

REJUVENATE®

International Crop Expo

Grand Forks, ND

Ralph Frederick Technical Sales Rep
Tom Larsen, AMVAC Product Development

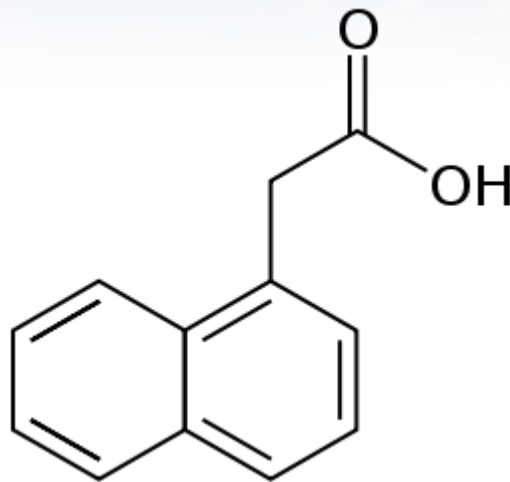
REJUVENATE

Overview

- What is Rejuvenate®
- Factors influencing marketable yield
- Rejuvenate Research

What is Rejuvenate®

1-Naphthaleneacetic acid



Synthetic plant hormone in the auxin family

Apical dominance is the phenomena whereby a branch, stem or stolon maintains order and uniform growth.



Auxin (NAA) helps restore apical dominance. In this example, an untreated pruning cut (right) results in many undesirable, unproductive shoots. The treated cut (left) was able to maintain uniformity. Potato stolon's, surprisingly, have similar characteristics to tree branches.

Potato Total Yield and Marketable Yield*

- Factors Influencing size (marketable yield):
 - Loss or decrease of apical dominance
 - Physiological age of seed & cutting of seed
 - Increased stems
 - Increased tuber set
 - Increase in undersized tubers
 - Earlier foliar senescence
 - Reduced marketable yield

* Knowles, *Crop Science* 46:284-296 (2006).

In most markets, tubers smaller than 6 oz. have significantly less value than larger ones

Percent of Crop Less Than 6 oz. (NASS '09-10)

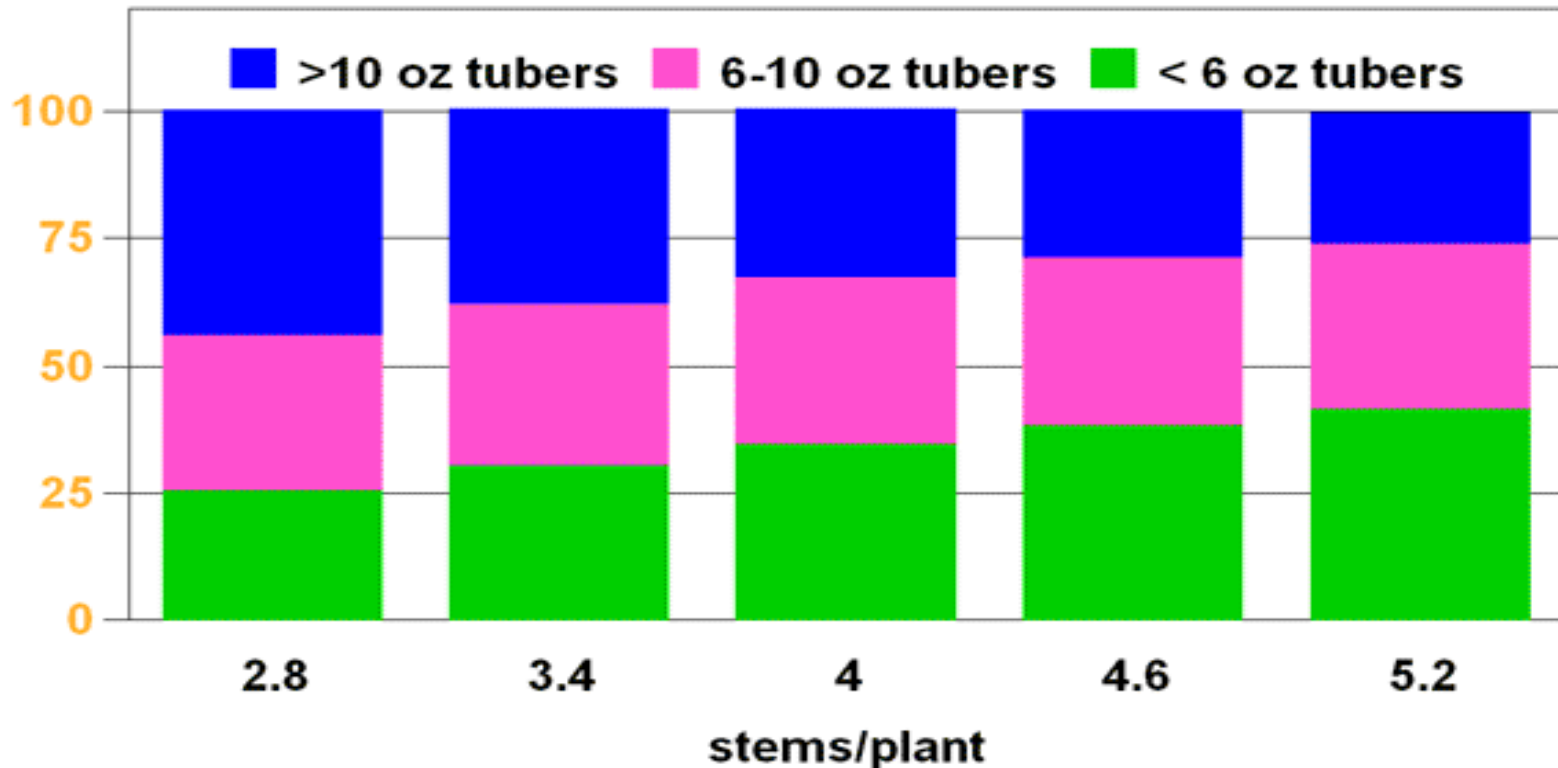
State	% < 6 oz
Idaho	45
Minnesota	40
Wisconsin	39
North Dakota	38

Stem number helps drive tuber competition and size

4+ stem plants contribute heavily to undersized potatoes

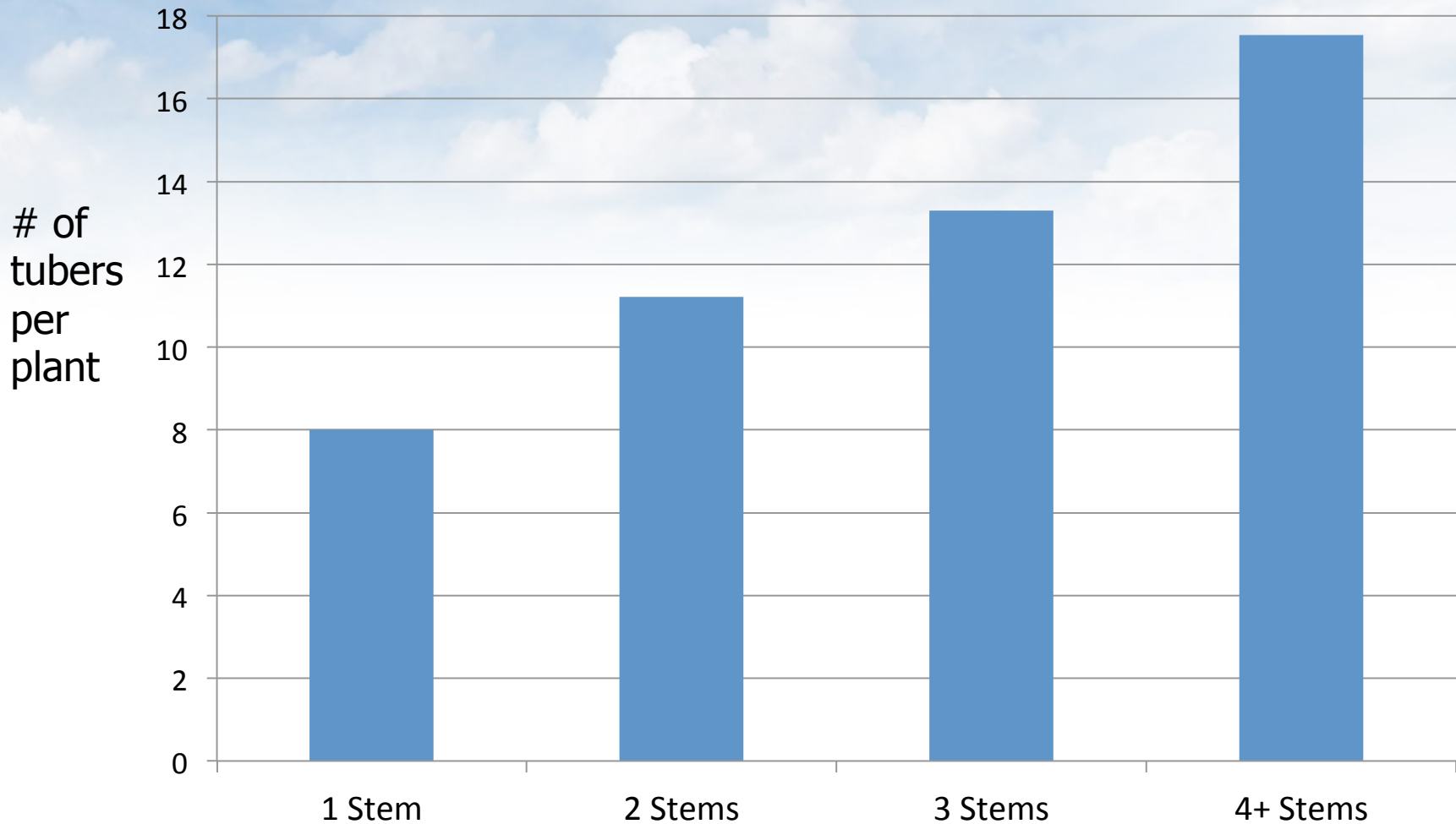
Impact of stem number on distribution of tubers (Knowles et al 2006)

percent of marketable yield



Ranger Russet potatoes

Tubers per Plant, 342 plants (Tri-Cities, 2013) **REJUVENATE**



An example of a 4-stem plant. The weak, unproductive stem to the right still demands water and nutrients.

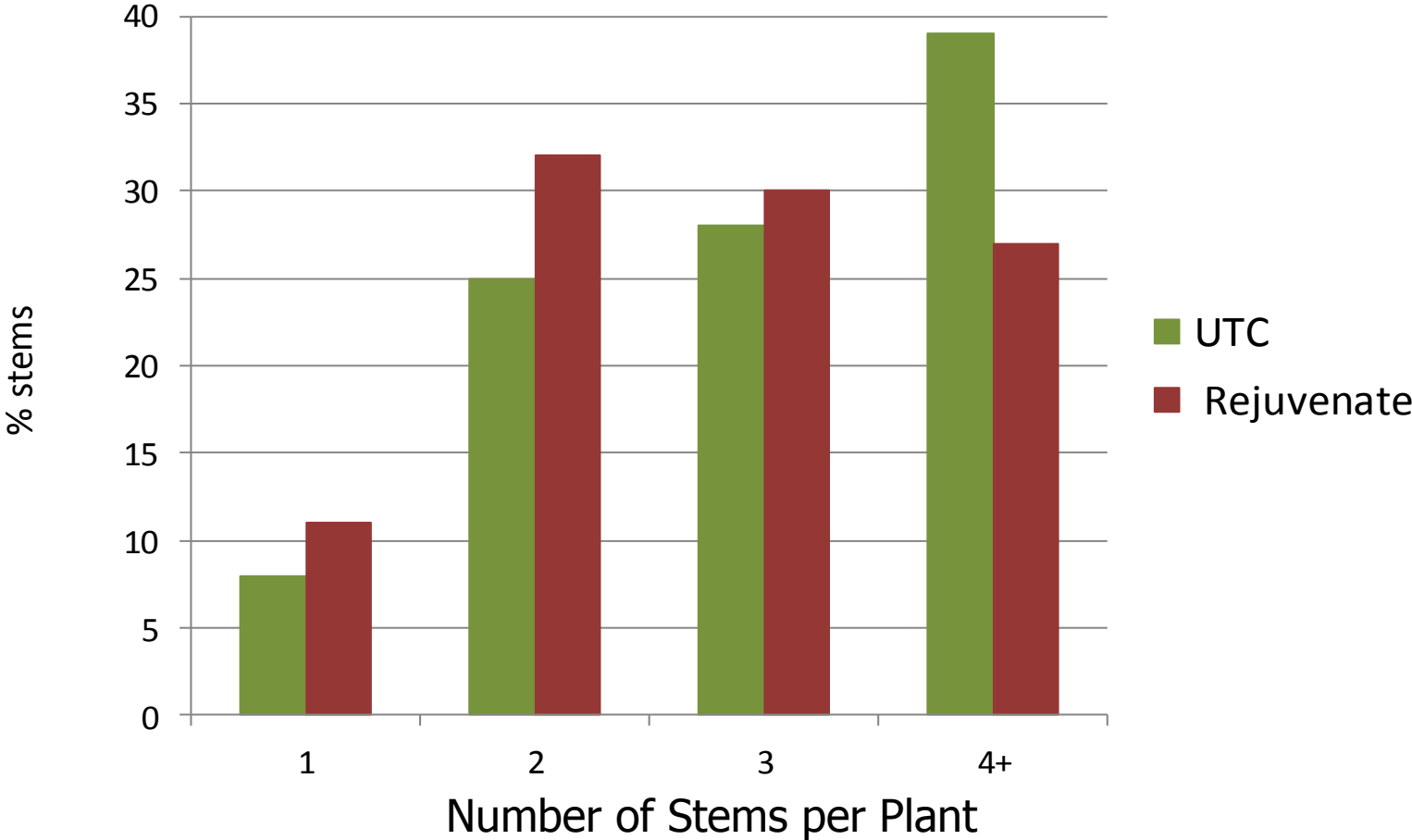


What is Rejuvenates effect on stem number

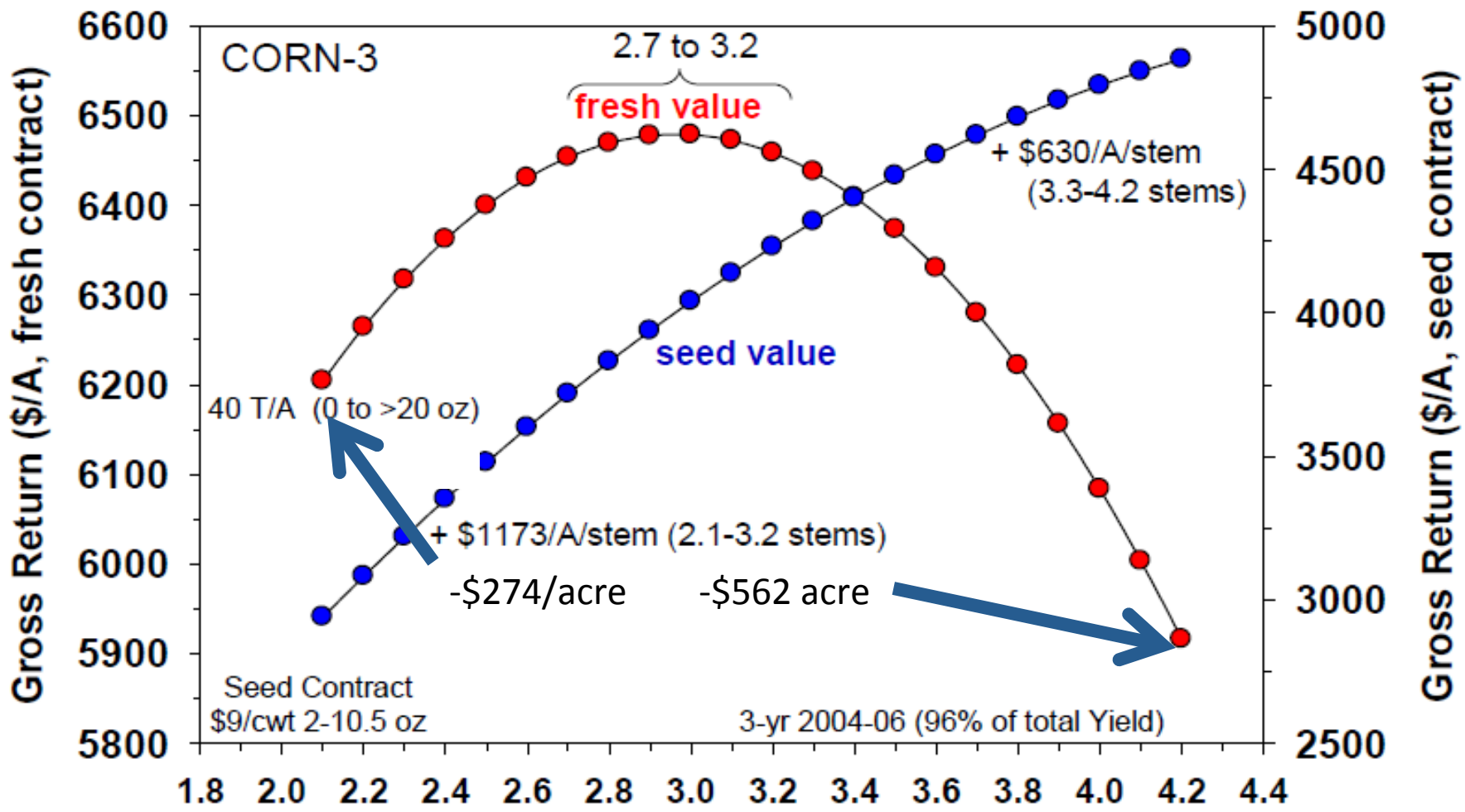
In 2010, Rejuvenate had a greater effect on plants with 3-5+ stems, but very little effect on stem number of plants with 2-3 stems.

UTC	Average	Rejuvenate	Stem
Stem Range	UTC	0.16 oz/ton	Reduction
2.0-2.5 (6 sites)	2.2	2.1	0.1
2.51-3.0 (7 sites)	2.9	2.8	0.1
3.01-3.5 (9 sites)	3.3	2.8	0.4
3.51-4.0 (4 sites)	3.6	2.9	0.7
4.01-5.0 (6 sites)	4.4	3.4	1.0
5.01+ (4 sites)	5.3	3.7	1.5
AVE (37 sites)	3.6	2.9	0.7

Rejuvenate Improves Stem Number Distribution 37 US Sites (7,600 plants) 2013



Changes in Fresh & Seed Value per Acre with Average Stems per Seedpiece for CO Russet Norkotah-3



+\$1945/A seed

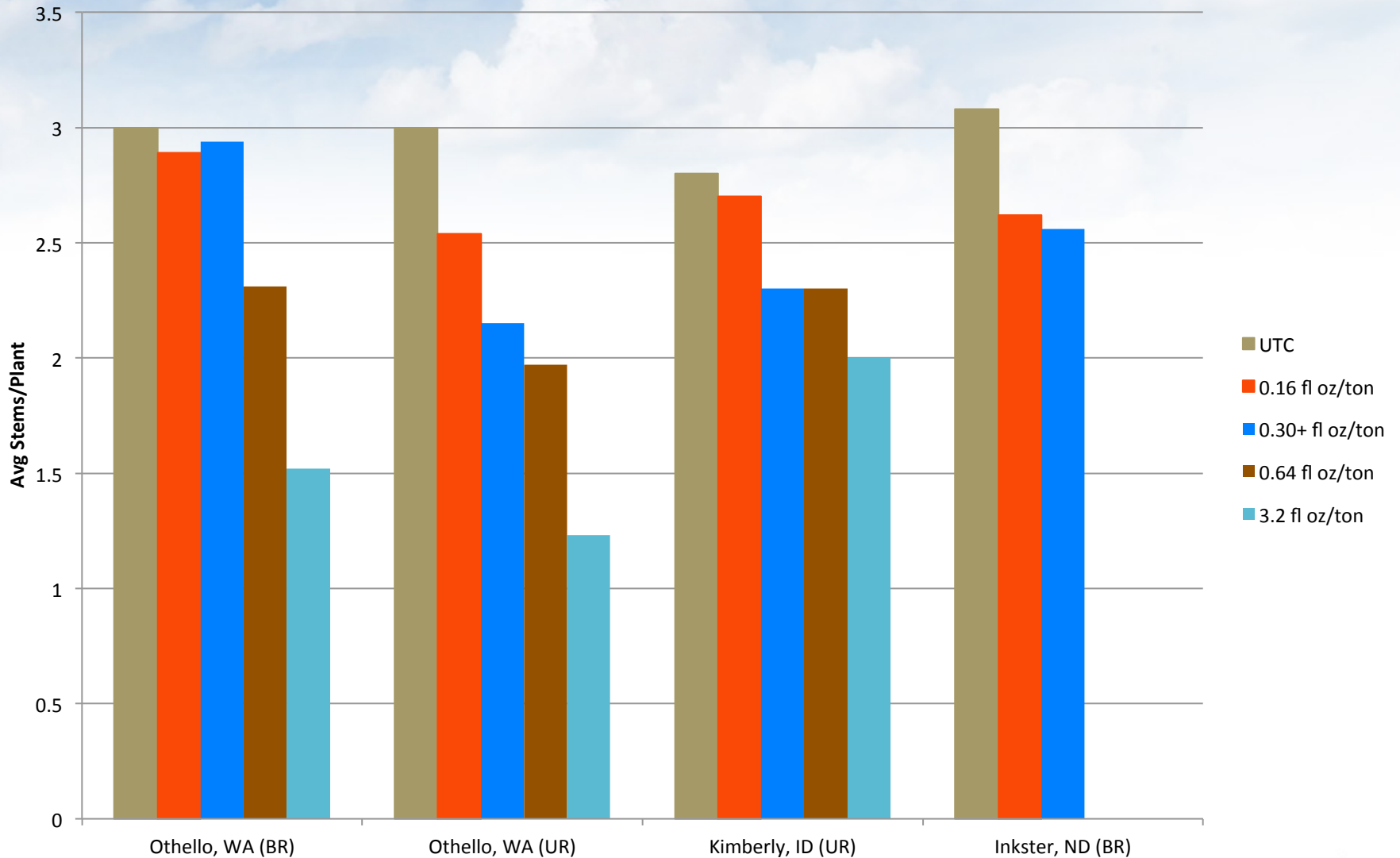
Knowles, WSU

Stem Number per Plant

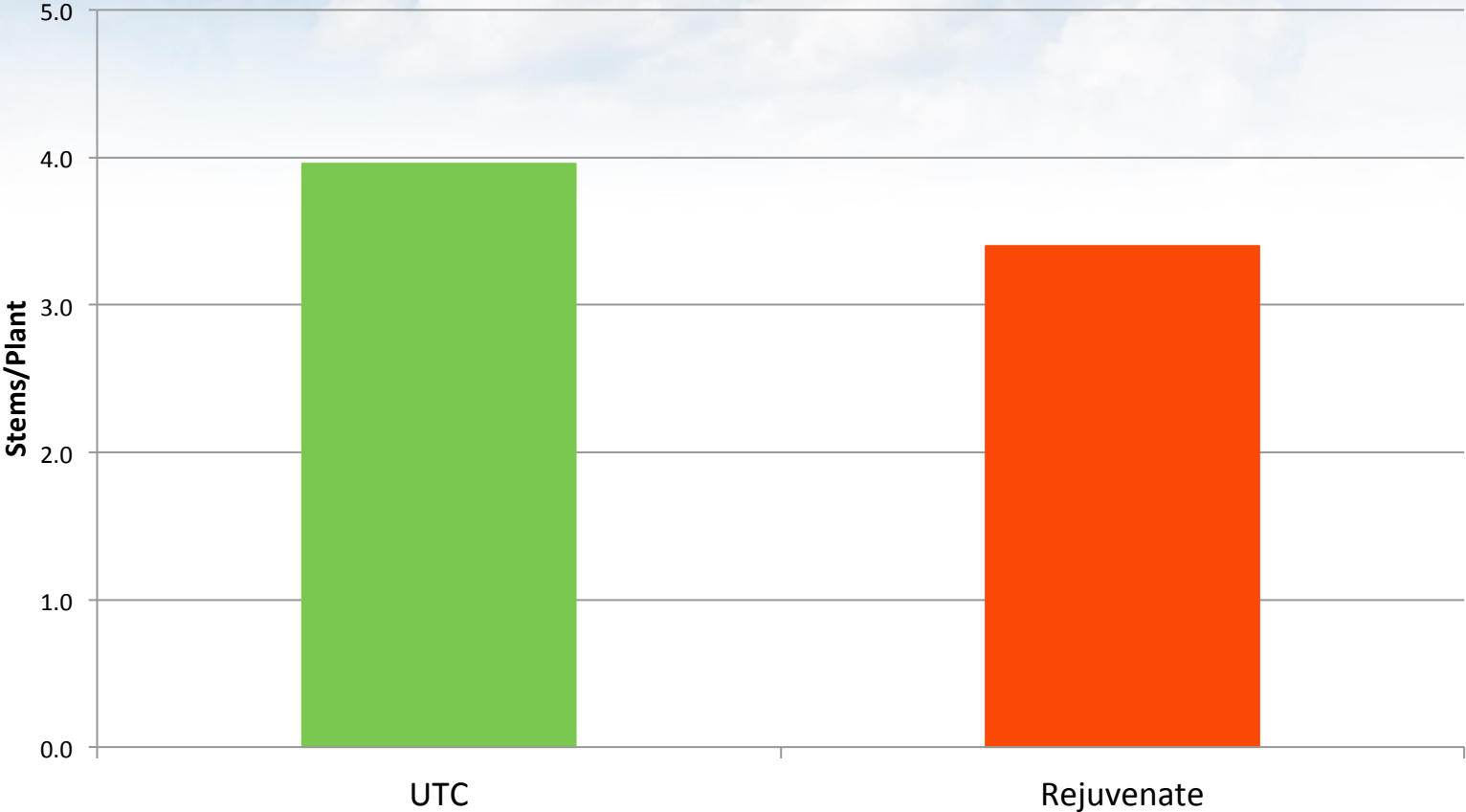
-\$562/A fresh
-\$274/A

2013 Rejuvenate Replicated Trials (Stem Counts)

REJUVENATE



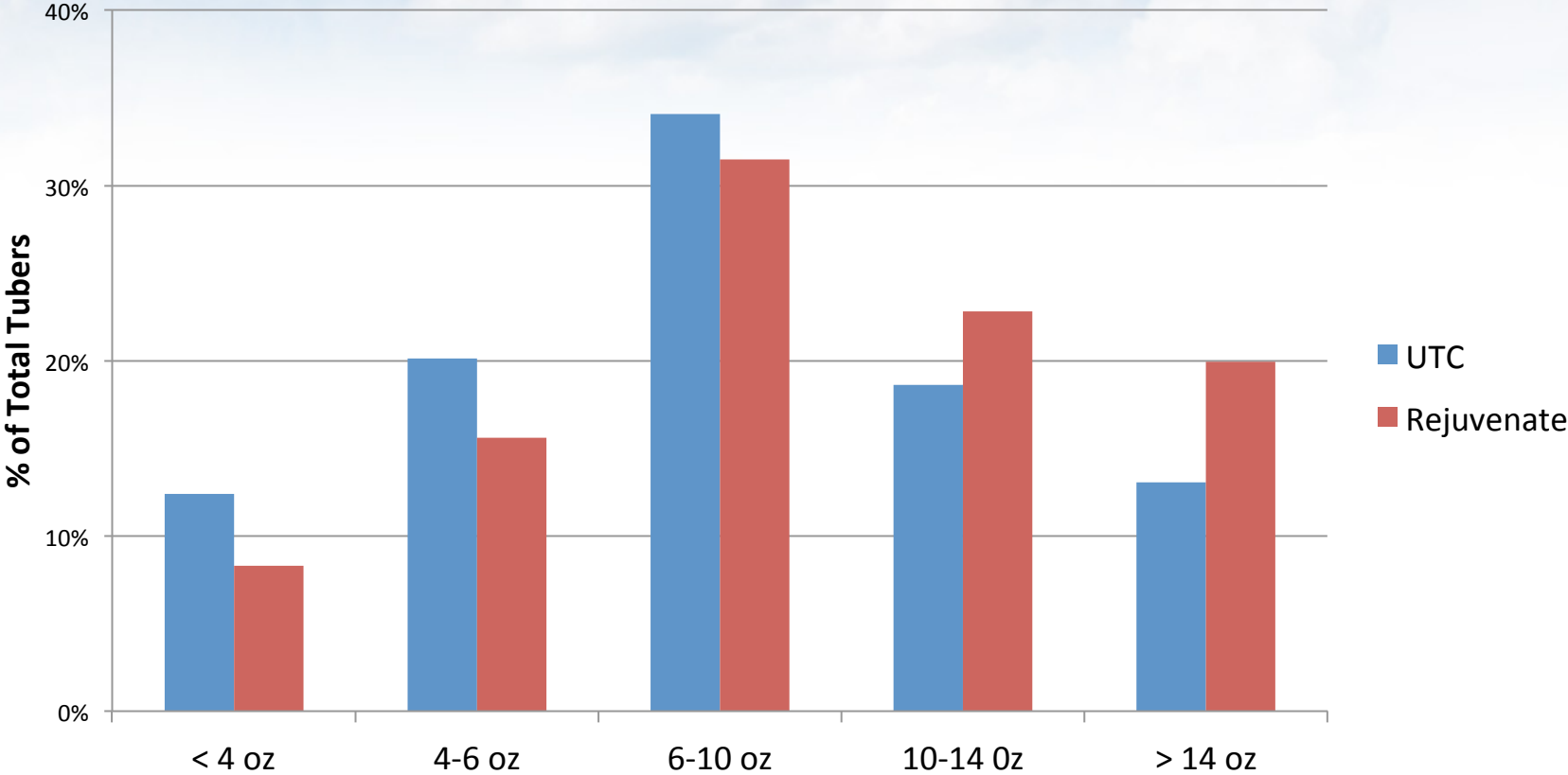
Average Stems/Plant MW Data - 2013



Average of 7 locations

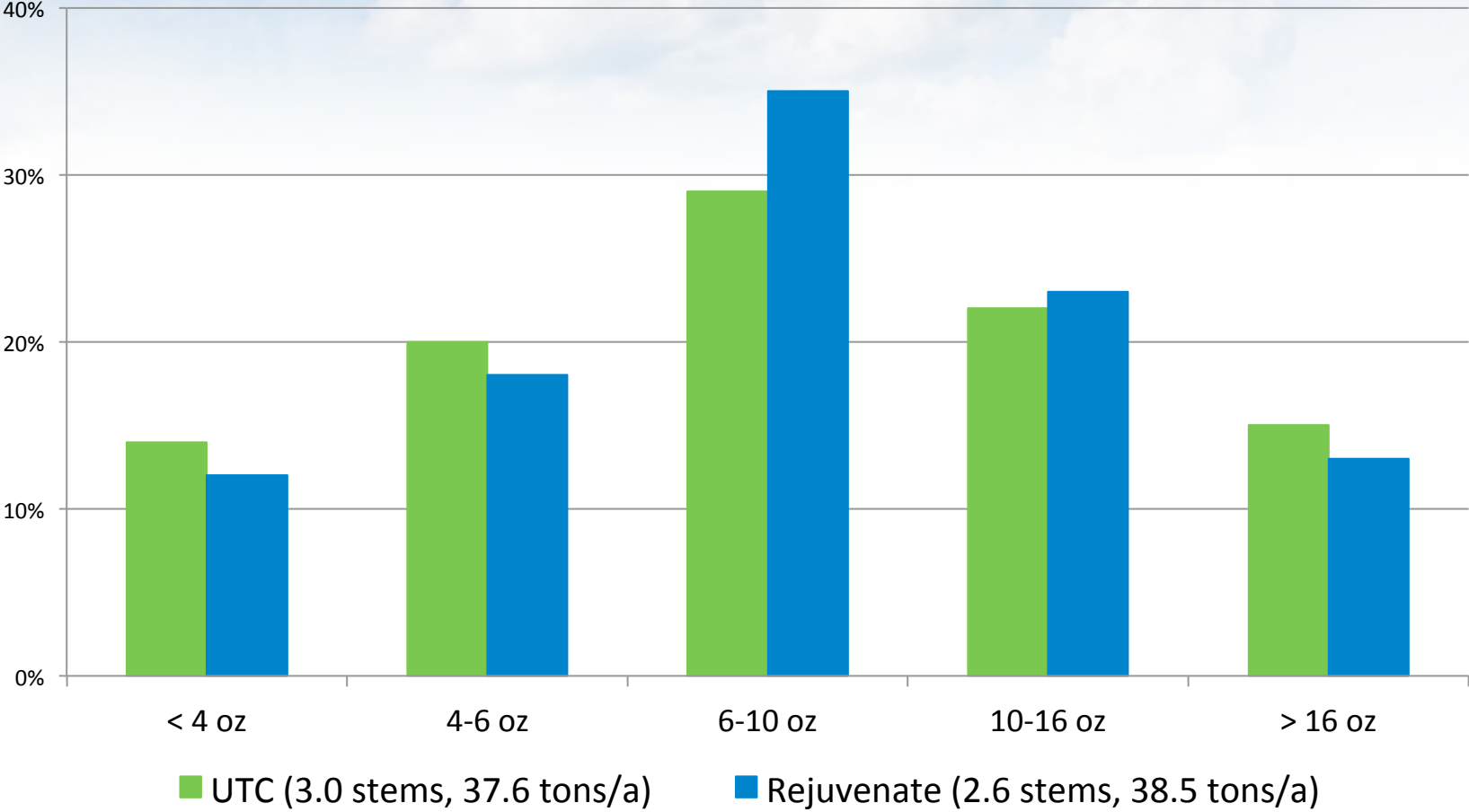
Tuber Size Distribution

MW Data - 2013

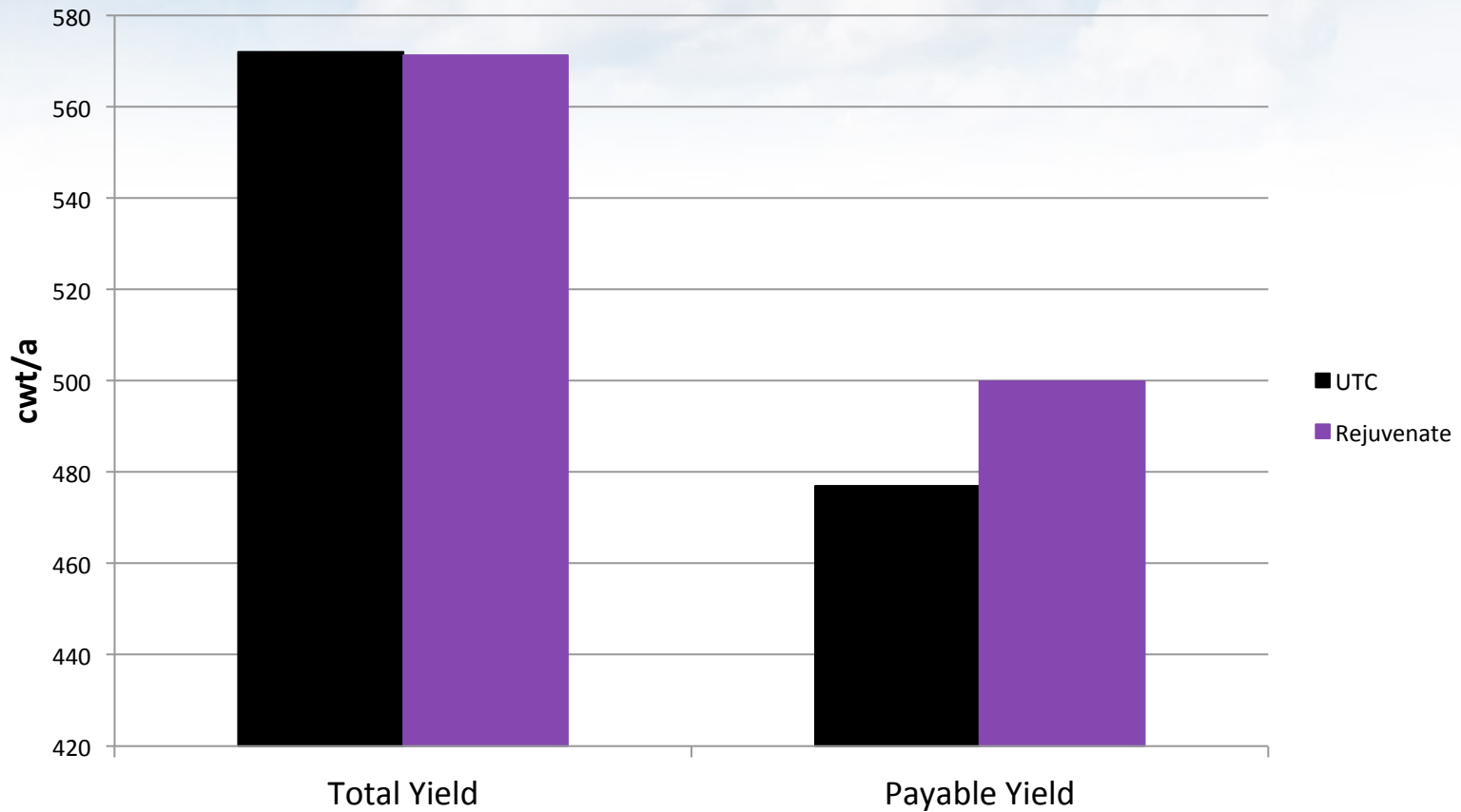


Average of 6 locations

Rejuvenate Tuber Size Profile & Yield (Avg. of 8 sites, WA 2013)

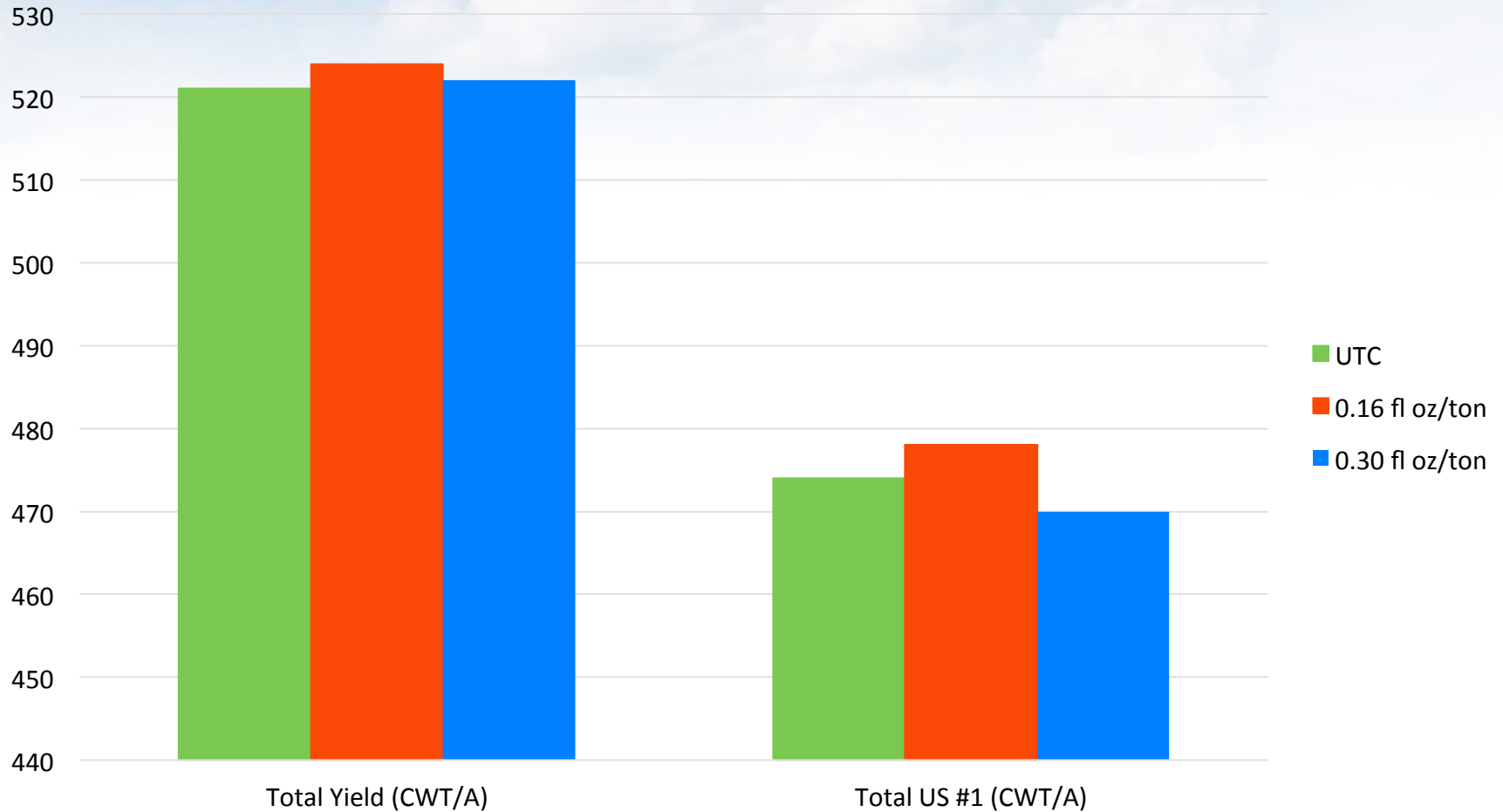


Effect of Rejuvenate on Potato Yield MW Data - 2013

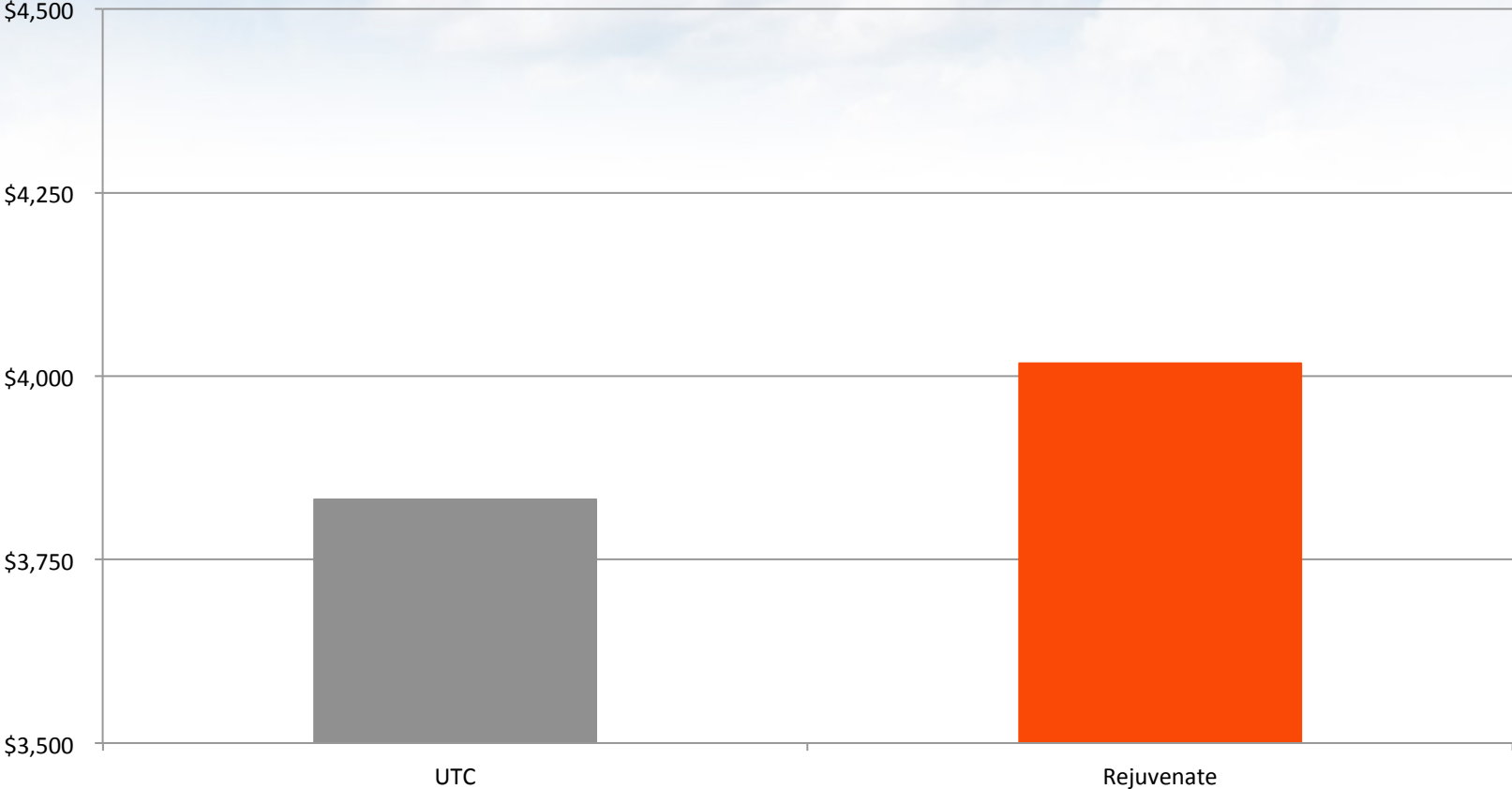


Average of 7 MW locations

2013 Rejuvenate Yield Trial NDSU - Dr. Robinson



Rejuvenate Effect on Return/A (Hypothetical Processing Contract)



Average of 7 MW locations

▶ **REJUVENATE helps restore apical dominance of weak seed:**

- Decreases number of stems
- Decreases total tuber set
- Produces more uniform tuber size distribution
- Is a tool to help increase marketable yield

CONCLUSIONS

- Tremendous experience was gained with REJUVENATE in 2013
- Benefits from REJUVENATE show a clear positive trend in reducing stem counts and increasing marketable yield
- There is still research planned to gain additional experience and understanding of all factors influencing results



FIVE OR SIX?

Sometimes it makes a big difference.



Thank You!

Questions?