

“What’s New from Industry: California Land Management Herbicide Update”

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What's New?

- Chlorsulfuron 75
- Ballast™
- Solano ™
- Esplanade™ Sure
- TerraVue™
- Sapphire™

Disclaimer: I will attempt to discuss Land Management products outside the Corteva line in a non-partisan format, limited to the information provided by those companies. Discussion of Corteva products should be considered partisan because that's my job!



Alligare is Expanding its Portfolio with 3 New Solutions for the California Transportation & Energy Market Segments

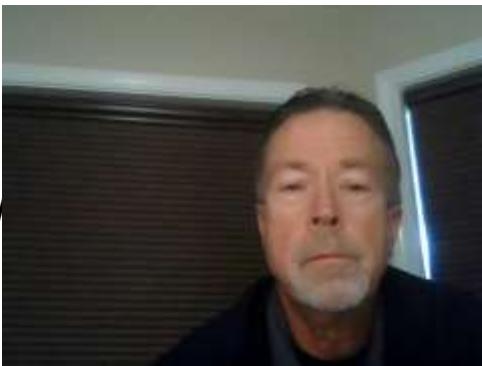


Chlorsulfuron 75

- 75% DF formulation
 - Chlorsulfuron - Group 2, ALS Inhibitor
- Highly Selective pre & post emergent activity
 - Recommended Markets: Transportation & Energy and Range & Pasture
 - Provides long-lasting weed control while promoting the growth of desirable grasses
 - Broadens the spectrum of control in bare-ground settings
- Low use rates of $\frac{1}{4}$ - 3 oz/A
- Precipitation is required to optimize results for preemergence control
- Fall applications can decrease populations of tough-to-control weed species the following spring



AVAILABLE NOV



BALLASTTM

- SC formulation with two modes of action
 - Imazapyr + Flumioxazin
 - Imazapyr - Group 2, ALS Inhibitor
 - Flumioxazin - Group 14, PPO Inhibitor
- “Hard” bare-ground product
 - Not recommended for areas adjacent to desirable species
 - Do not apply within root zone of susceptible species
- Long-lasting control of 235 annual, biennial and perennial weeds and brush
- Use rates of 32 – 48 fl. oz/A
 - 48 oz/A equal to 32 oz of Imazapyr 4 + 12 oz Flumioxazin
- Glyphosate recommended to aid burn-down of existing vegetation



AVAILABLE 2023



SOLANO™

- 39.6% SC formulation of Sulfentrazone
 - Sulfentrazone - Group 14, PPO Inhibitor
- Provides extended preemergence and postemergence activity
 - 120 – 300 day half-life
 - Effective against species that have developed resistance against ALS & PSII inhibitors and synthetic auxin herbicides
- Solano will only be labeled in CA and surrounding states and will be available for non-crop use only
- Use rates of 4 – 12 fl. oz/A
- Precipitation is required to optimize results for preemergence control



AVAILABLE 2023



Esplanade™ Sure

Envu (formerly Bayer Environmental Sciences)

- Esplanade™ Sure (indaziflam and rimsulfuron)
 - an easy-to-use premix herbicide that manages difficult-to-control weeds in bareground sites.
 - It also provides pre- and post-emergent control in non-crop areas.
 - Rate range is 3.5 to 6 oz/acre with an average rate of 4.5 oz/acre.
 - Packaged in a 90 oz bottle (4 x 90 oz bottle).



TerraVue®



TerraVueHerbicide.com

- TerraVue is a combination of Rinskor® active and aminopyralid (AKA Milestone®)
- Formulated as a wettable granule (WG)
- Both actives are Reduced Risk pesticides
- Together: Pre- and Post-emergent activity on 80+ weeds
- At 5.7 oz rate, roughly equal to 13+ oz Milestone

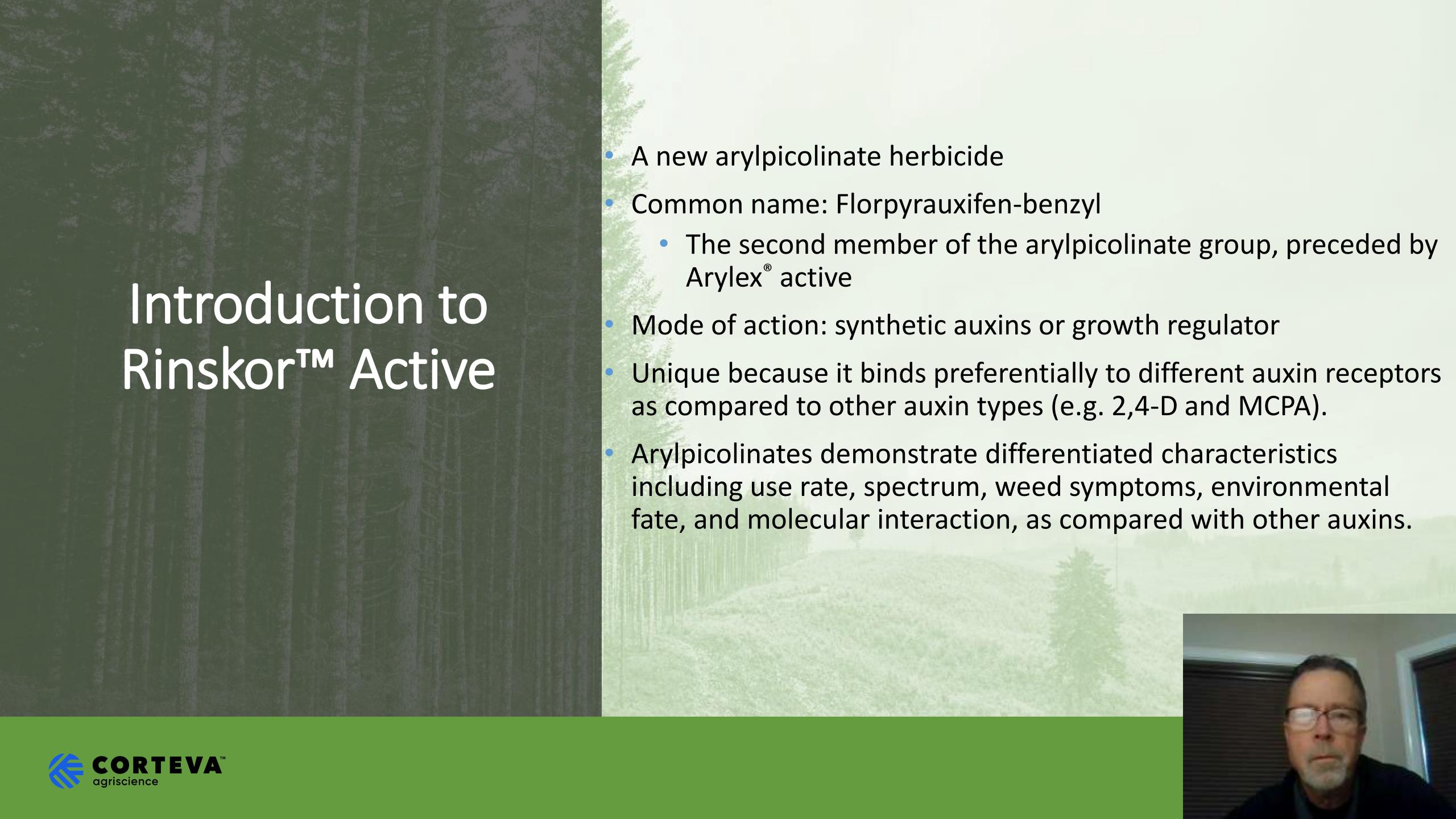


TerraVue®



TerraVueHerbicide.com

- Woody plant activity ideally combined with triclopyr
- Weed Spectrum expanded & differentiated beyond Milestone
- Not 2,4-D, not dicamba
- Currently labeled for non-crop, ROW and range & pasture (CA pending)



Introduction to Rinskor™ Active

- A new arylpicolinate herbicide
- Common name: Florpyrauxifen-benzyl
 - The second member of the arylpicolinate group, preceded by Arylex® active
- Mode of action: synthetic auxins or growth regulator
- Unique because it binds preferentially to different auxin receptors as compared to other auxin types (e.g. 2,4-D and MCPA).
- Arylpicolinates demonstrate differentiated characteristics including use rate, spectrum, weed symptoms, environmental fate, and molecular interaction, as compared with other auxins.



Rinskor™ Active

O Synthetic Auxins

Pyridine-carboxylic acids

Benzoic acids

Phenoxy-carboxylic acids

Quinolinecarboxylic acids

Others

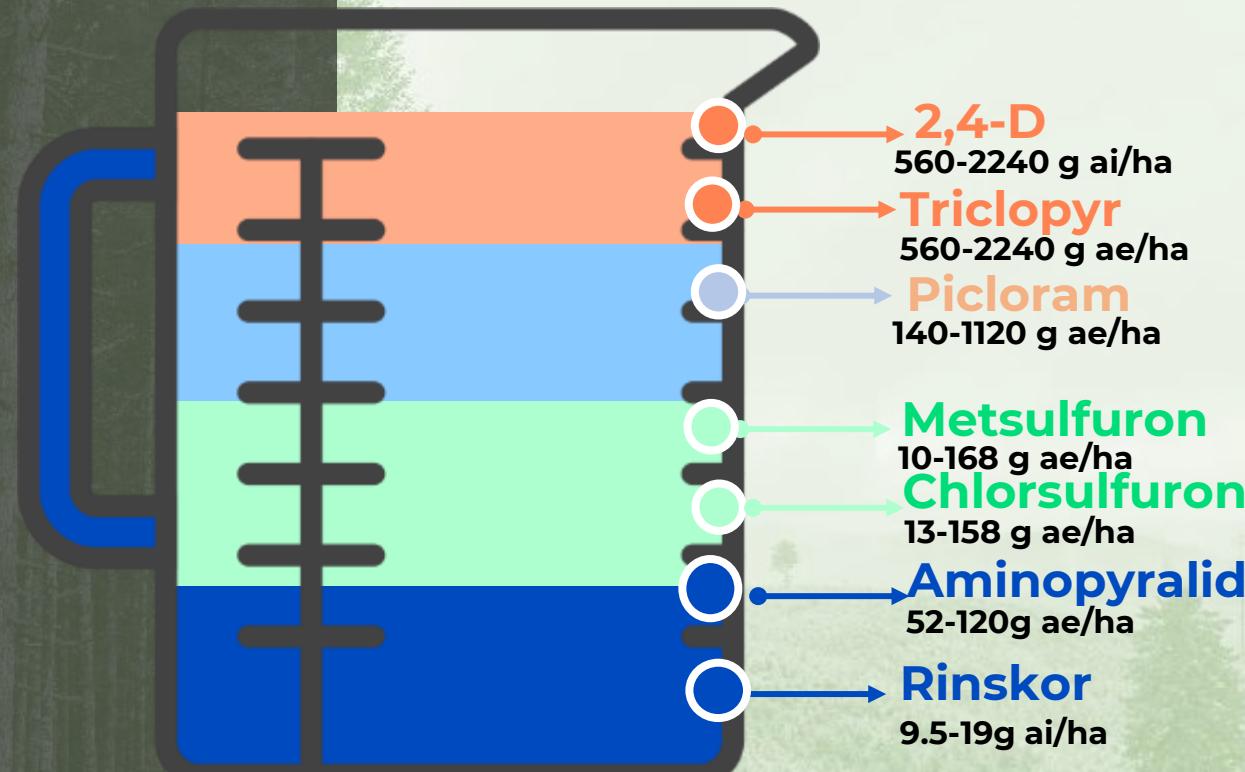
Arylpicolinates

Rinskor™
active

Arylex™
active



Rinskor™ Active Comparative Use Rates



Current Forestry Research Activity and Results

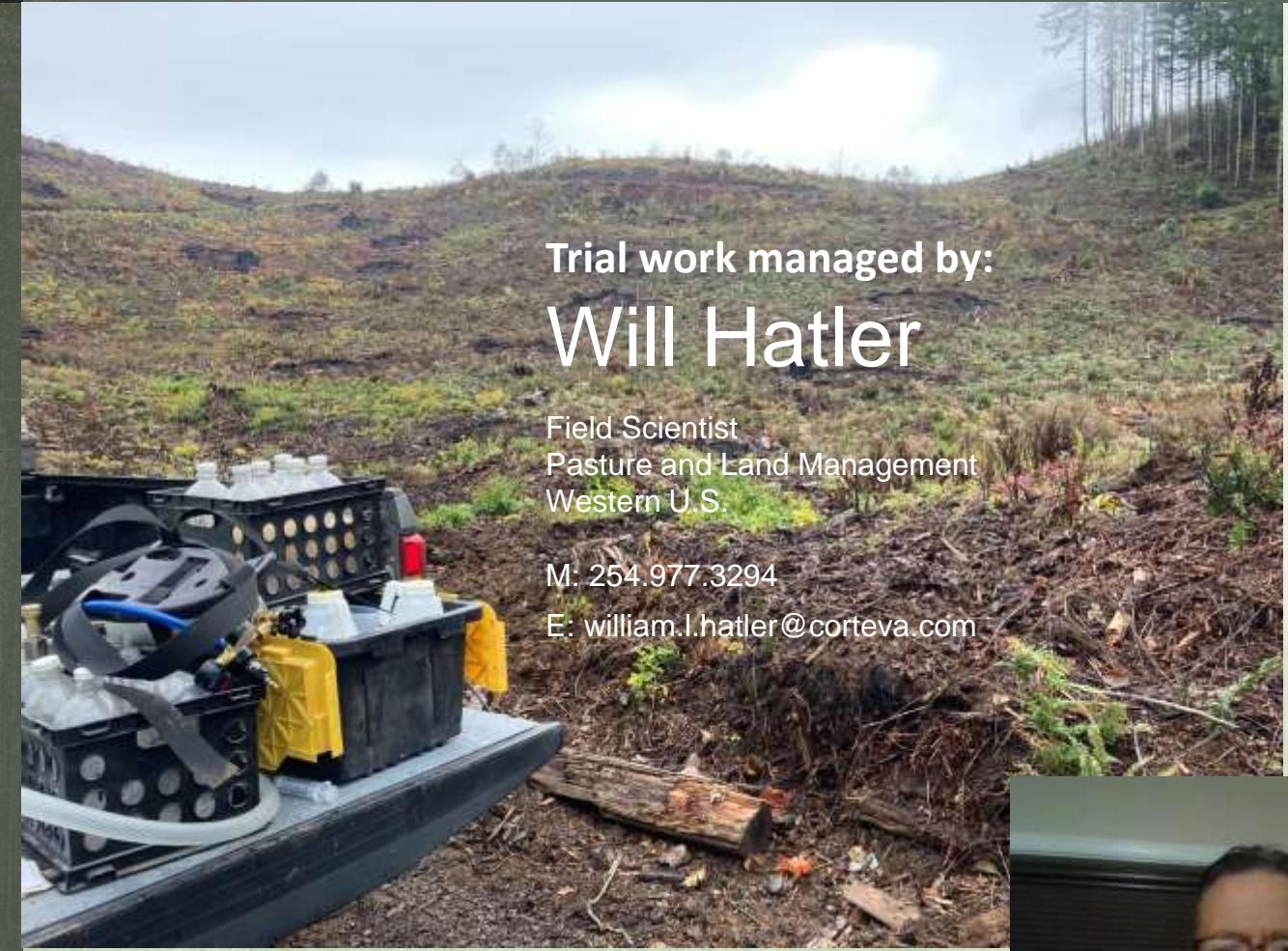
TerraVue® Herbicide site prep

- 2020 – 5 sites in CA focused on tank mix data collection
- 2021 – 7 sites in CA, OR, WA, ID focused on specific data needs for registration

Sapphire® Herbicide site prep

- 2020 – 2 sites in CA
- 2021 – 3 sites in CA, 2 sites in OR

TerraVue and Sapphire are not currently registered for use in forestry applications



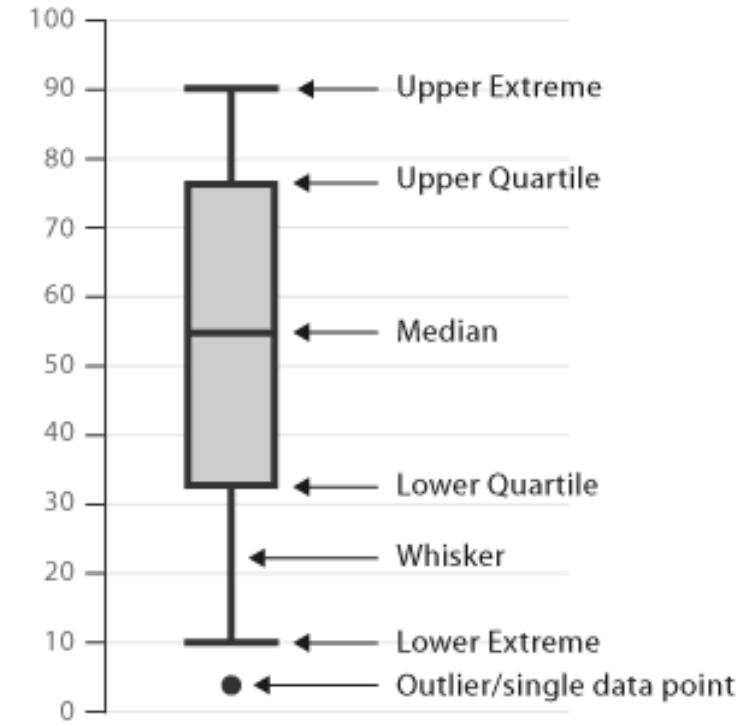
**Trial work managed by:
Will Hatler**

Field Scientist
Pasture and Land Management
Western U.S.

M: 254.977.3294
E: william.l.hatler@corseva.com

Box plot refresher

Scale

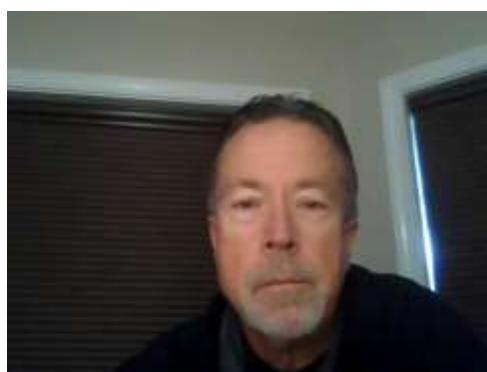
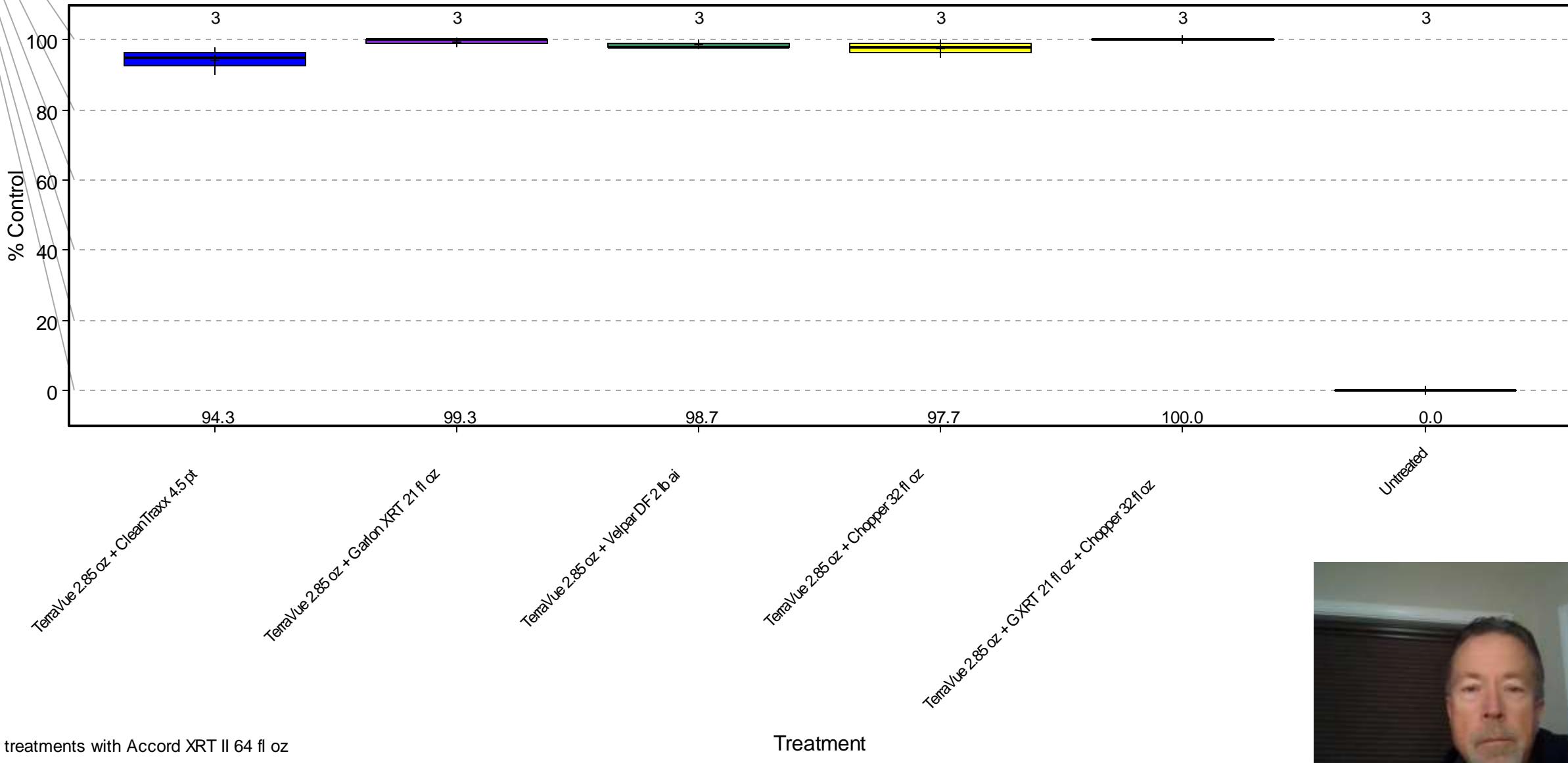


2020 TerraVue Forestry Trials

Deerbrush ceanothus % Control - 18 to 26 WAA

NA20T8B014H-WEW042

Mean values below box. Number of observations above box

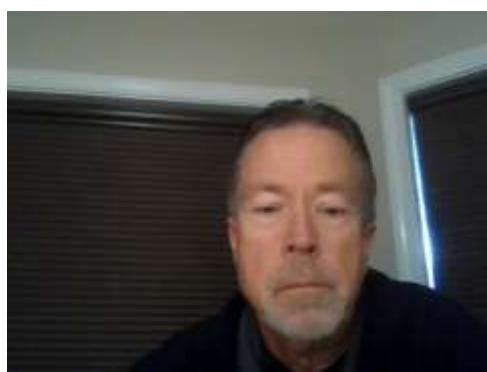
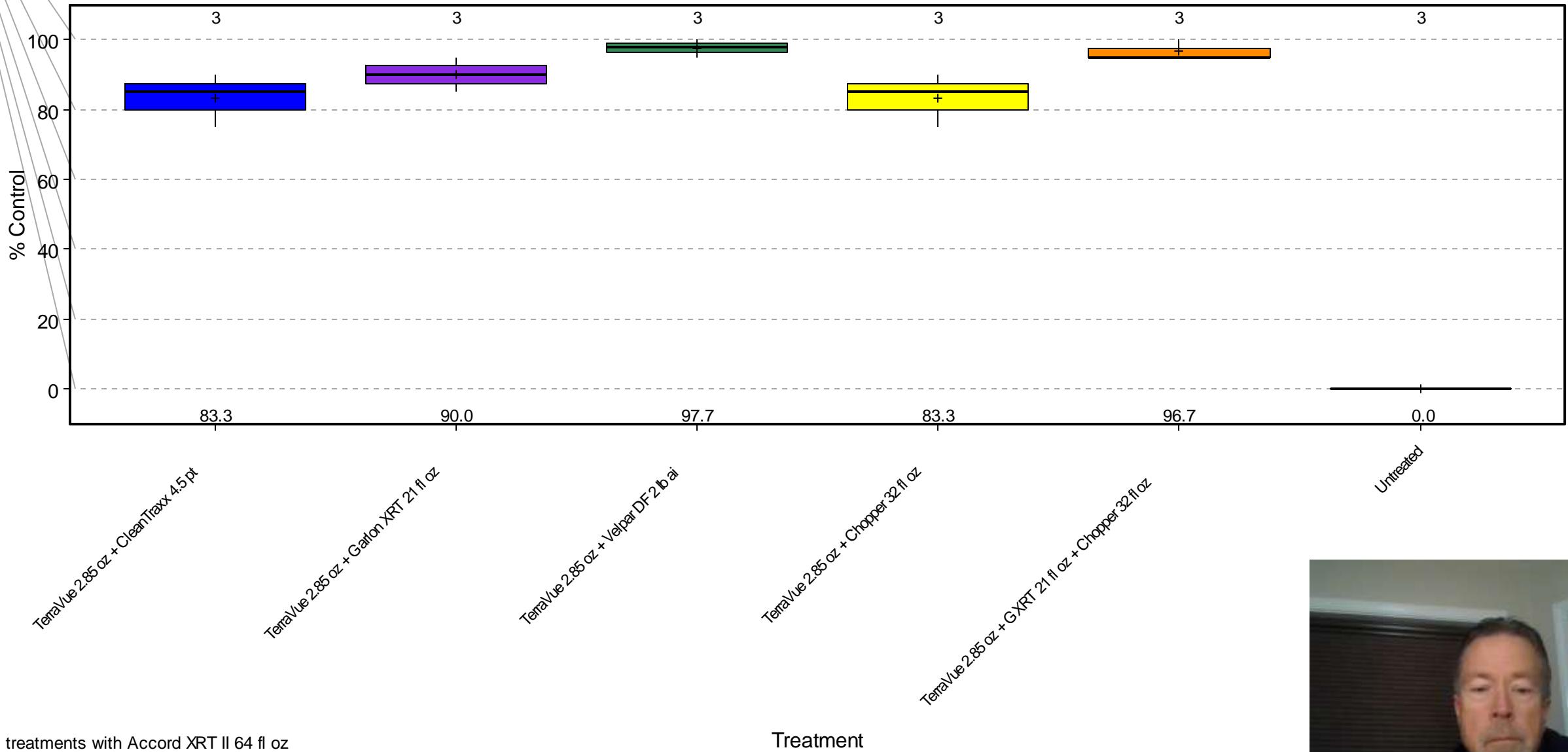


2020 TerraVue Forestry Trials

Lemmons ceanothus % Control - 18 to 26 WAA

NA20T8B014H-WEW041

Mean values below box. Number of observations above box

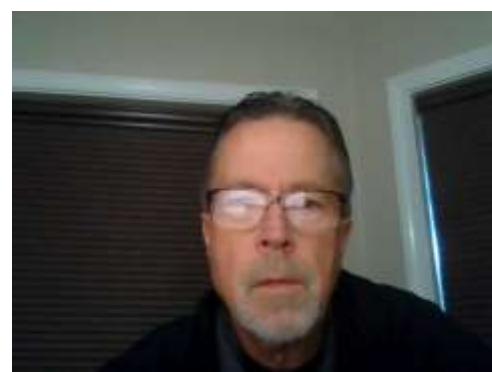
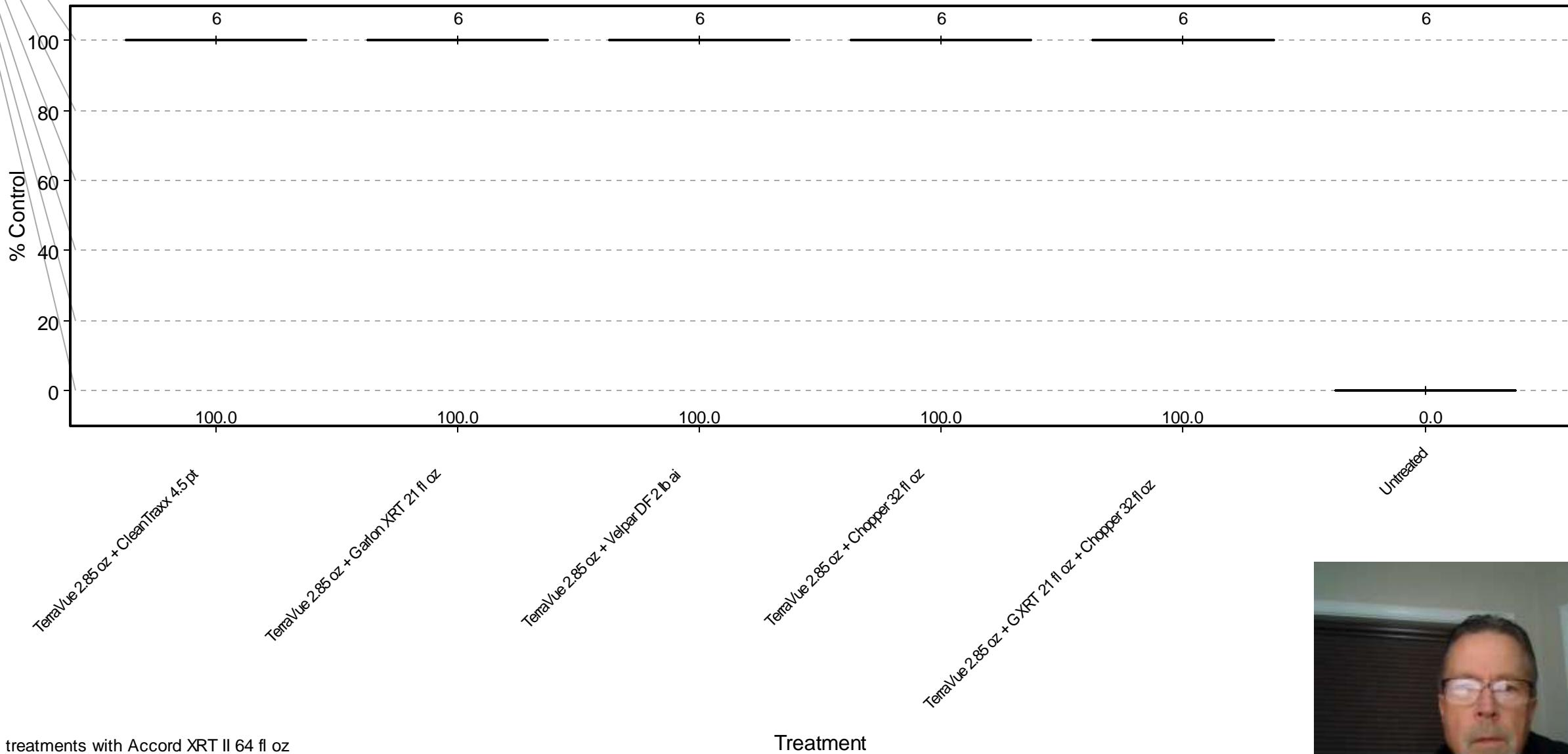


2020 TerraVue Forestry Trials

Minerfts lettuce % Control - 15 to 17 WAA

NA20T8B014H-WEW041, NA20T8B014H-WEW042

Mean values below box. Number of observations above box

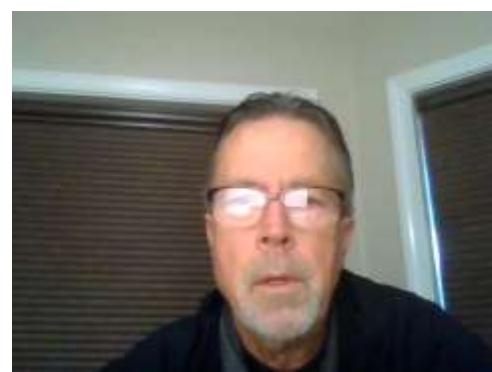
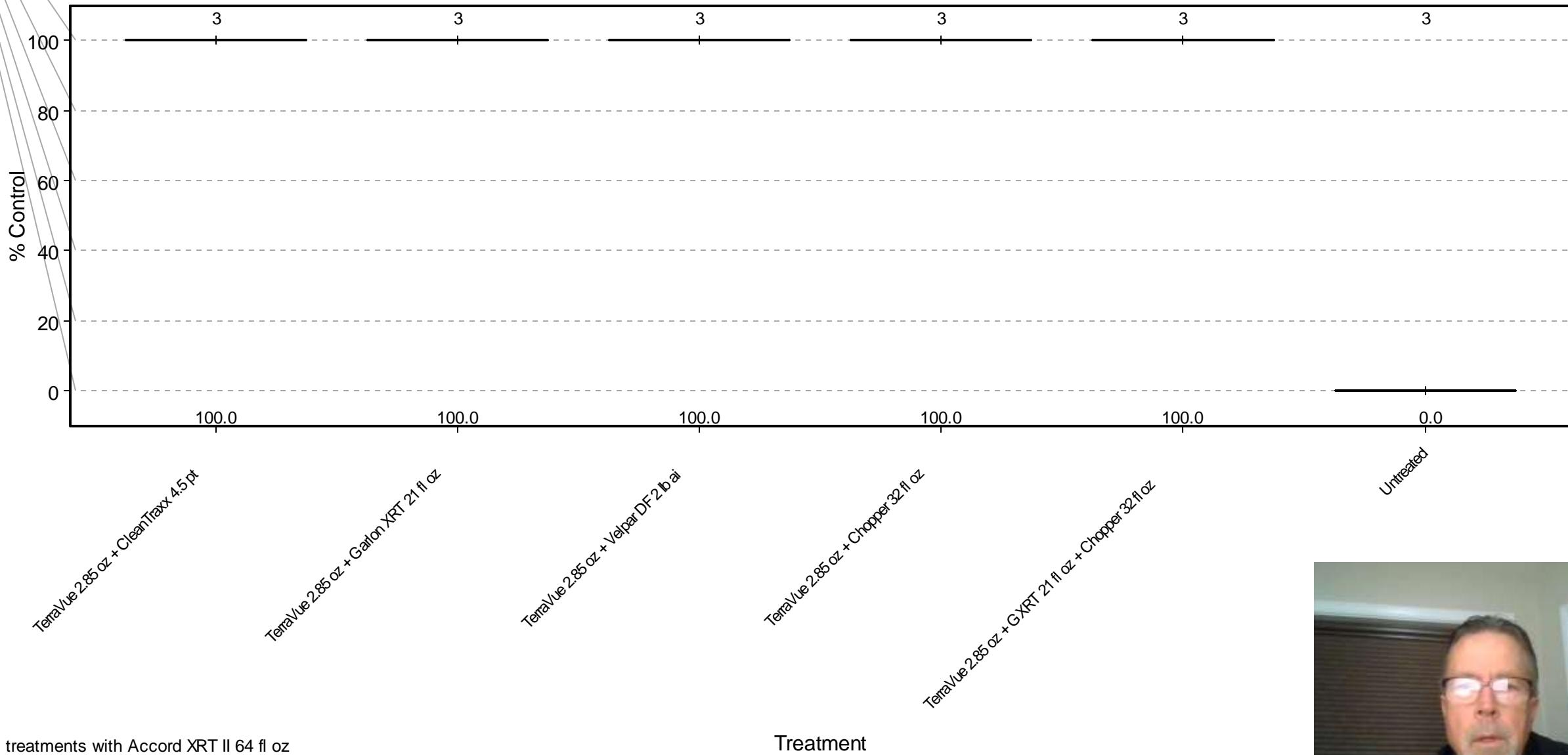


2020 TerraVue Forestry Trials

Willowherb % Control - 18 to 26 WAA

NA20T8B014H-WEW042

Mean values below box. Number of observations above box

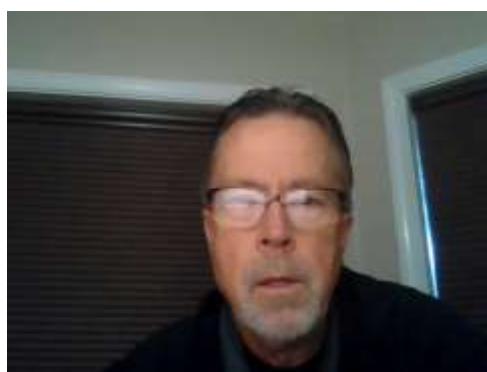
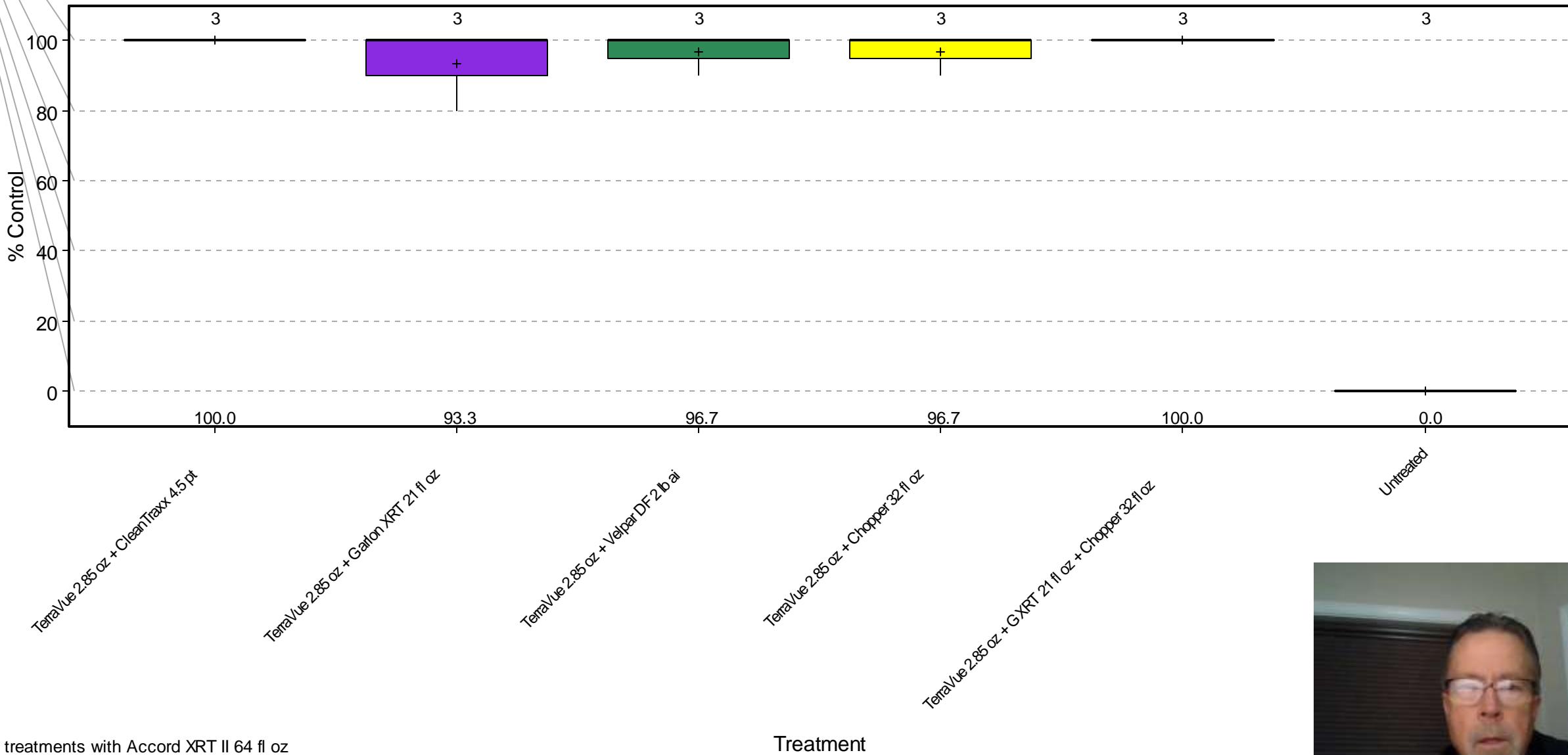


2020 TerraVue Forestry Trials

Prickly lettuce % Control - 27+ WAA

NA20T8B014H-WEW042

Mean values below box. Number of observations above box

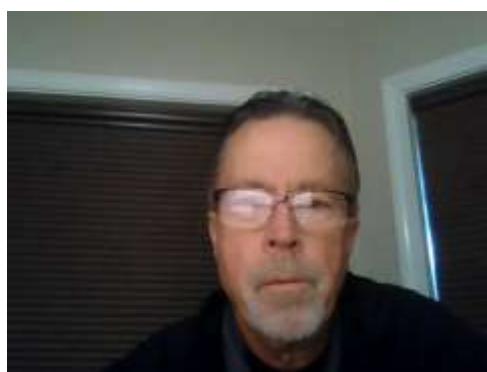
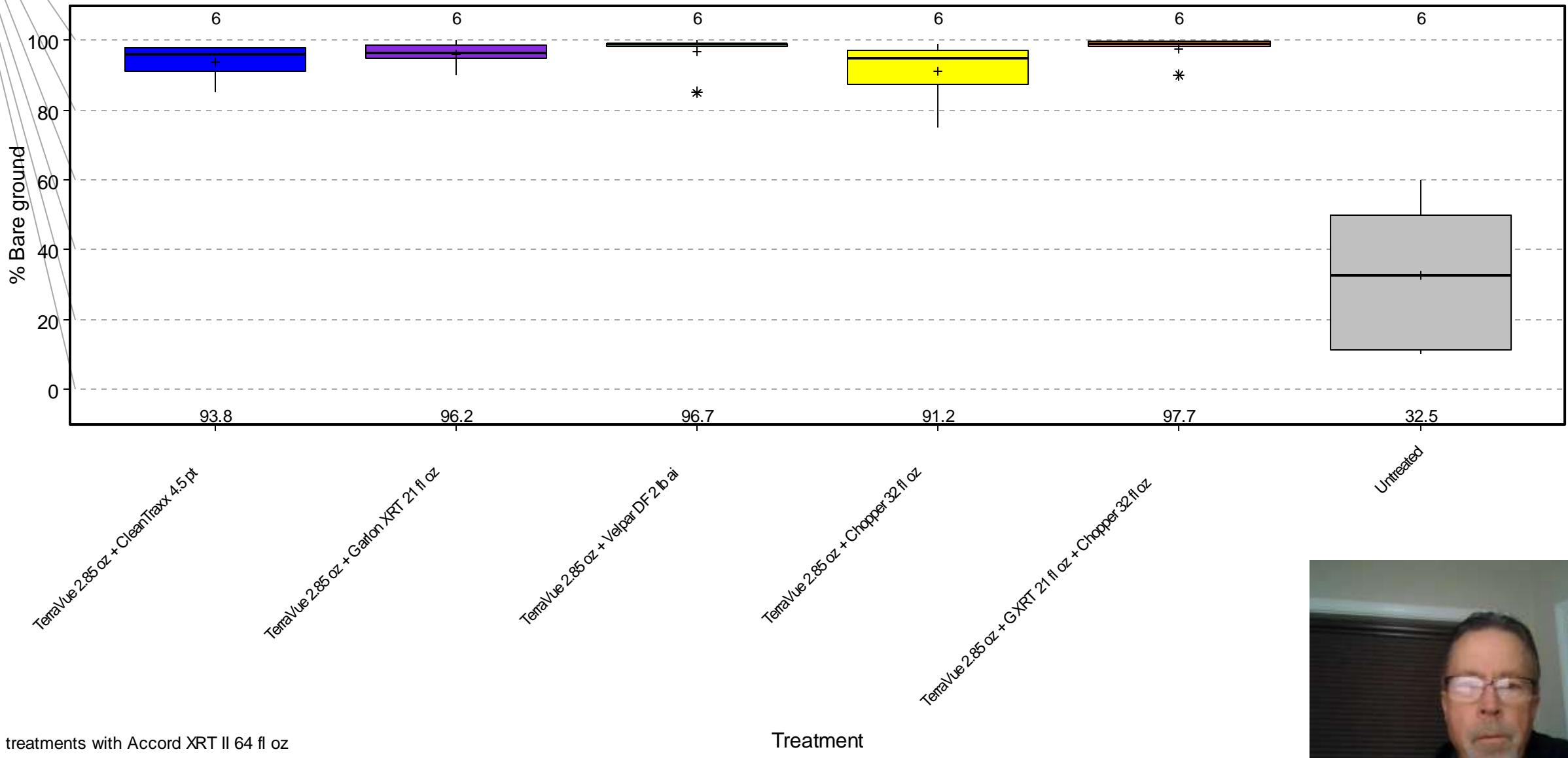


2020 TerraVue Forestry Trials

% Bare Ground - 18 to 26 WAA

NA20T8B014H-WEW041, NA20T8B014H-WEW042

Mean values below box. Number of observations above box



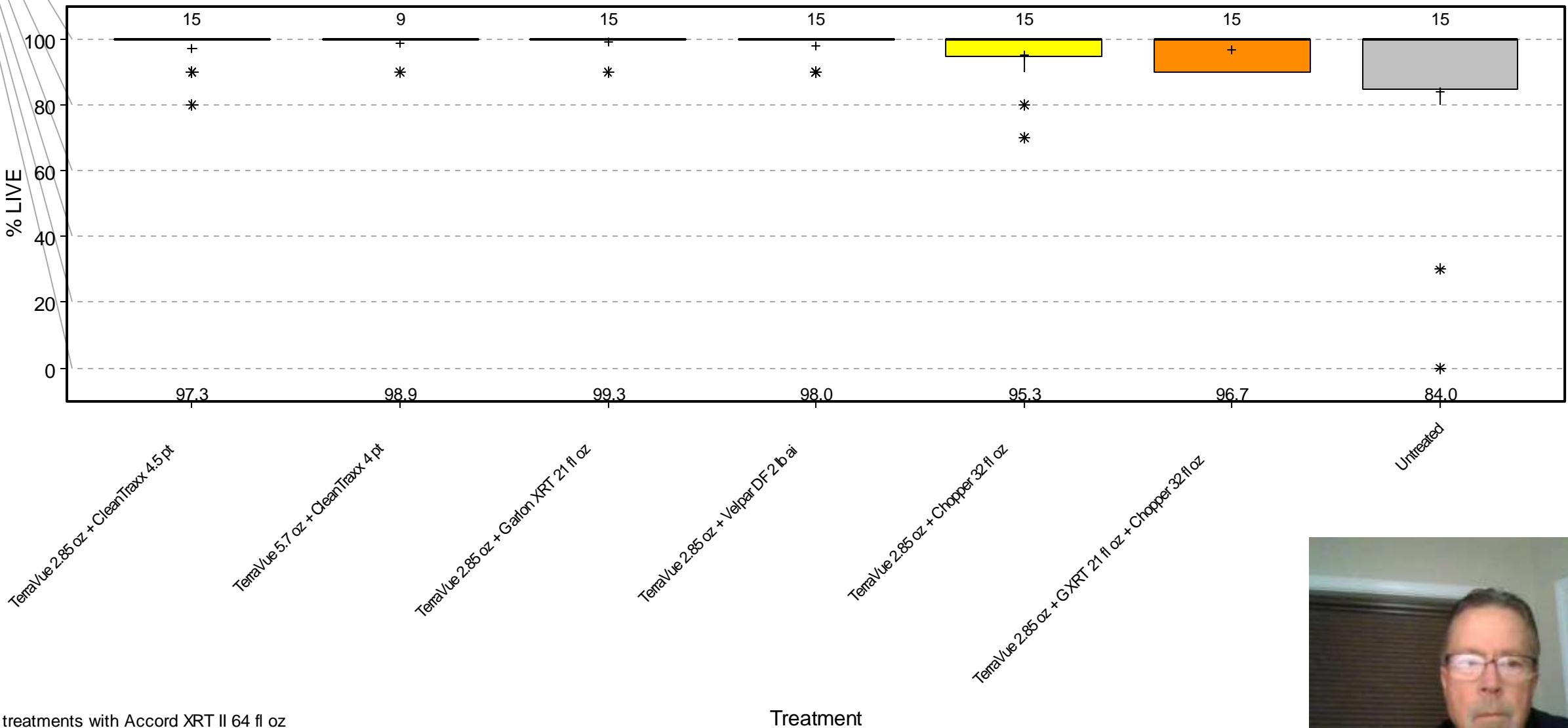
2020 TerraVue Forestry Trials

Ponderosa pine % Live Plants - 27+ WAA

NA20T8B014H-WEW041, NA20T8B014H-WEW042, NA20T8B014H-WEW043, NA20T8B014H-WLH018

NA20T8B014H-WLH078

Mean values below box. Number of observations above box



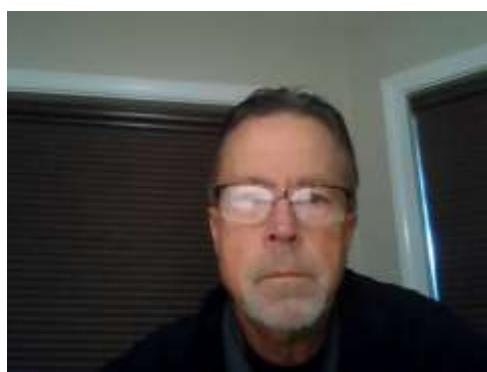
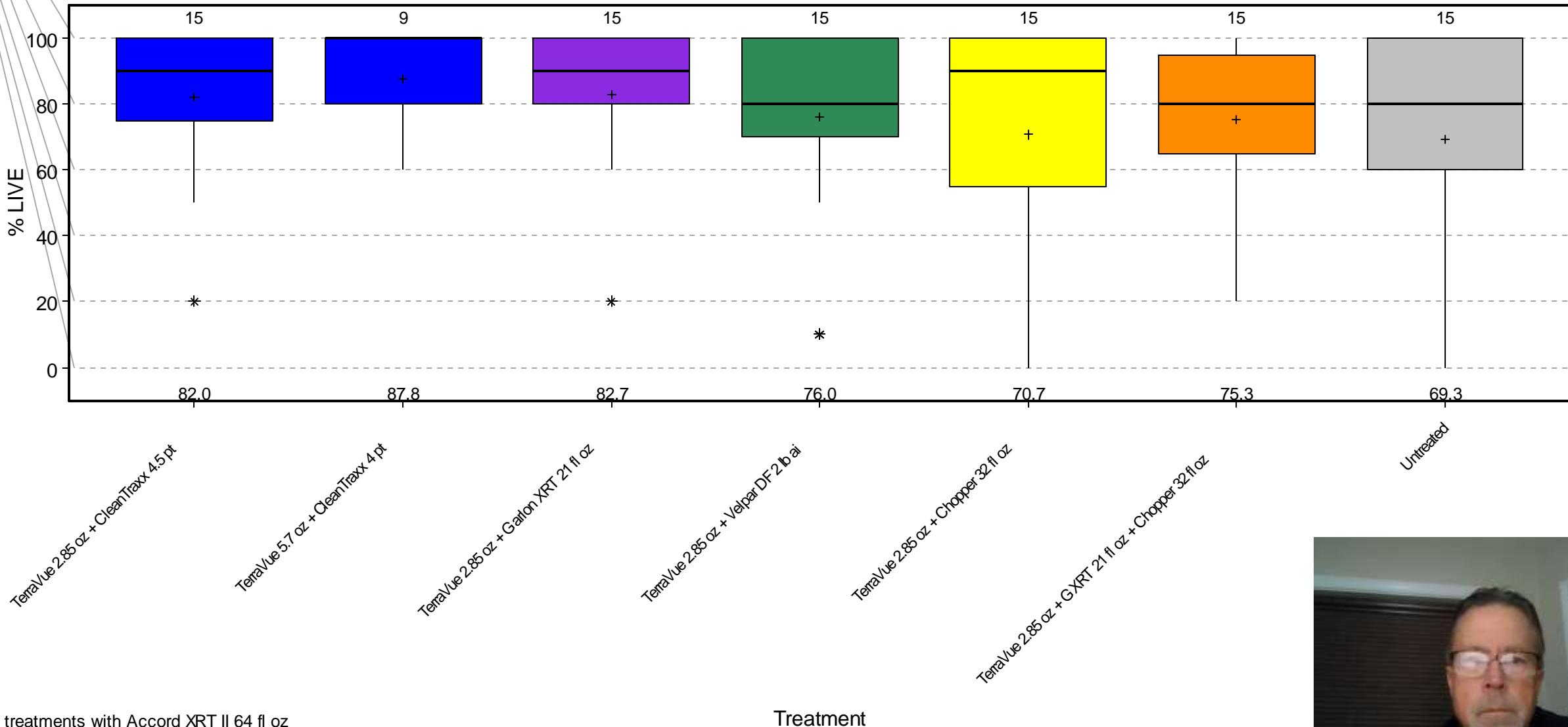
2020 TerraVue Forestry Trials

Douglas fir % Live Plants - 27+ WAA

NA20T8B014H-WEW041, NA20T8B014H-WEW042, NA20T8B014H-WEW043, NA20T8B014H-WLH018

NA20T8B014H-WLH078

Mean values below box. Number of observations above box



Anticipated Additional Weed Spectrum Controlled by TerraVue™ Herbicide (beyond Milestone)



Wild carrot
(*Daucus carota*)



Western Ironweed
(*Vernonia baldwinii*)



Tall ironweed
(*Vernonia gigantea*)



Buckhorn plantain
(*Plantago lanceolata*)



Common caraway
(*Carum carvi*)



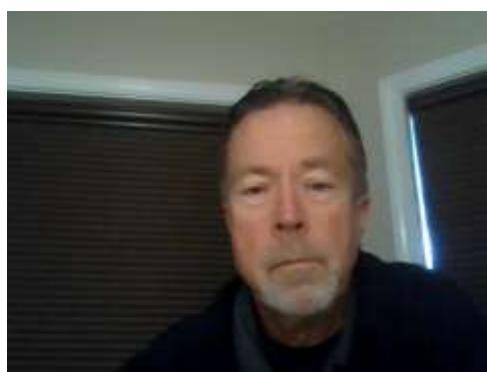
Annual Marshelder
(*Iva annua*)



Poison Hemlock
(*Conium maculatum*)

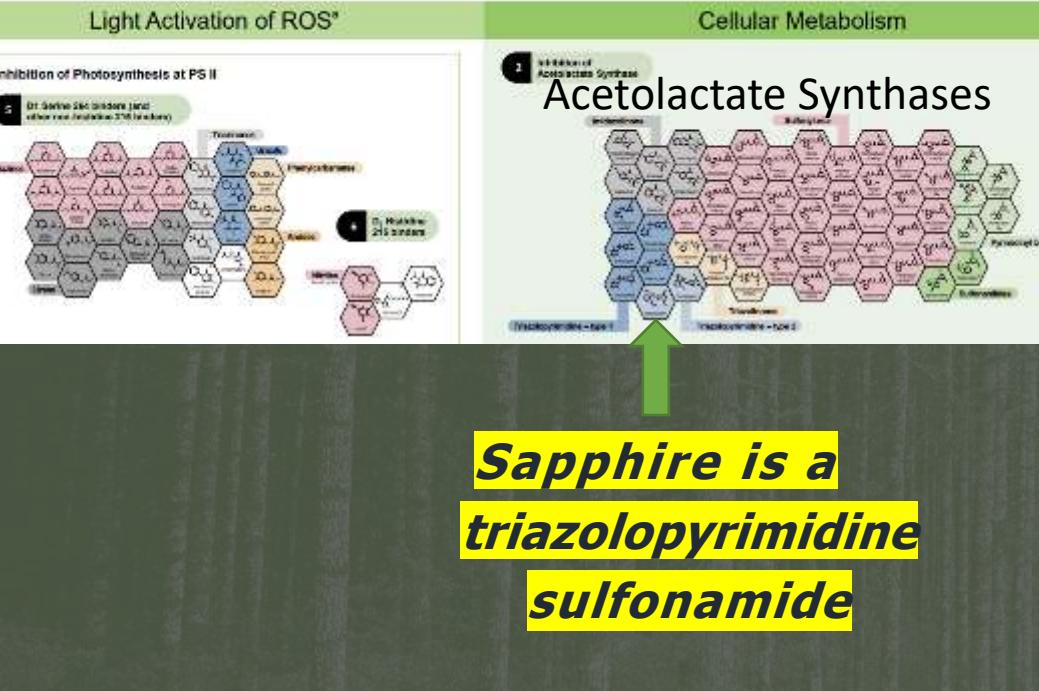


Croton
(*Croton capitatus*)



Sapphire®

HRAC Mode of Action Classification 2021



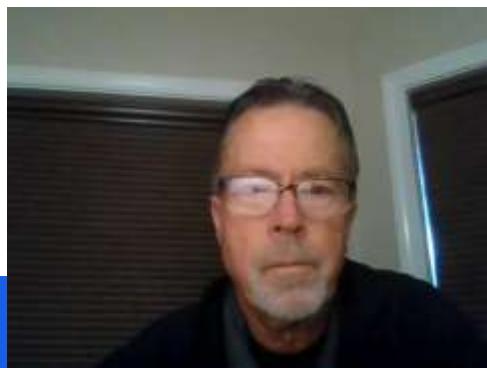
- **Sapphire is Penoxsulam in a Suspension Concentrate**
- **Currently has a non-crop postemergence label**
- **Reduced Risk herbicide / Minimal PPE requirements**
- **Pre-emergence data accumulating for new label**
- **Past 3 years averaged 4000 acre commercial treatments/yr** showing pre-emergence activity
- **Pending Forestry uses on Ceanothus spp., blackberry, etc.**



Sapphire® Current Specimen Label: Listed Weeds

Weeds Controlled	Rate		
	pt/acre	fl oz/ 1000 sq ft	
English lawn daisy ¹	0.25 – 1.5 (4 – 24 fl oz/ acre)	0.09 – 0.55	
burclover, California Celery, wild chickweed (common) chickweed (mouseear) clover, hop clover, red clover, white cudweed, purple dandelion, common dollarweed evening primrose, cutleaf false dandelion fiddleneck, coast fleabane, hairy fleabane, dwarf groundsel, common ivy, ground	lettuce, prickly lespedeza, common loosestrife, loosed-leaf maretail/horseweed medic, black mustard, black mustard, Indian mustard, wild nightshade, black pigweed species pineappleweed plantain, broadleaf plantain, buckhorn parsley-piert purslane, common radish, wild redmaids rocket, London shepherdspurse smartweed, Pennsylvania sowthistle, annual storksbill, long thistle, Russian Virginia buttonweed willowherb	0.5 – 1.5 (8 – 24 fl oz/ acre)	0.18 – 0.55
kyllinga, green (suppression only) ² nutsedge, purple ²	nutsedge, yellow ²	1 – 1.5 (16 – 24 fl oz/acre)	0.37 – 0.55

Weeds Suppressed	Rate	
	pt/acre	fl oz/1000 sq ft
Barnyardgrass	0.25 – 1.5 (4 – 24 fl oz/acre)	0.09 – 0.55
filaree, redstem		
knotweed, prostrate		
mallow, common		
mallow, little		
pepperweed, perennial		
sowthistle, perennial		
speedwell		
spurge, prostrate		
spurge, spotted		





Sapphire® Trials

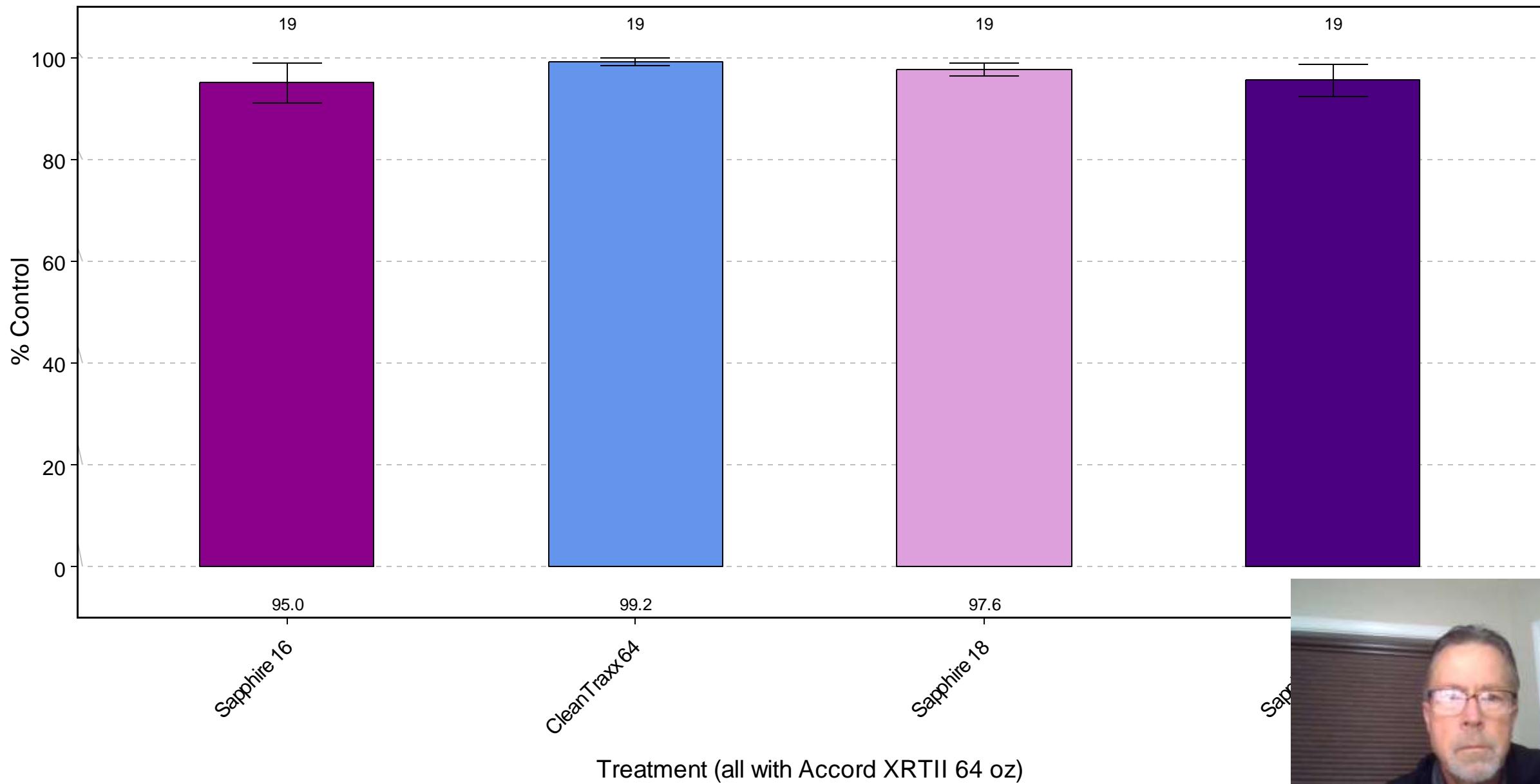
Non-Crop and Forestry

Sapphire Specialty herbicide
<https://www.corteva.us/products-and-solutions/turf-and-ornamental/sapphire.html>



Sapphire Non-Crop Mustard spp. (shortpod, tansy, blue, tumble) % Control - 9 to 10 WAA

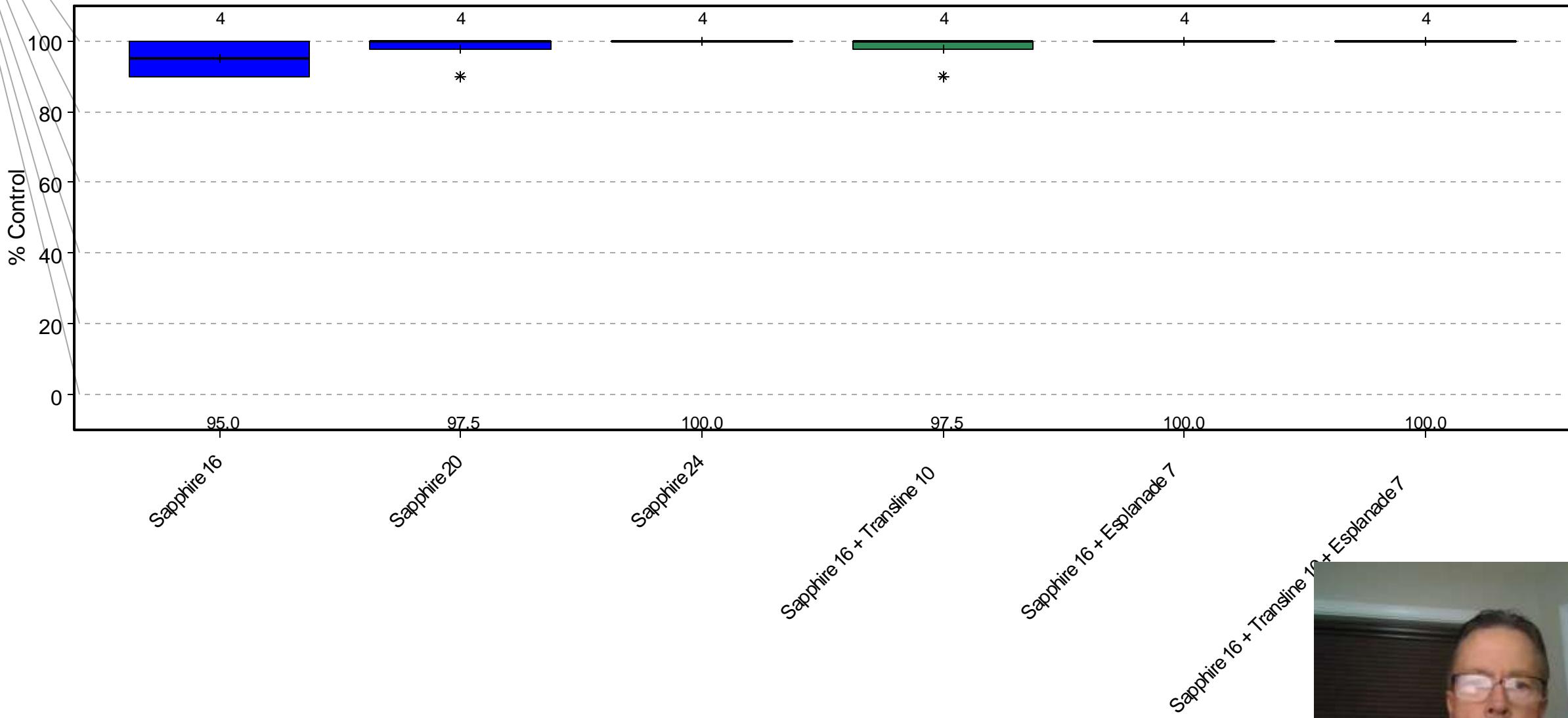
Mean values below box. Number of observations above box



2021 Sapphire Forestry - Western U.S. Green-leaf manzanita % Control - 19 to 22 WAA

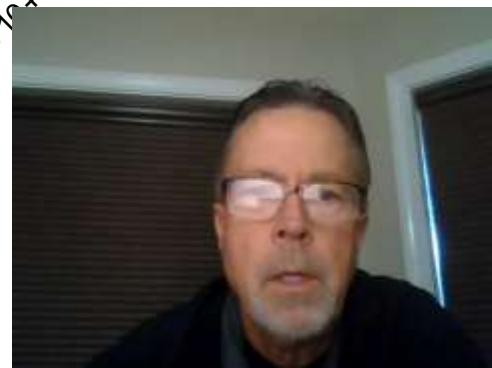
NA21E9A002H-WEW038

Mean values below box. Number of observations above box



All with Accord XRT II 4 pts. pr/a

Treatment

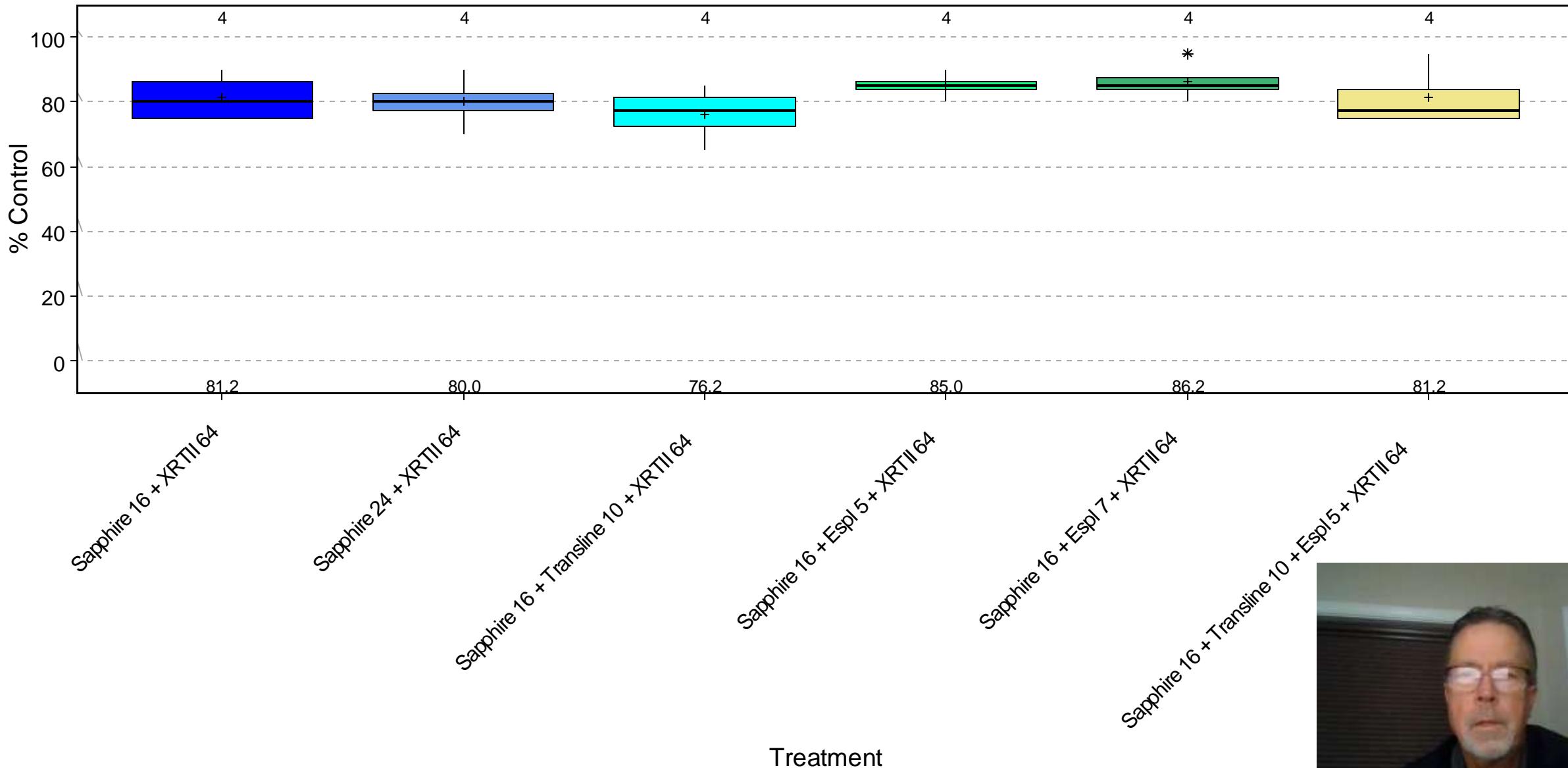


2020 Sapphire Forestry Trials

Deerbrush ceanothus % Control - 12 to 14 WAA

NA20E9A002H-WEW007

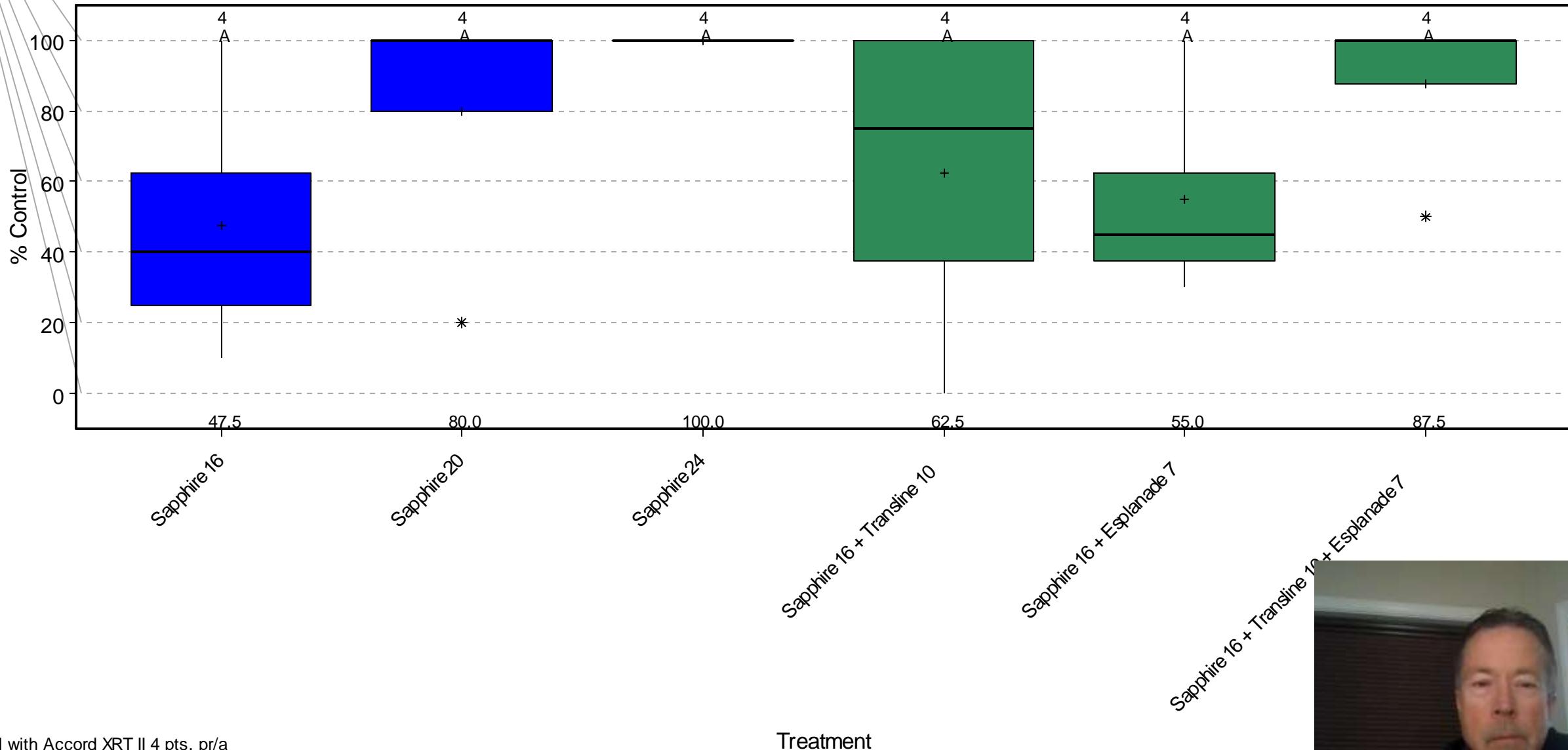
Mean values below box. Number of observations above box



2021 Sapphire Forestry - Western U.S. Squawcarpet ceanothus % Control - 19 to 22 WAA

NA21E9A002H-WEW038

Mean values below box. Number of observations above box



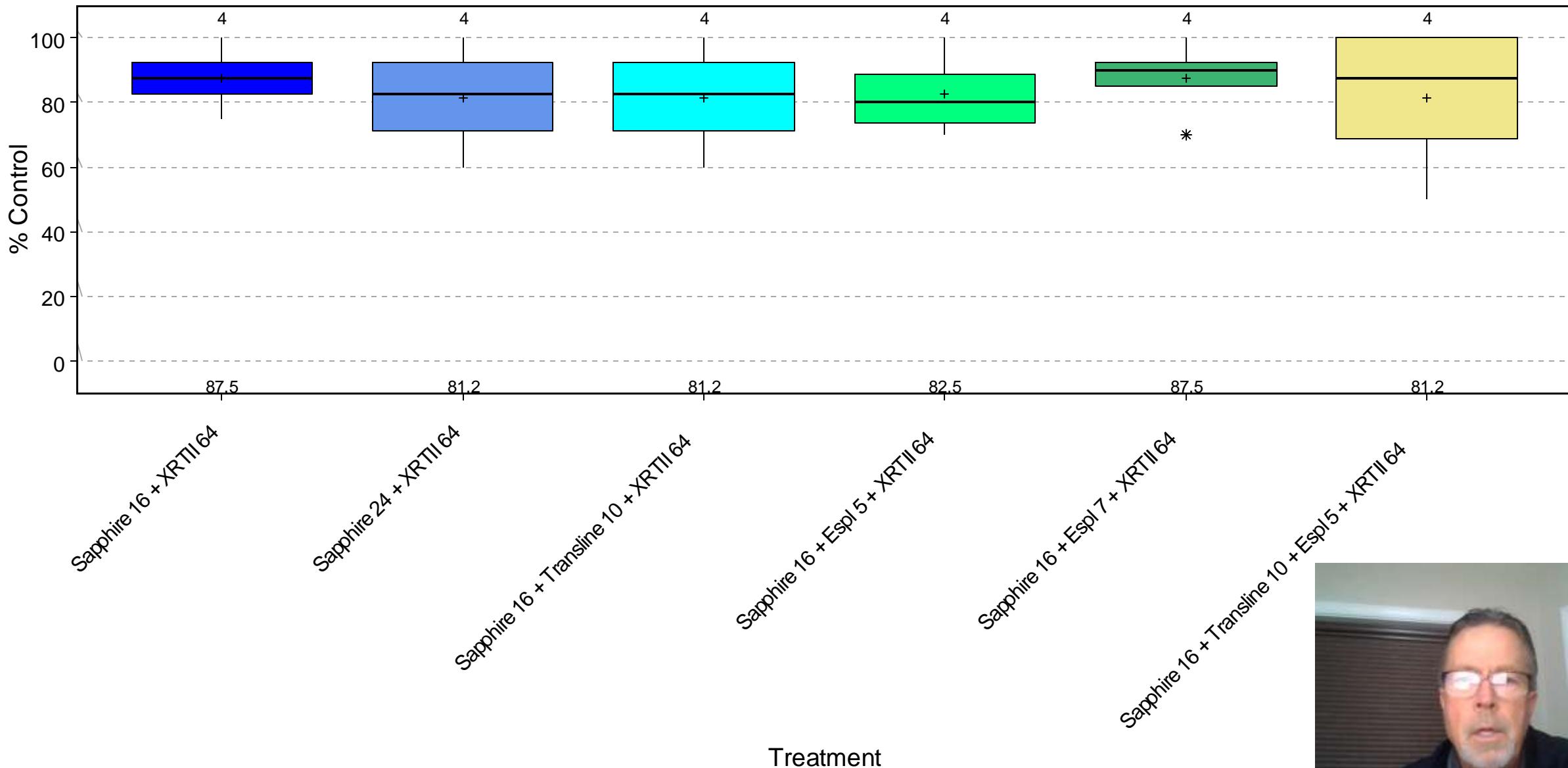
2020 Sapphire Forestry Trials

Antelopebush % Control - 12 to 14 WAA

NA20E9A002H-WEW008

***Purshia plicata* (Antelope Bush, Buckbrush)**

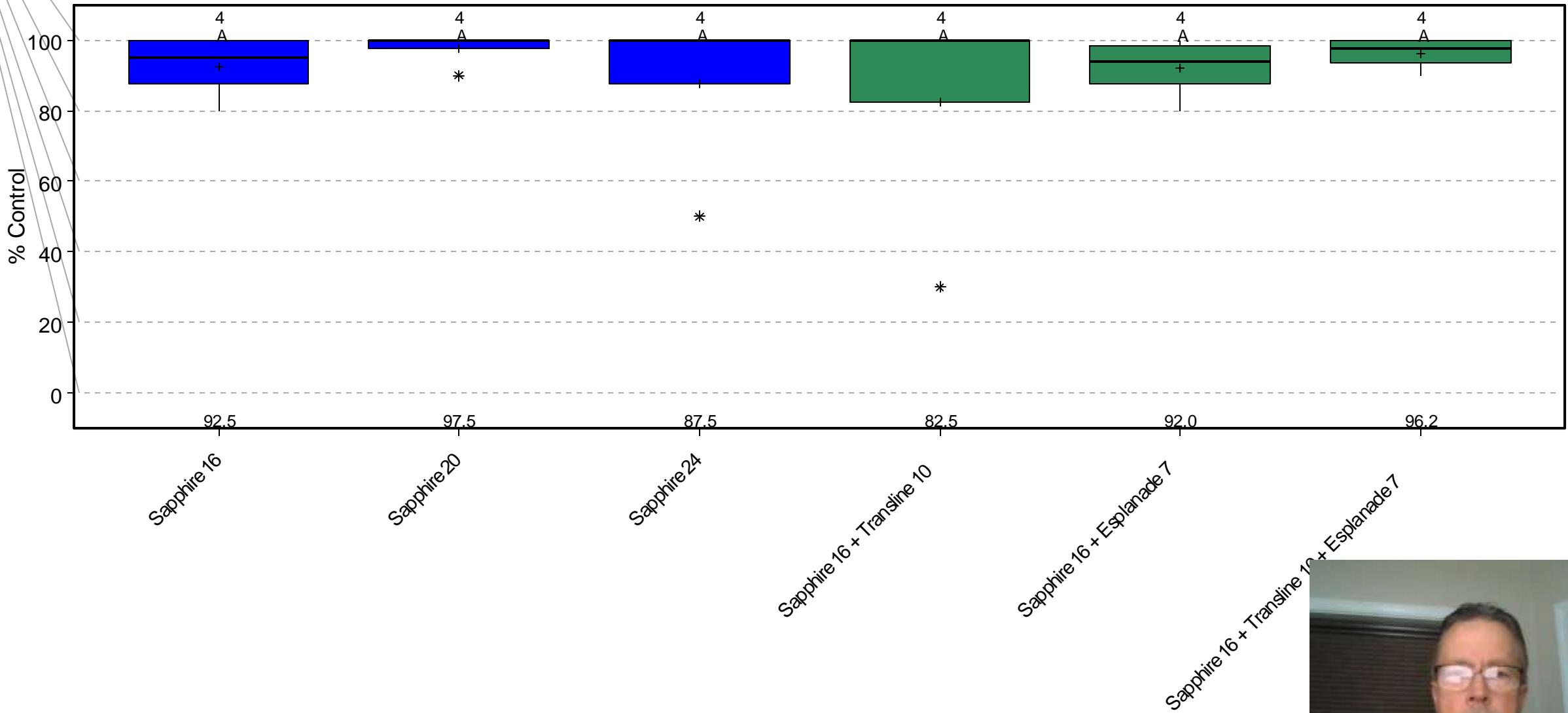
Mean values below box. Number of observations above box



2021 Sapphire Forestry - Western U.S. Blackberry, Himalaya % Control - 11 to 13 WAA

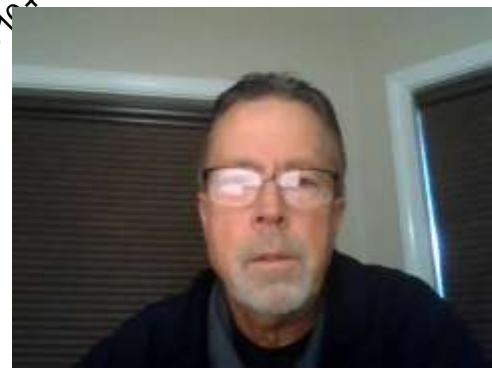
NA21E9A002H-WEW037

Mean values below box. Number of observations above box



All with Accord XRT II 4 pts. pr/a

Treatment

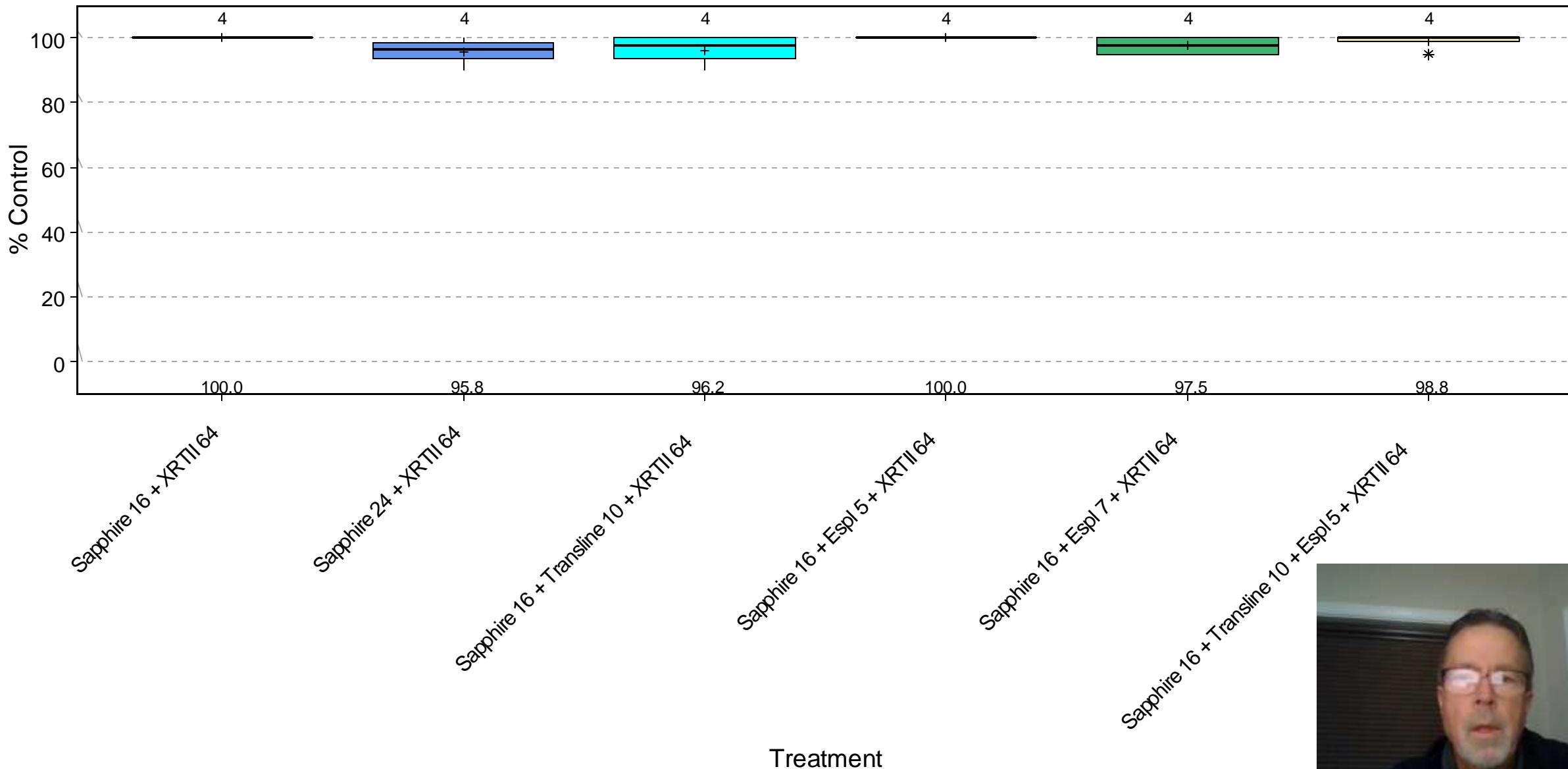


2020 Sapphire Forestry Trials

Willowherb % Control - 12 to 14 WAA

NA20E9A002H-WEW008

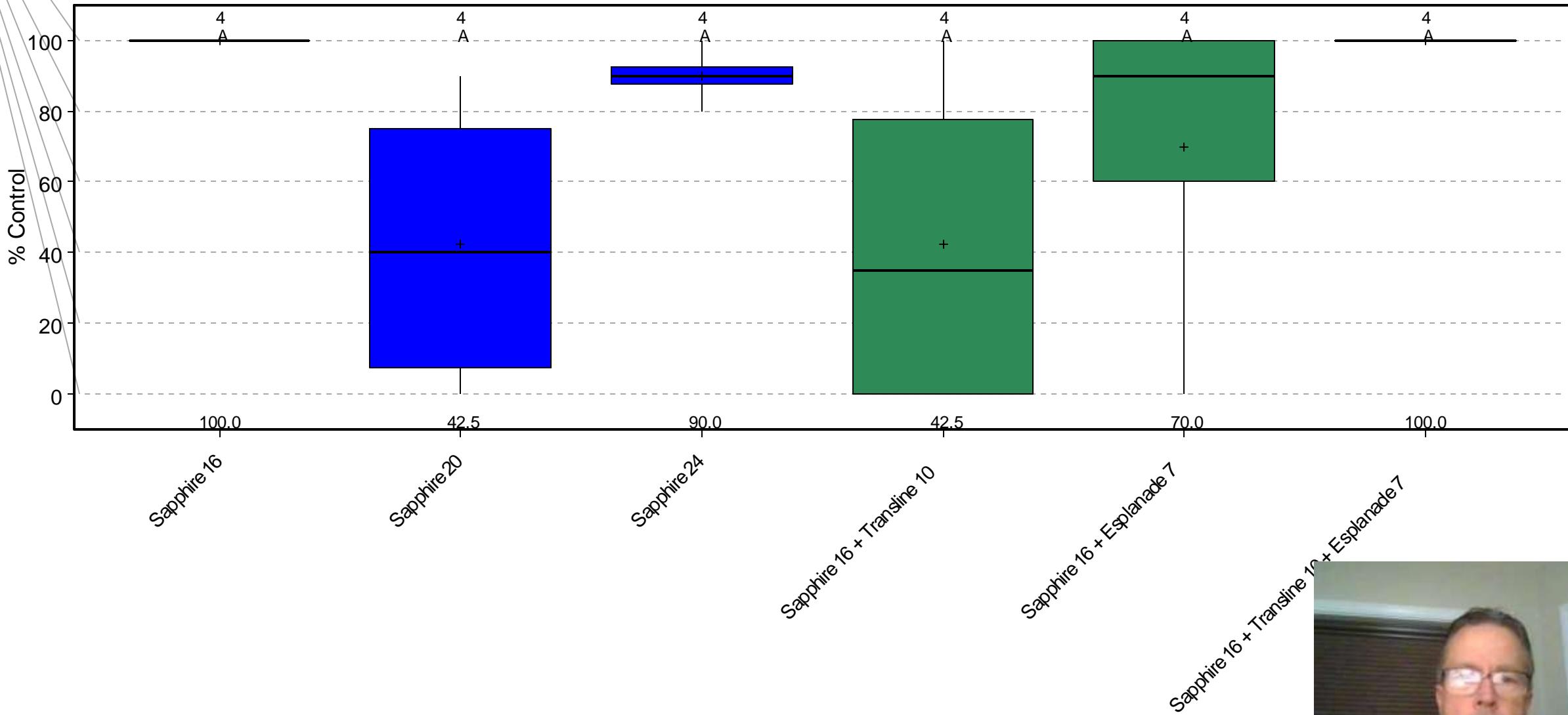
Mean values below box. Number of observations above box



2021 Sapphire Forestry - Western U.S. Tropical brackenfern % Control - 19 to 22 WAA

NA21E9A002H-WEW038

Mean values below box. Number of observations above box



All with Accord XRT II 4 pts. pr/a

Treatment

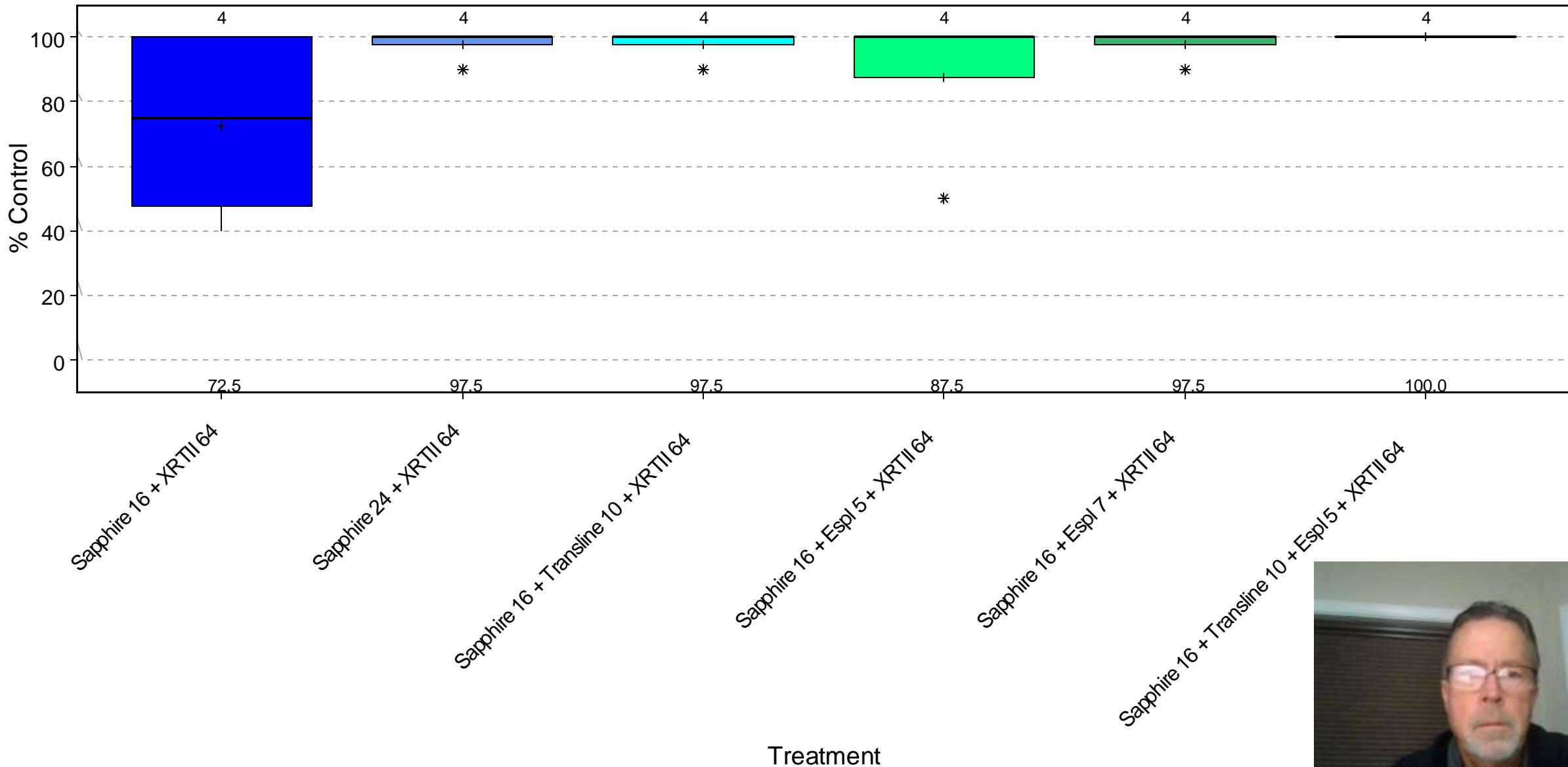


2020 Sapphire Forestry Trials

Prickly lettuce % Control - 12 to 14 WAA

NA20E9A002H-WEW007

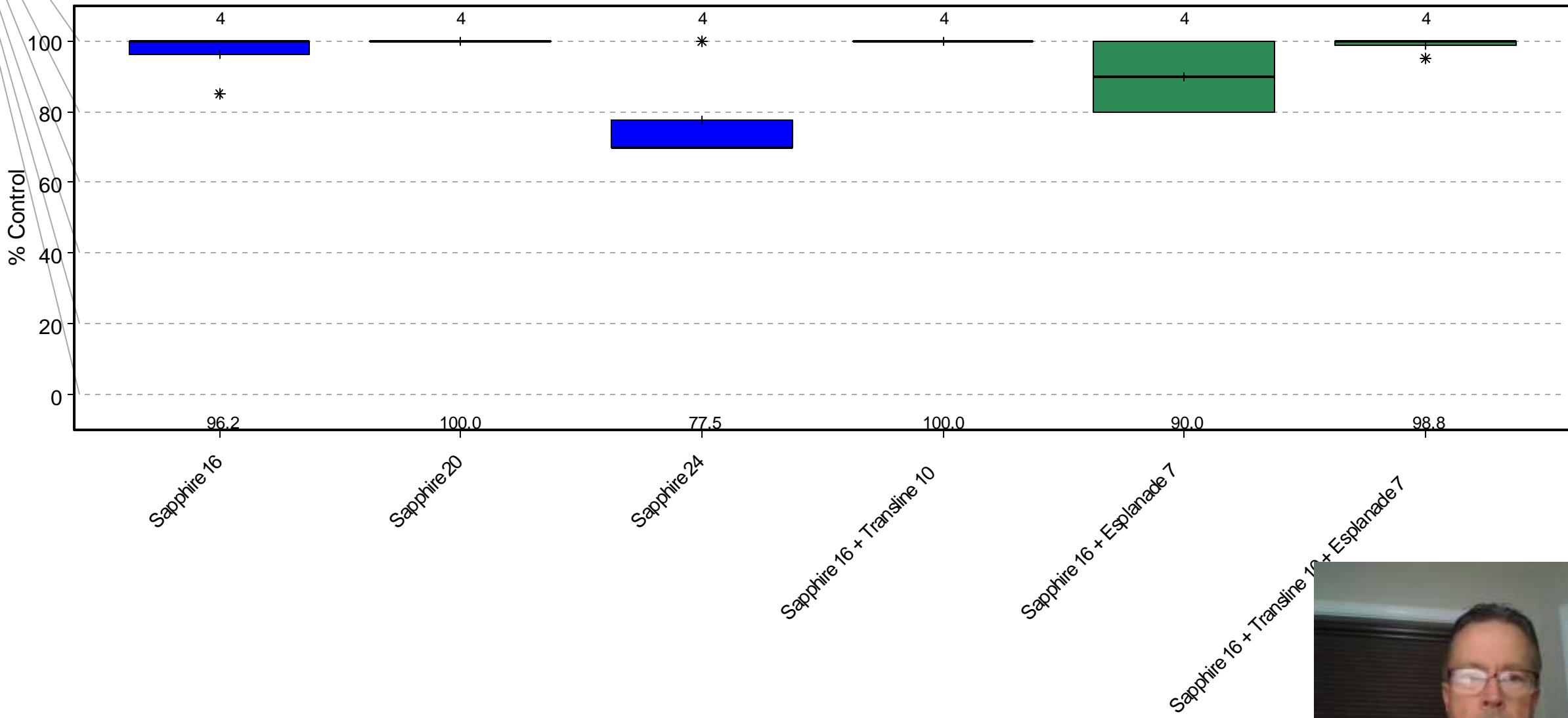
Mean values below box. Number of observations above box



2021 Sapphire Forestry - Western U.S. Bull thistle % Control - 19 to 22 WAA

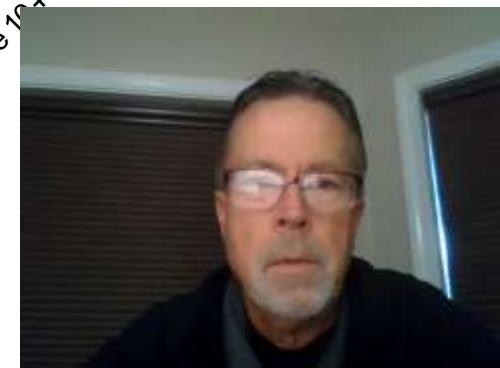
NA21E9A002H-WEW037

Mean values below box. Number of observations above box



All with Accord XRT II 4 pts. pr/a

Treatment

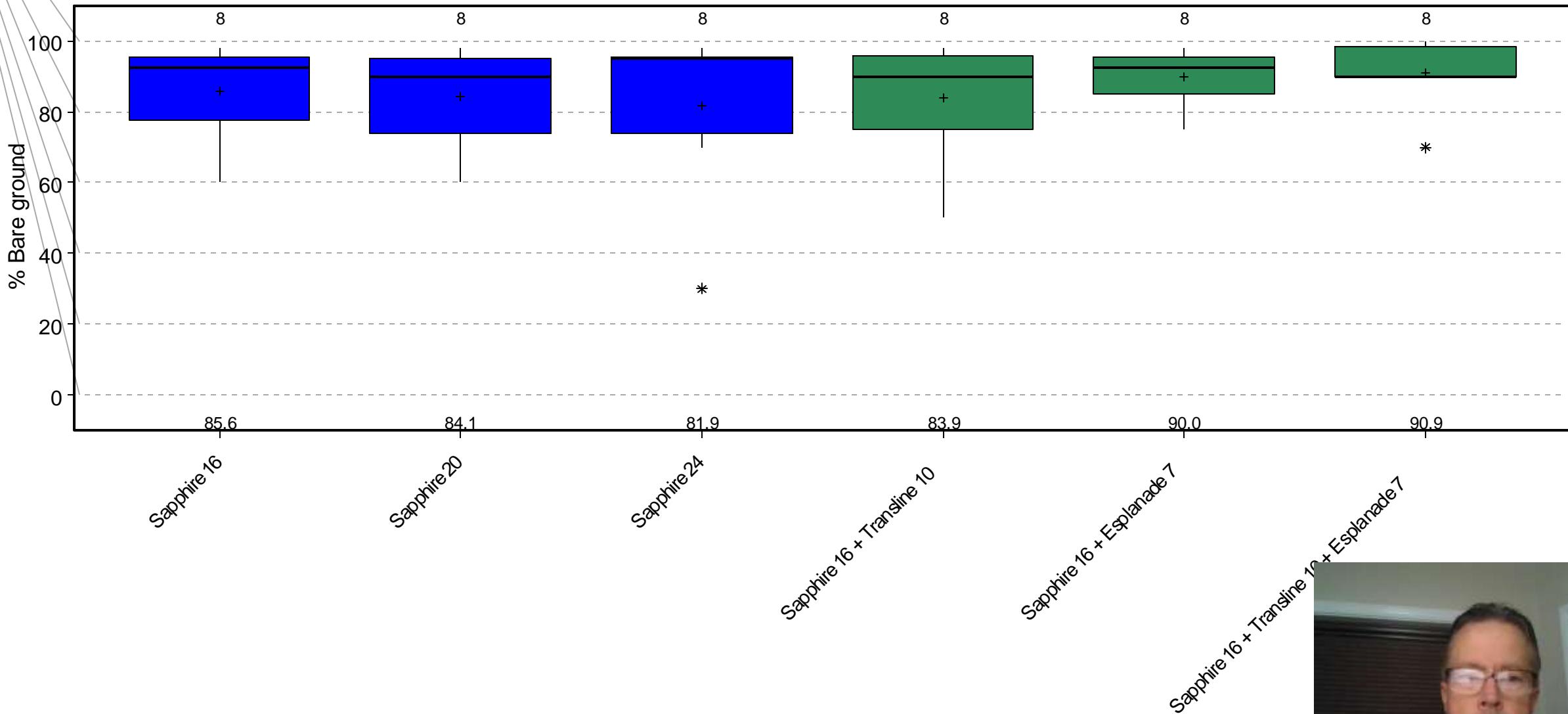


2021 Sapphire Forestry - Western U.S.

Bare ground - 19 to 22 WAA

NA21E9A002H-WEW037, NA21E9A002H-WEW038

Mean values below box. Number of observations above box



All with Accord XRT II 4 pts. pr/a



Thank You! I'll answer any Q&A as soon as possible!

Legal Disclaimer

TerraVue™ has not yet received CA state registration; registrations are pending. Sapphire™ has not yet received a label update for forestry use sites. The information presented here is not an offer for sale.

Some states require an individual be licensed if involved in the recommendation, handling or application of any pesticide. Consult your local extension office for information regarding licensing requirements.

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Western District Portfolio

<https://corteva.showpad.com/share/fBbOhWWzIF6XW9GndKhjk>

