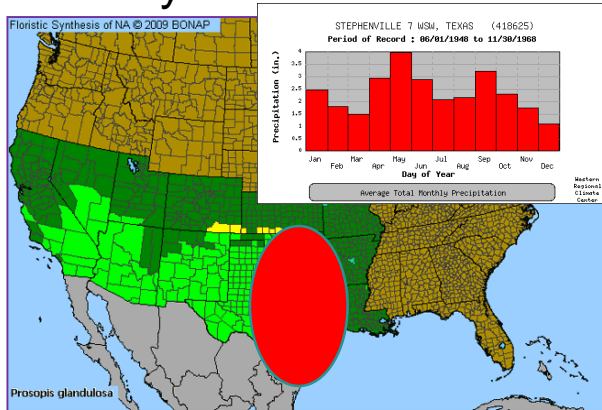
Toreyanna or Western honey

Velvet

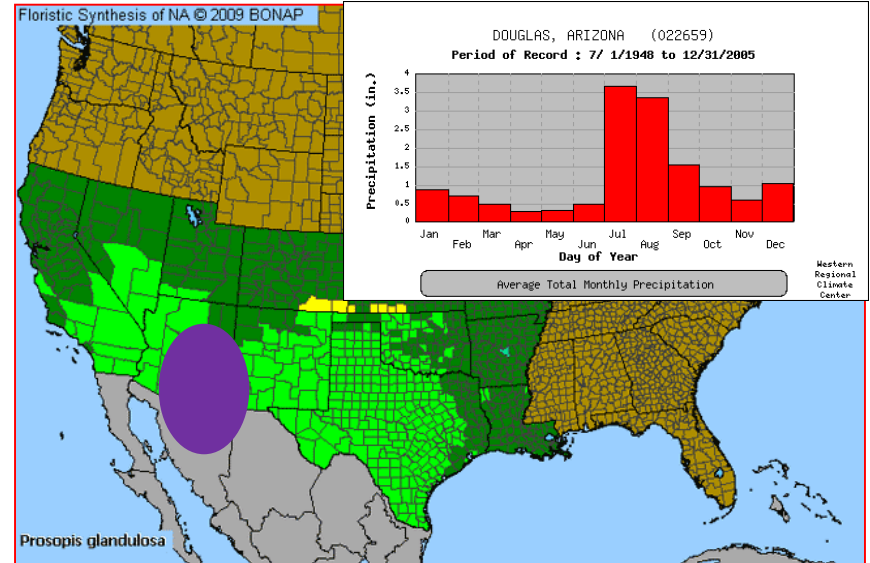


# Mesquite varieties – Distribution and Rainfall pattern

## Honey



## Velvet



Torreyanna or Western honey



# Standard guidelines for spraying

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- Plants like mesquite must be sprayed when the herbicide will best be translocated to the root and basal meristem region.
- Timing of application has been touted as the key to successful control.



## Optimal timing or spray window

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- 45 to 90 days after bud break  
(about late May through early July)
- Soil temp. @ 12 to 18 inch depth > 75 F
- Healthy dark green full foliage to insure herbicide absorption
- Avoid damage to foliage by recent rains, insects, hail, drought etc.



# Stressed vs non-stressed canopy

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6-15-2009



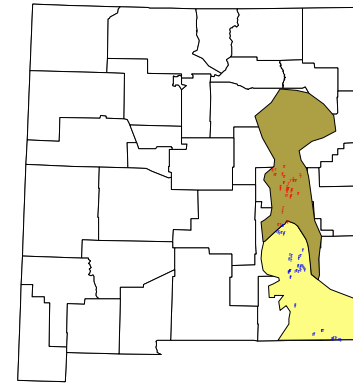
6-15-2010



# Study 2 - Mesquite response to spraying

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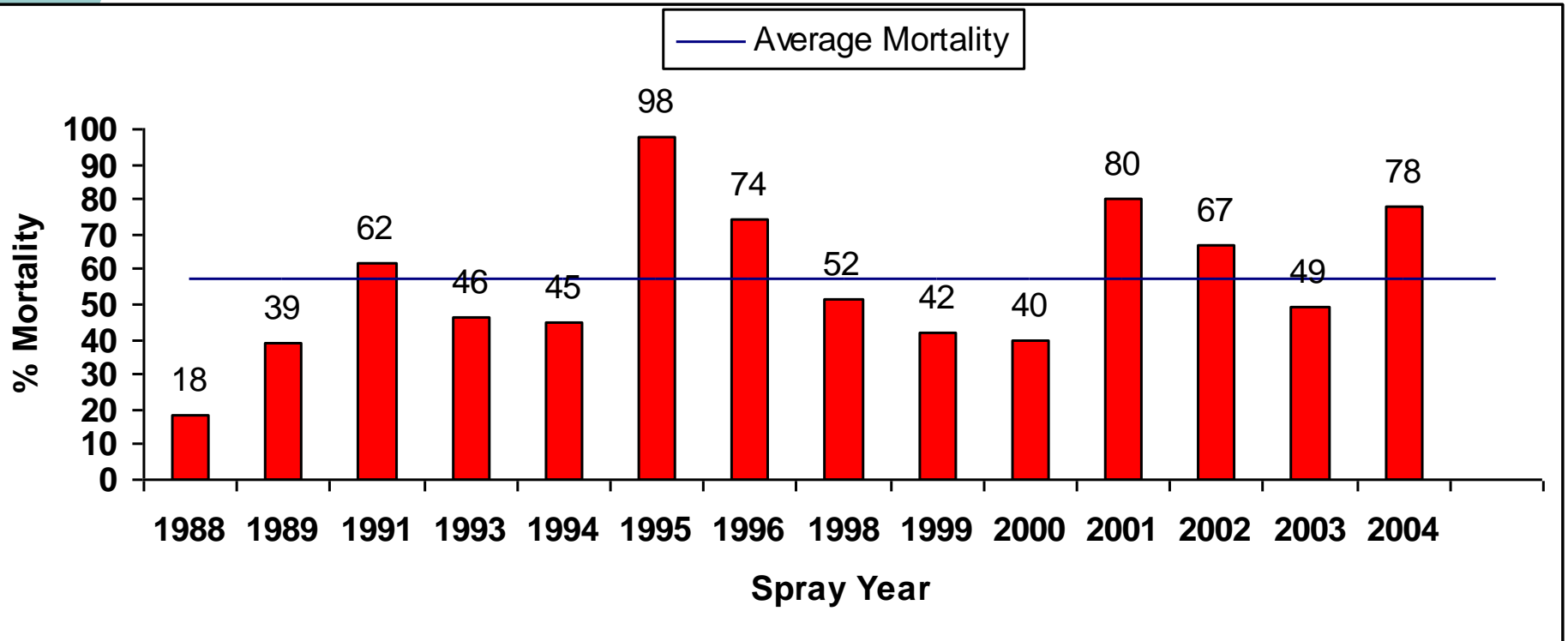
- 1988 to 2004
- Mesquite was aerially sprayed at 60 different sites





# Mesquite Mortality by Year Sprayed

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# 20 yrs of mesquite control with Clopyralid + Triclopyr

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<b>Precipitation receive from Jan 1- June 1</b>	<b>No. of sites sampled</b>	<b>Low growing multi-stemmed mesquite</b>	<b>Upright fewer stemmed mesquite</b>
		% AM	% AM
< 2 inches	24	43	38
2-3 inches	14	45	66
> 3 inches	21	55	88

# Arizona Border Project 2014-2016



- 2016 June Mesquite
- 2015 August Mesquite
- 2015 June Mesquite
- 2014 September Mesquite

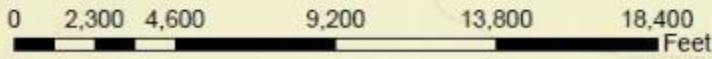
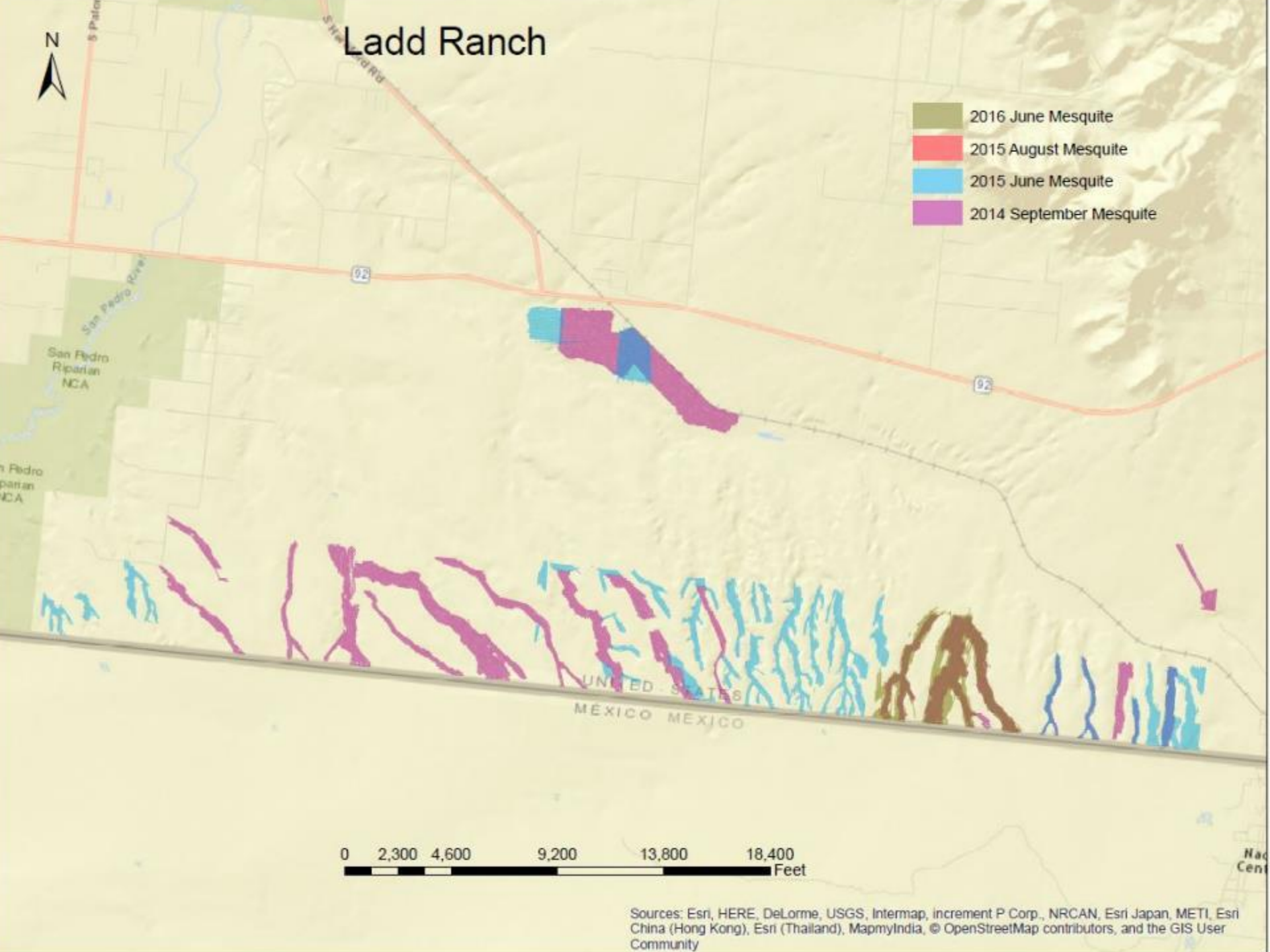


Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

# Ladd Ranch



- 2016 June Mesquite
- 2015 August Mesquite
- 2015 June Mesquite
- 2014 September Mesquite



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# Preliminary- Mesquite Control Results

Arizona Border Project Mesquite Applications			
Initial Spray	Second Spray	Average	
2014 Sep	none	10	n=4
2015 Jun	none	65	n=2
2015 Aug	none	53	n=1
2016 Jun	none	53	n=1
2014 Sep	2015 Jun	66	n=5
2014 Sep	2015 Aug	57	n=4
2014 Sep	2016 Jun	90	n=1
	Average 2015-16	64	







