

# **Onion Economics, IPM, Cost of Production and Break-Even Points**

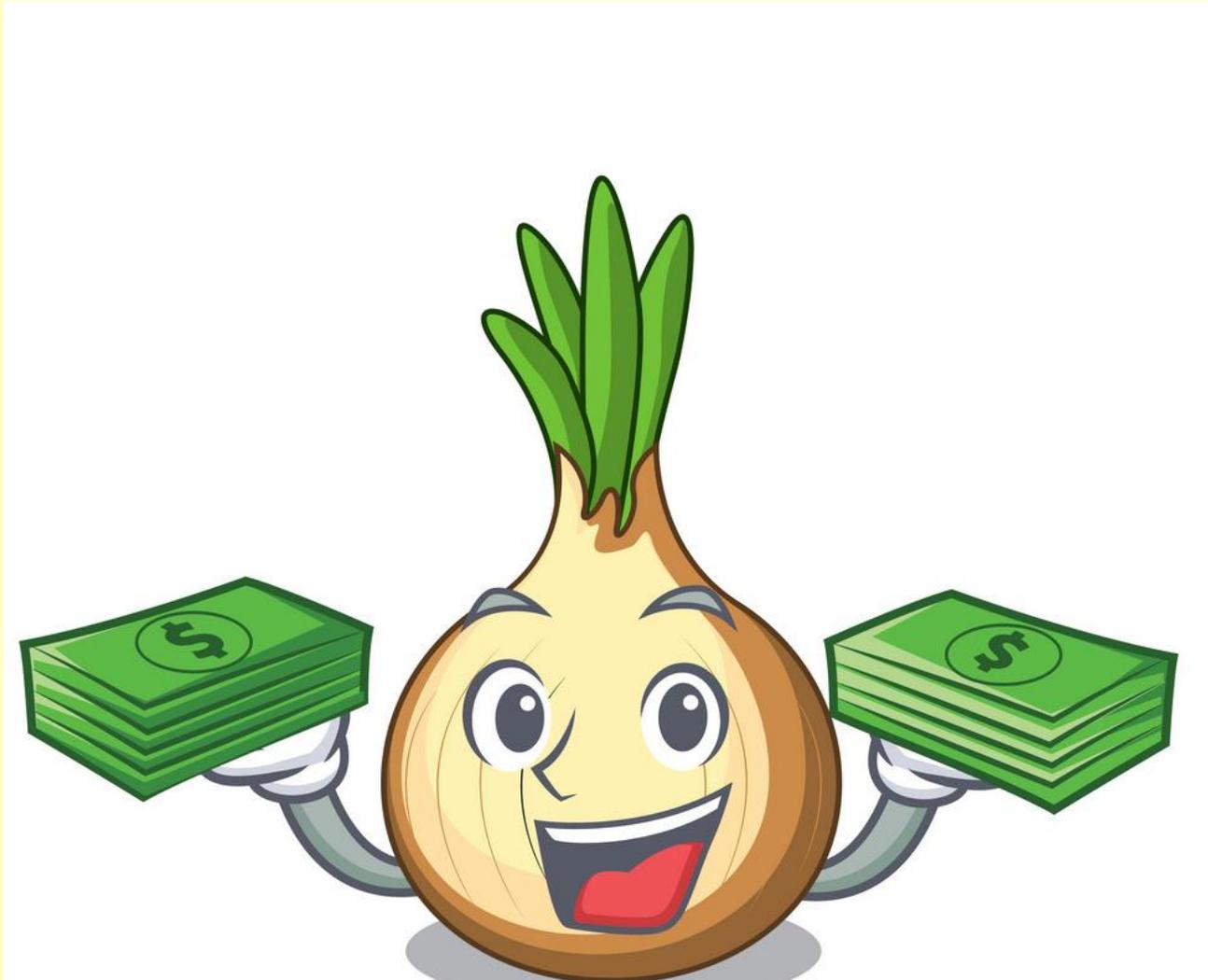
**Gina Greenway**

# Limitations



**1 Set of Books = hundreds of growers**

# Representative



# **Input Pricing**

- **Location**
- **Inventory**
- **Timing of Purchase**
- **Volume**
- **Ballpark**

**2021 Seed**

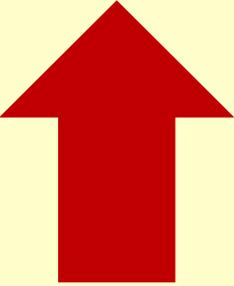
**\$585-\$630/Acre**

**Treat**

**Variety**

**Rate**

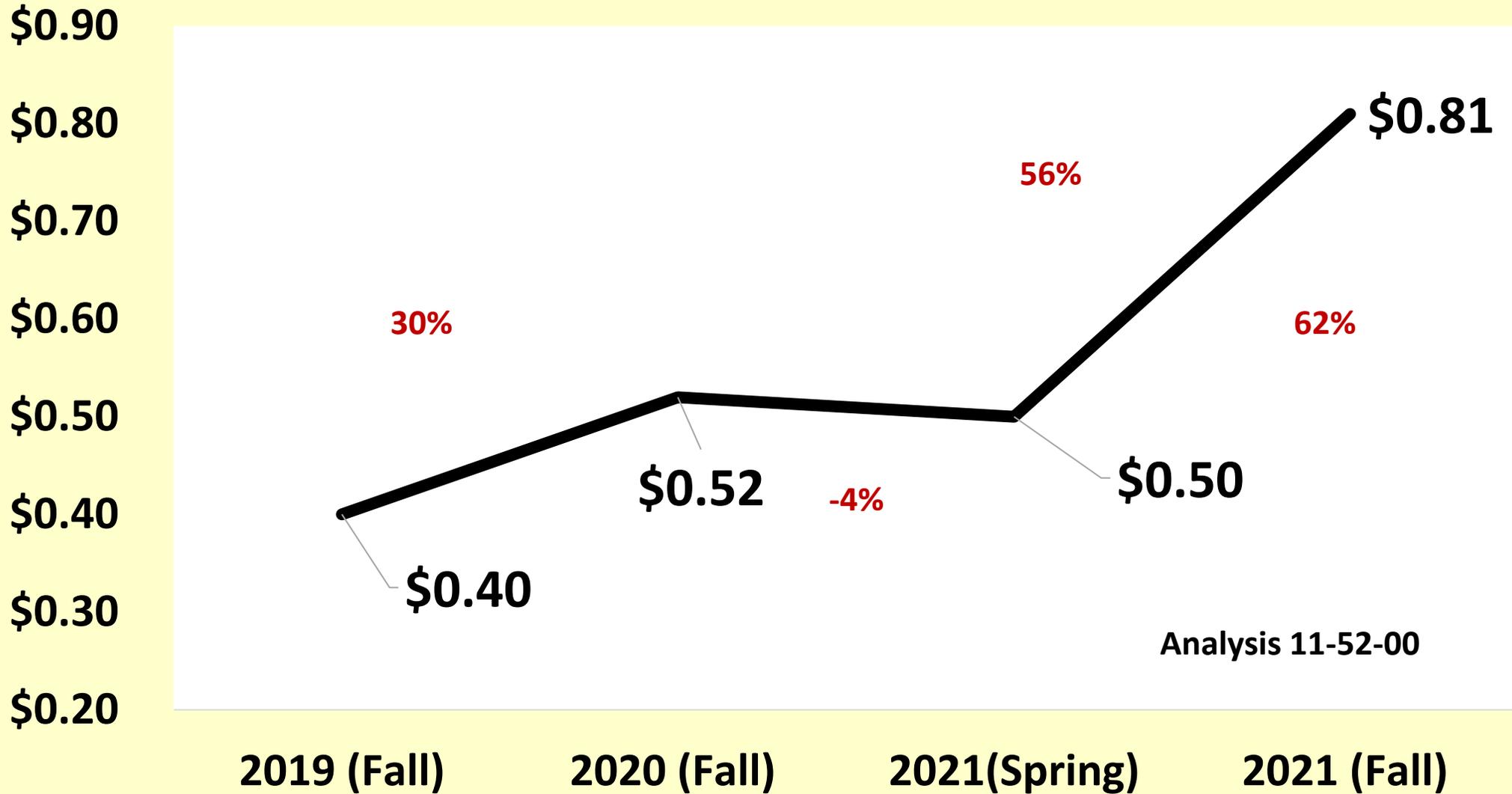
# Seed Expectations 2022



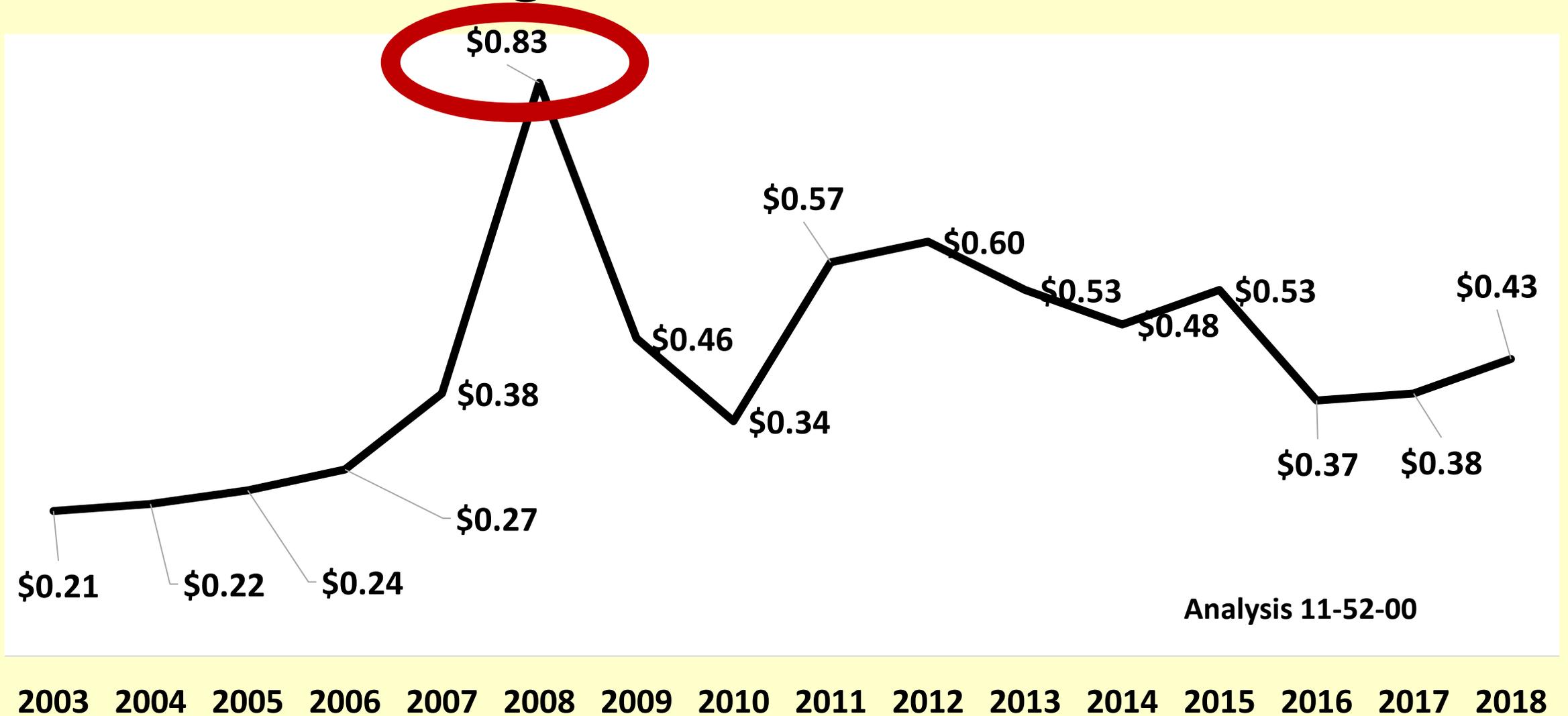
**6%**

# Fertilizer

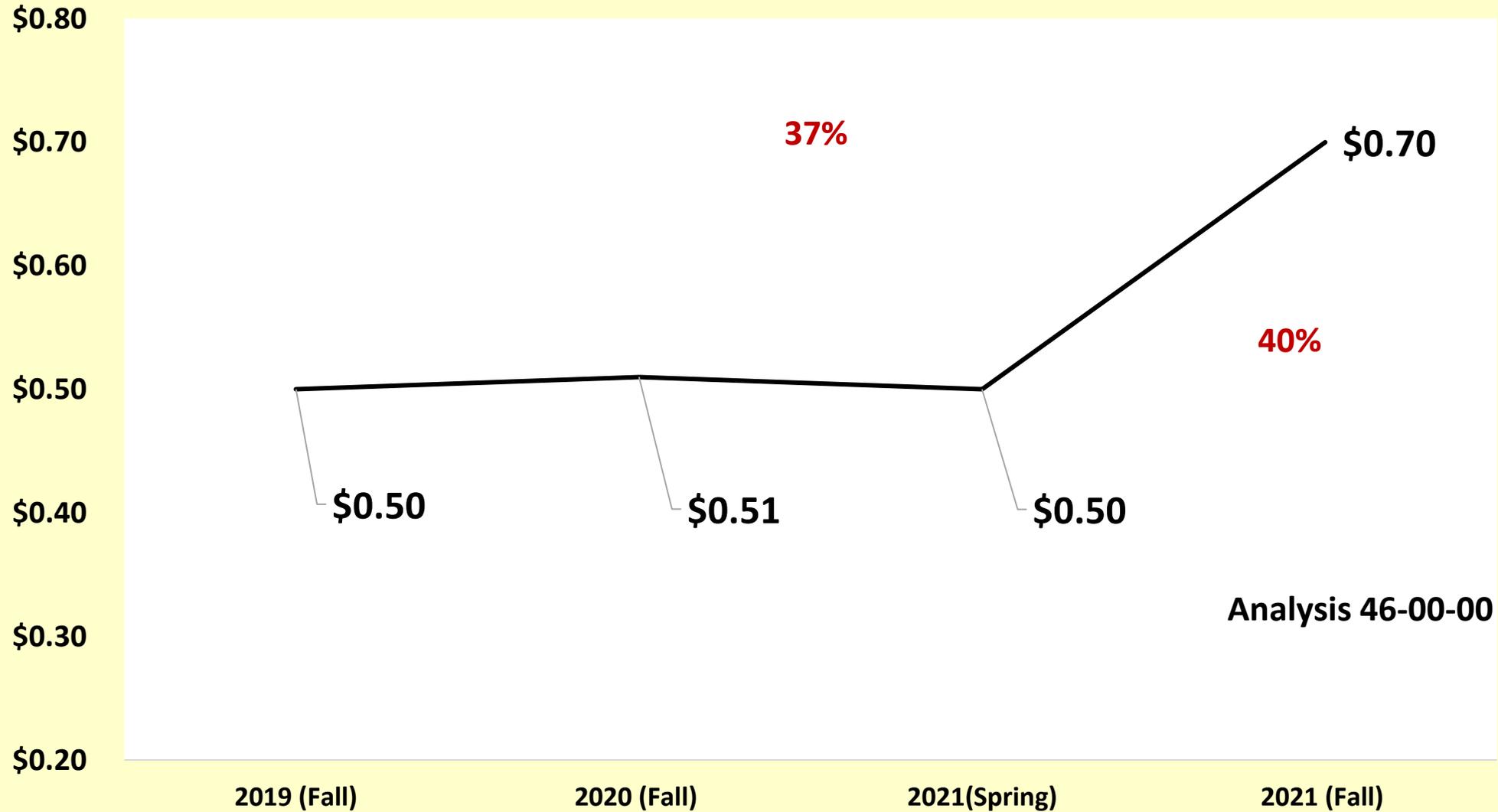
# Dry P205



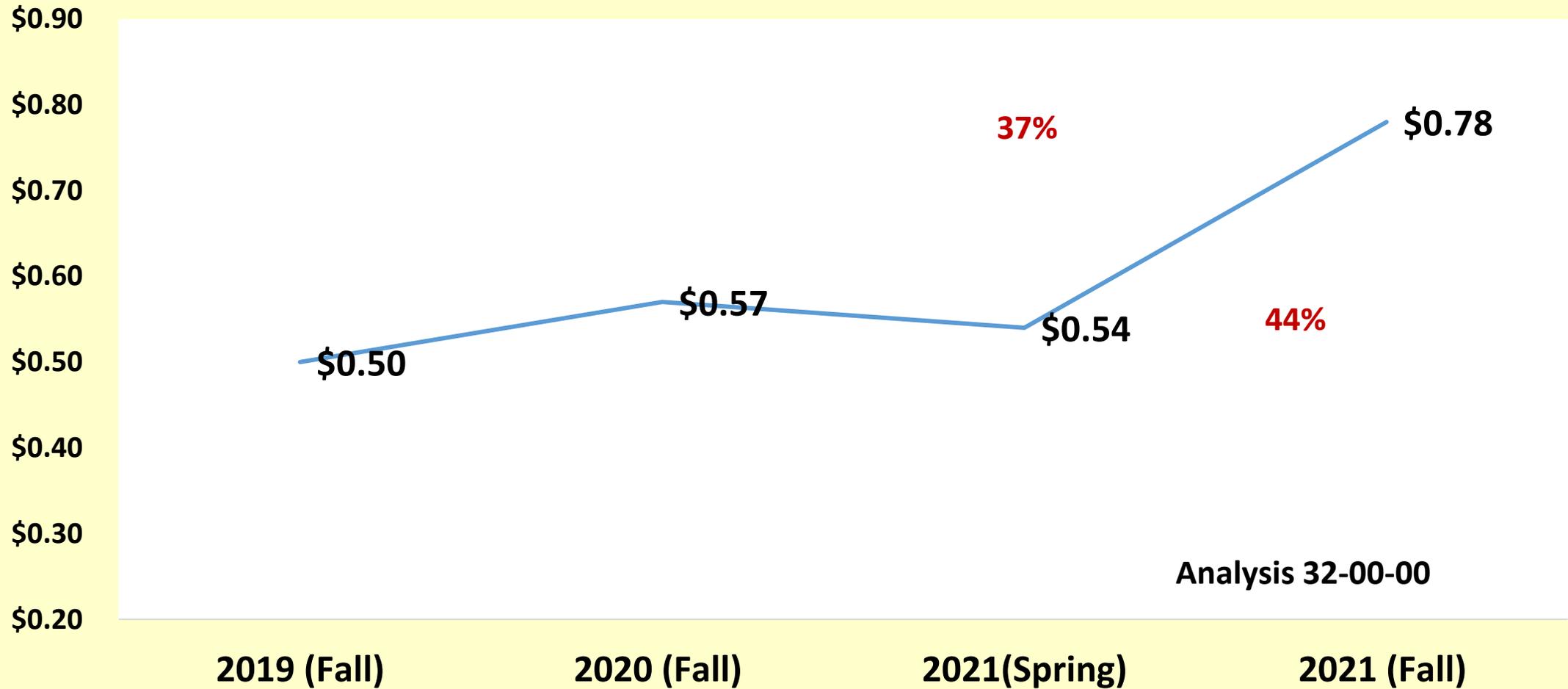
# Historical Pricing P205



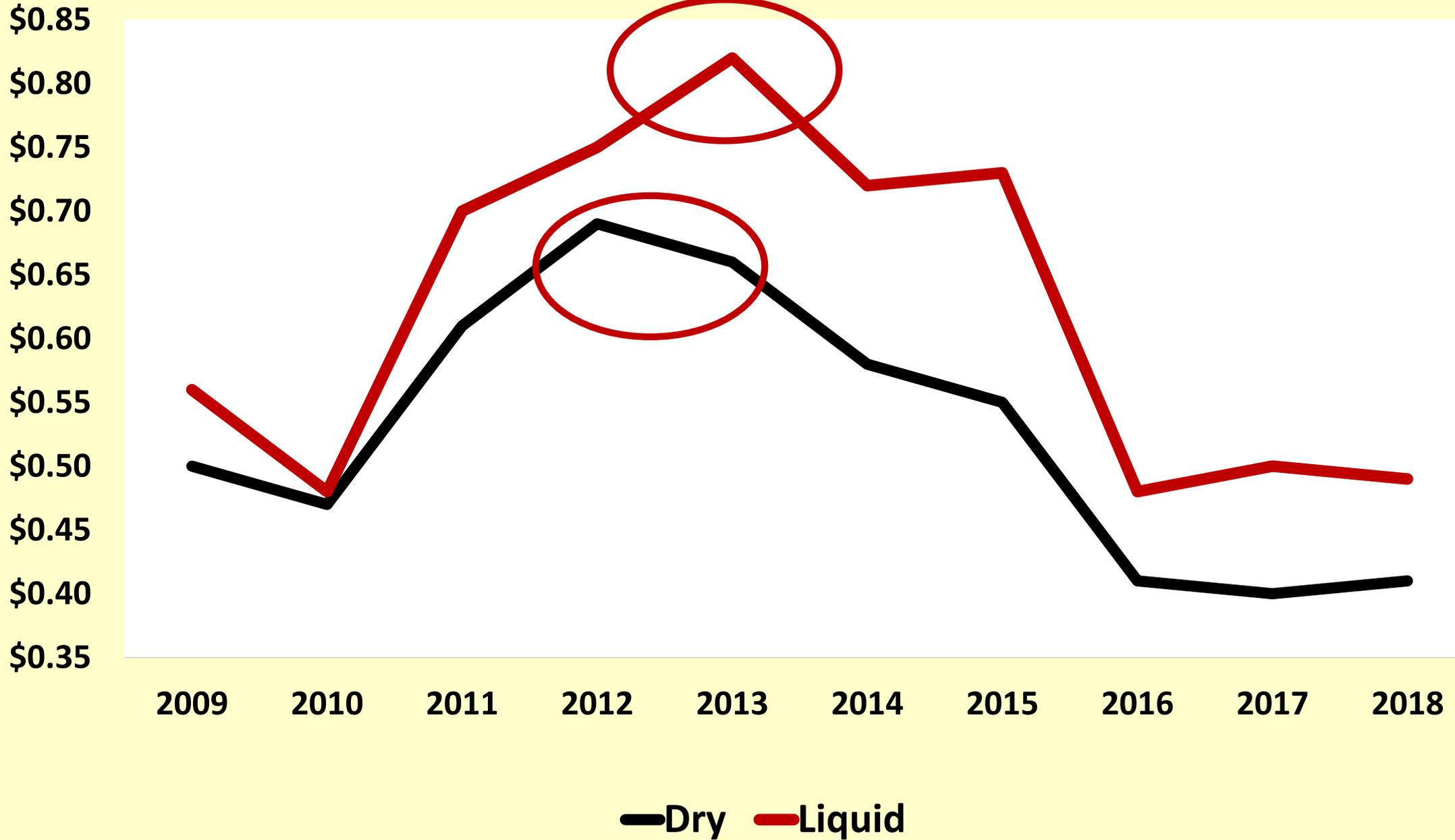
# Dry Nitrogen



# Liquid Nitrogen

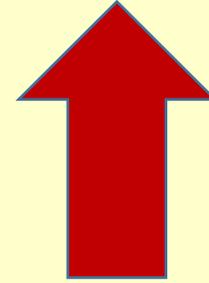


# Historical Nitrogen Pricing



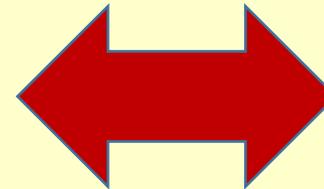
# Fall 2021 Fumigant

Vapam \$7.50/gal @40 \$300



Fall 2020 \$7.00/gal @40 \$280

Chloropicrin \$80/@4 \$320



# **Custom Application**

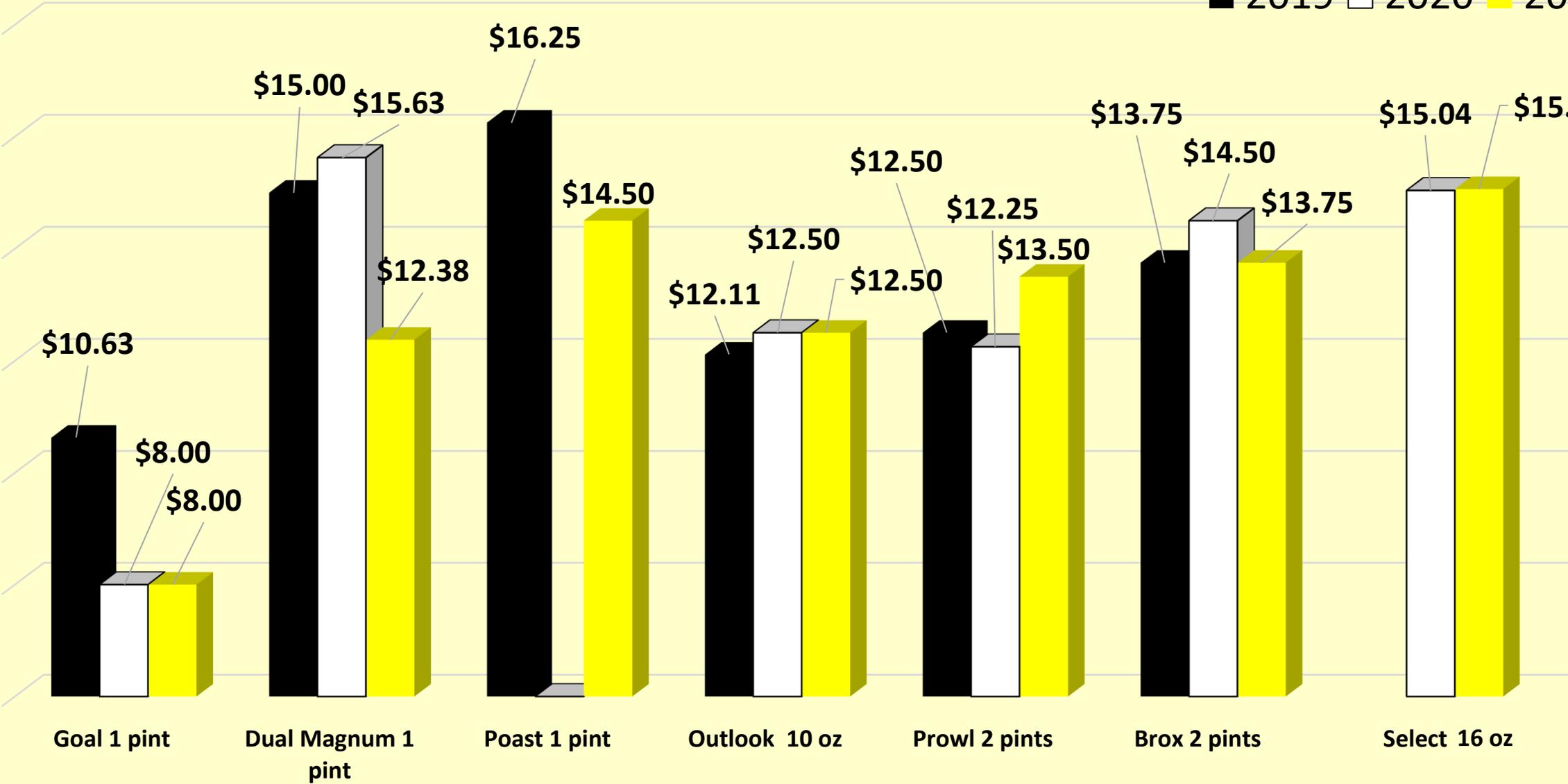
- **\$42.50-\$45.00**

# Herbicides

**Depends ~ \$68-\$110**

# Herbicide Pricing 2019-2021

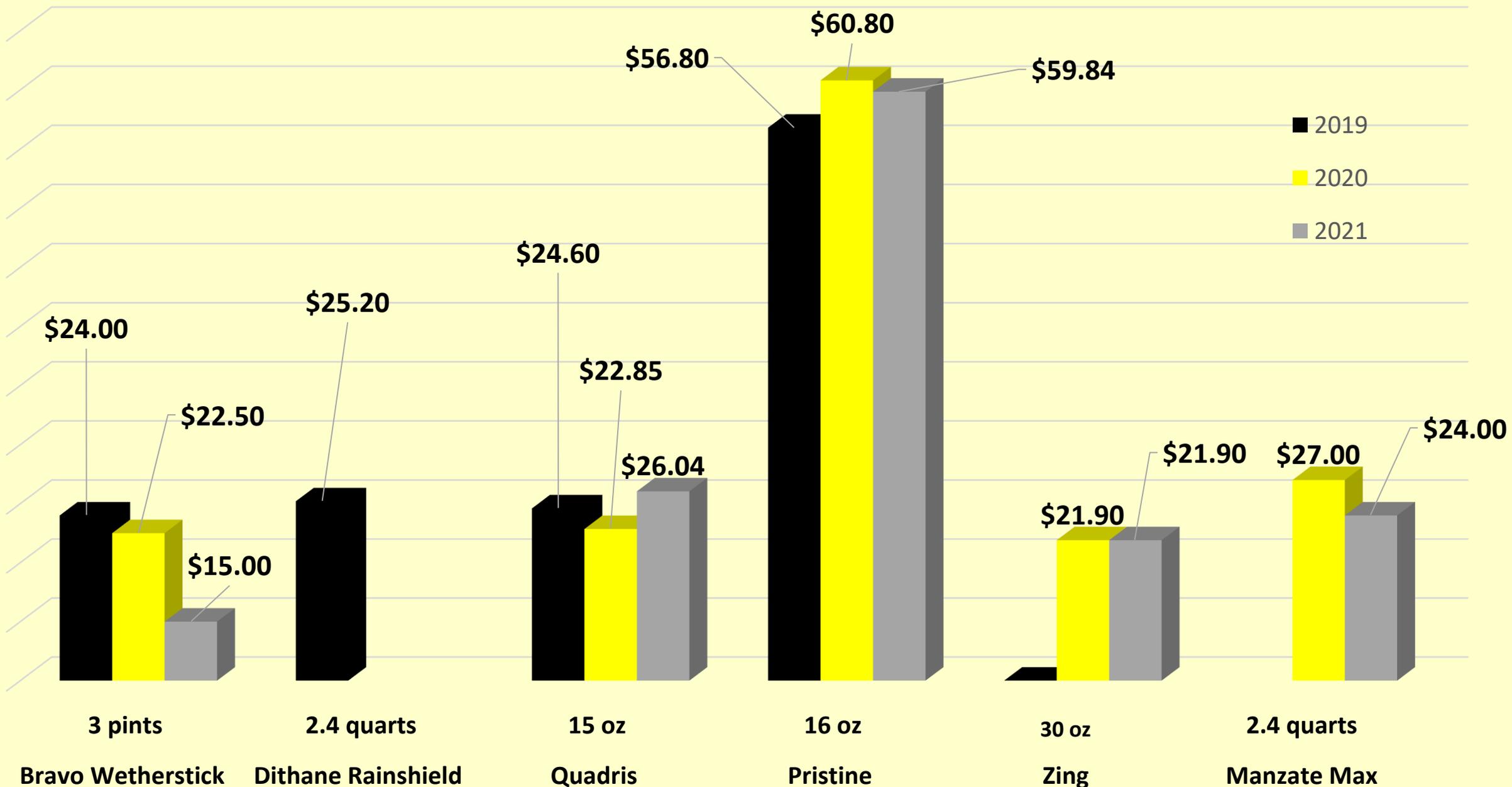
2019 2020 2021



# Fungicides

- **\$88-\$140**
- **Depends on # of Applications**
- **Product**

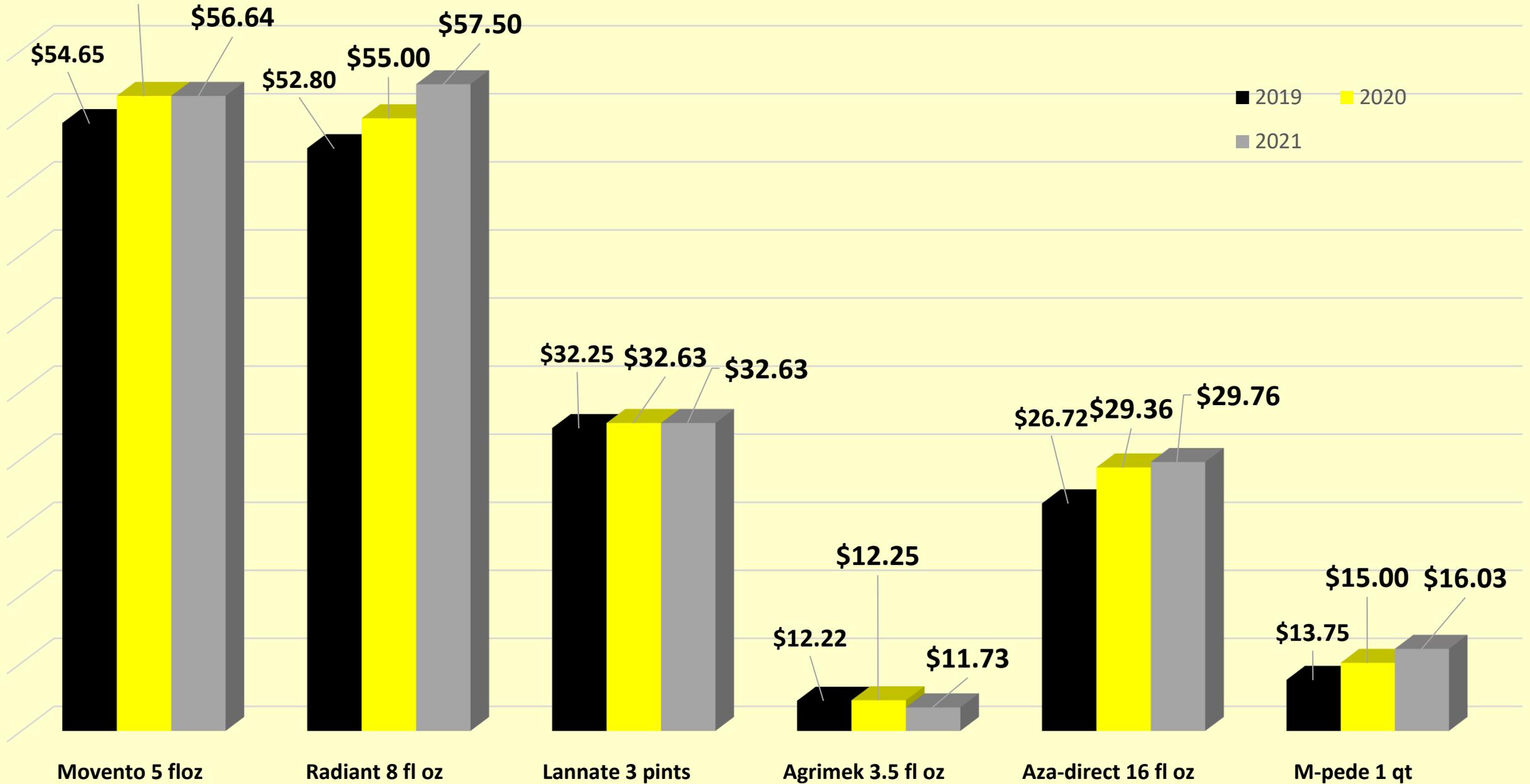
# Fungicide Cost Comparisons



# **Insecticides**

- **# of Applications**
- **Rate/Product Combo**
- **\$225-\$344**

# Insecticides 3 Year Comparison



# IPM

- **Can threshold based insecticide treatments and reduced nitrogen fertilization improve thrips management w/o impacting yield?**
- **Malheur Experiment Station 2020**
- **Anitha Chitturi, Erik B. G. Feibert, Kyle Wieland, Ian Trenkel, Alicia Rivera, and Stuart Reitz**

# **N Treatments**

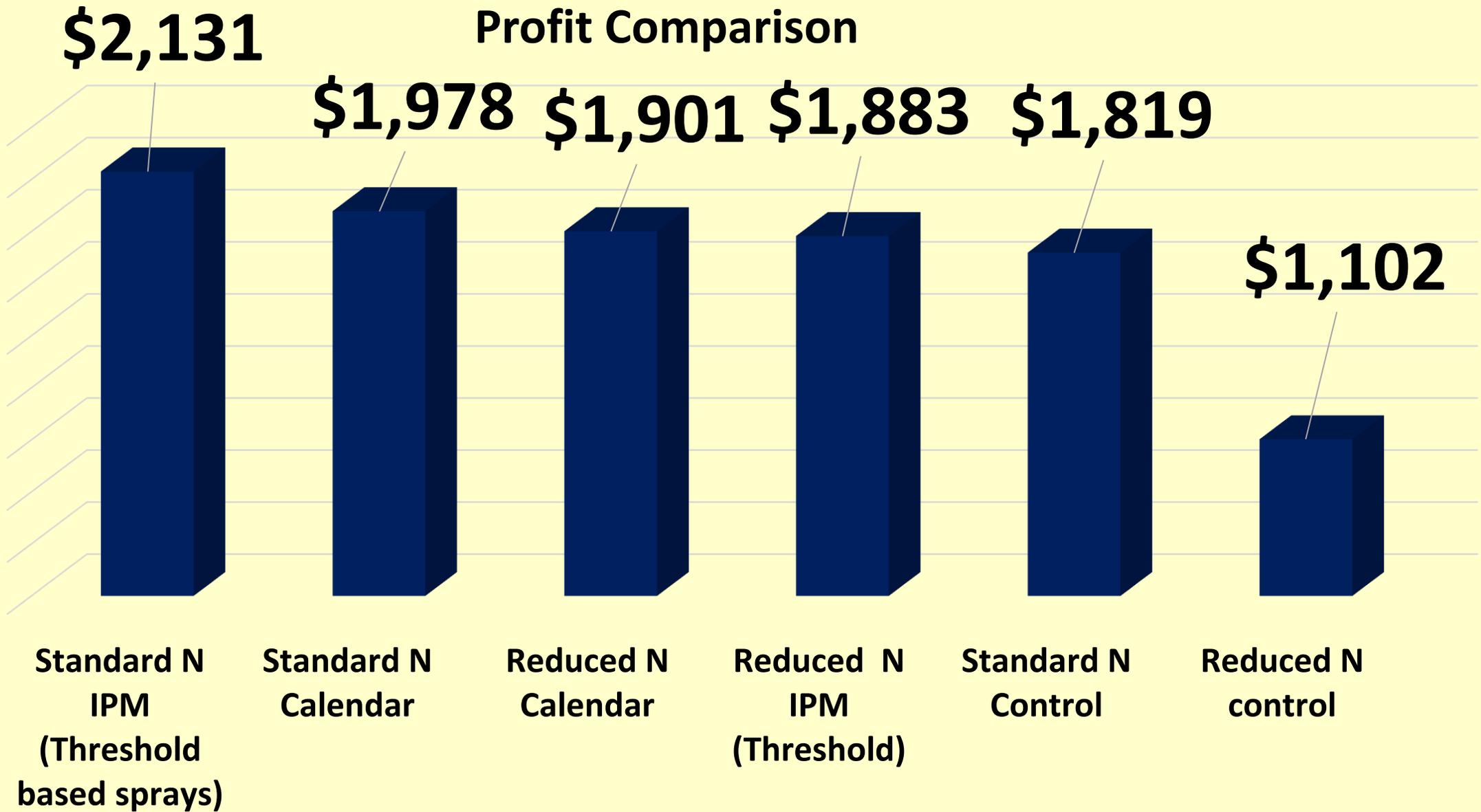
- **Applied through drip**
- **Standard N=120 lbs/acre =\$68.40 (Based on soil and tissue test)**
- **Reduced N=50 lbs/acre=\$28.50**

Calendar (Reduced N & Standard N)		IPM (threshold based) Reduced N		IPM (threshold based) Standard N	
Movento	2.5fl. oz	Movento	2.5fl. oz	Movento	2.5fl. oz
Aza	16fl. oz	Aza	16fl. oz	Aza	16fl. oz
Dyne-Amic	0.7pt	Dyne-Amic	0.7pt	Dyne-Amic	0.7pt
Movento	2.5fl. oz	Movento	2.5fl. oz	Movento	2.5fl. oz
Aza	16fl. oz	Aza	16fl. oz	Aza	16fl. oz
Dyne-Amic	0.7pt	Dyne-Amic	0.7pt	Dyne-Amic	0.7pt
agrimek	3.5fl. oz	agrimek	3.5fl. oz	Agrimek	3.5fl. oz
Dyne-Amic 0.25% V/V		Dyne-Amic 0.25% V/V		Dyne-Amic 0.25% V/V	
agrimek	3.5fl. oz	agrimek	3.5fl. oz	Agrimek	3.5fl. oz
Dyne-Amic 0.25% V/V		Dyne-Amic 0.25% V/V		Dyne-Amic 0.25% V/V	
Radiant	8fl. oz	Radiant	8fl. oz	Radiant	8fl. oz
Dyne-Amic 0.25% V/V		Dyne-Amic 0.25% V/V		Dyne-Amic 0.25% V/V	
Radiant	8fl. oz			Radiant	8fl.oz
Dyne-Amic 0.25% V/V				Dyne-Amic 0.25 V/V	
Exirel	13.5fl. oz				
Dynamic 0.25% V/V					
<b>Total Number of Insecticide Apps</b>	<b>7</b>		<b>5</b>		<b>6</b>
<b>Total Cost (Insecticides)</b>	<b>\$344.58</b>		<b>\$224.44</b>		<b>\$284.23</b>

# **Complications**

- **COVID-19 Precautions**
- **No insecticide applications were made after July 14**

# Profit Comparison



# Takeaway

**Action based thresholds (IPM) managed thrips w/o impacting yield**

*But*

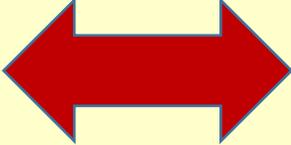
**The % of larger bulbs was greater with standard N vs Reduced N**

**Full Report:**

**<https://agsci.oregonstate.edu/article/management-onion-thrips-threshold-based-insecticide-applications-and-reduced-nitrogen>**

# Other Inputs

- Chlorine Dioxide \$30-\$32

- MH-30 

# GAP Audits

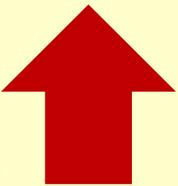
- \$10/Acre



\$12/Acre

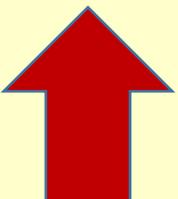
**Opportunity Cost of Time**

# Drip Irrigation

- Drip Supplies 2021 

- Booked Fall For Spring

- 4-7%

- Waited Until Spring 

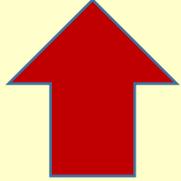
- 15-18%

- Conventional Bed \$265

- Intense Bed-\$370

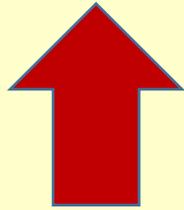
# Drip Irrigation

2022

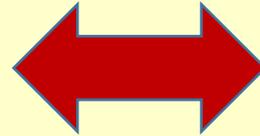


Book Now For Spring

25% -32%



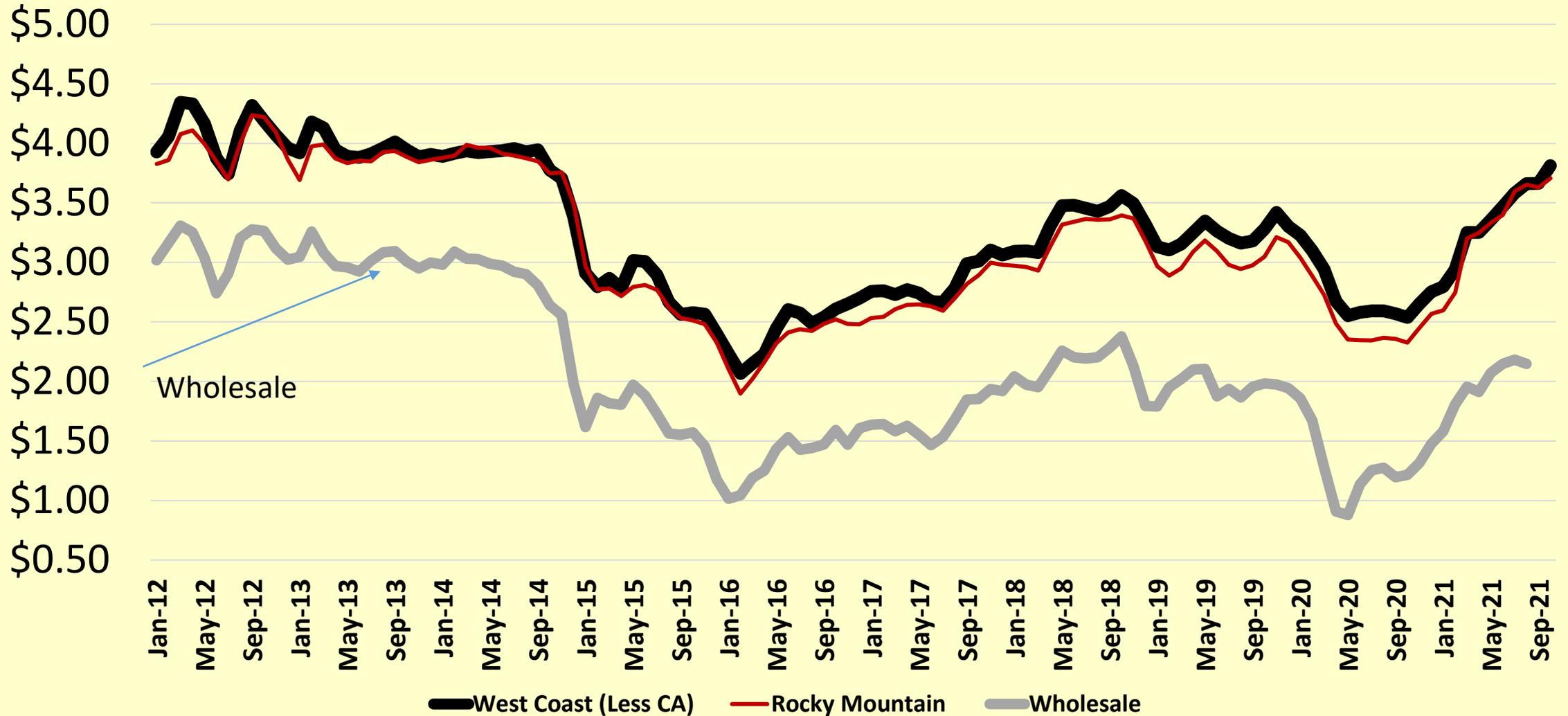
• Water Assessment (Region Specific)



• Drip Recycling \$10 Bucks/Acre

# Fuel

Diesel Retail (On Road) Price (Rocky Mountain, & West Coast) vs Wholesale



# Fuel Averages 2021

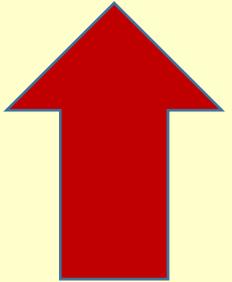
- **\$3.37 (Jan- October) Road Retail**
- **\$2.25 (Dyed) Jan-August (Adjusted PROXY)**

# Fuel Calculations Tractor Operations

- Ag Engineering
  - Horsepower
  - Speed X Width X Field Efficiency
- ~30-51 Gal/Acre
- ~43 Gal/Acre Treasure Valley
- ~37 Gal/Acre Basin (Field Efficiency)

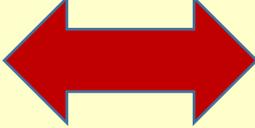
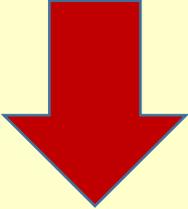
# YOY Fuel Comparisons

- Last Year 37 gal/acre @\$1.27-\$1.45= ~\$47.00-\$54.00
- This year 37 gal/acre @2.25=\$83.25



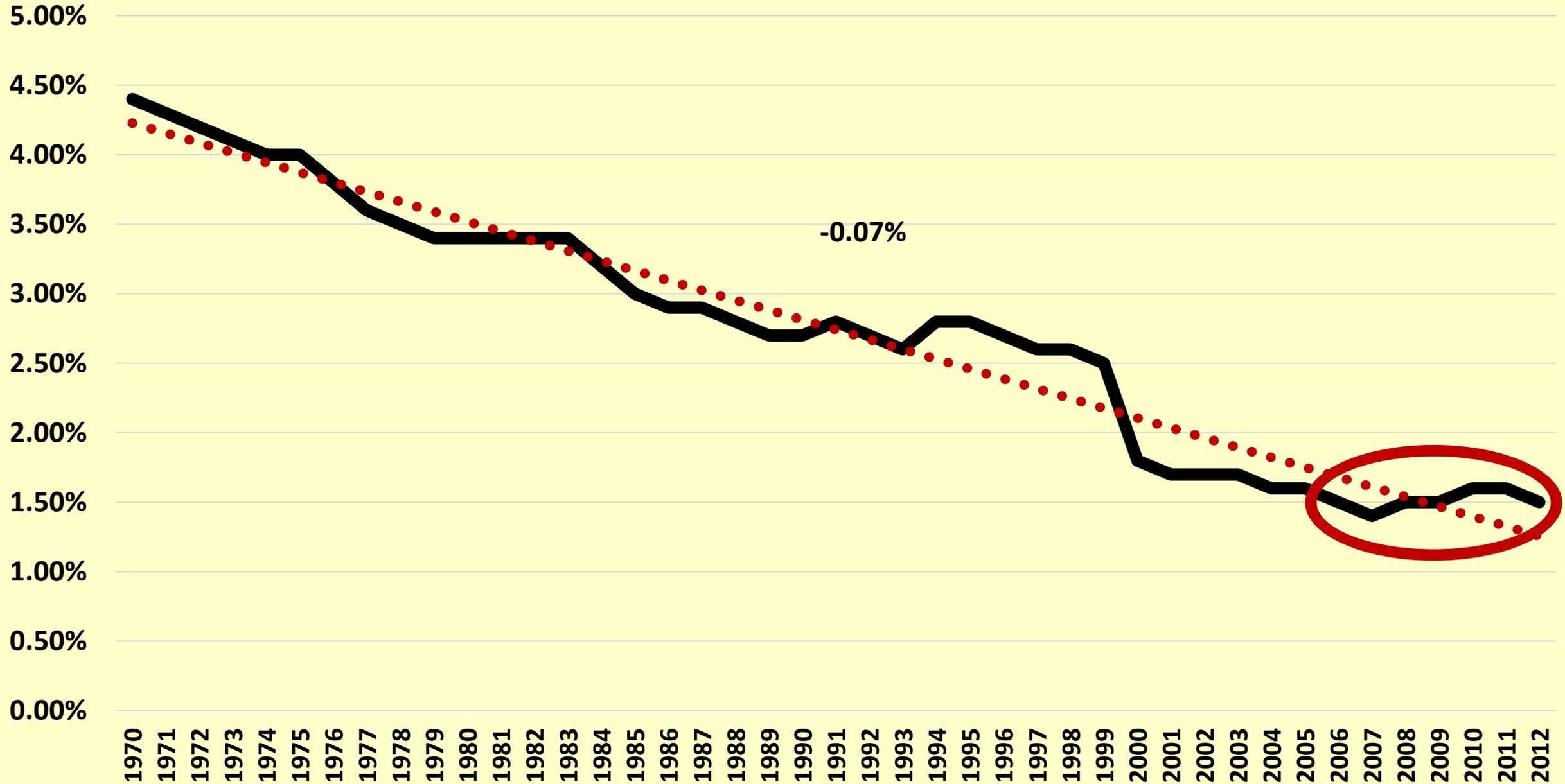
**Hauling Charge \$9.00/Ton**

# Other Costs Custom and Consultants

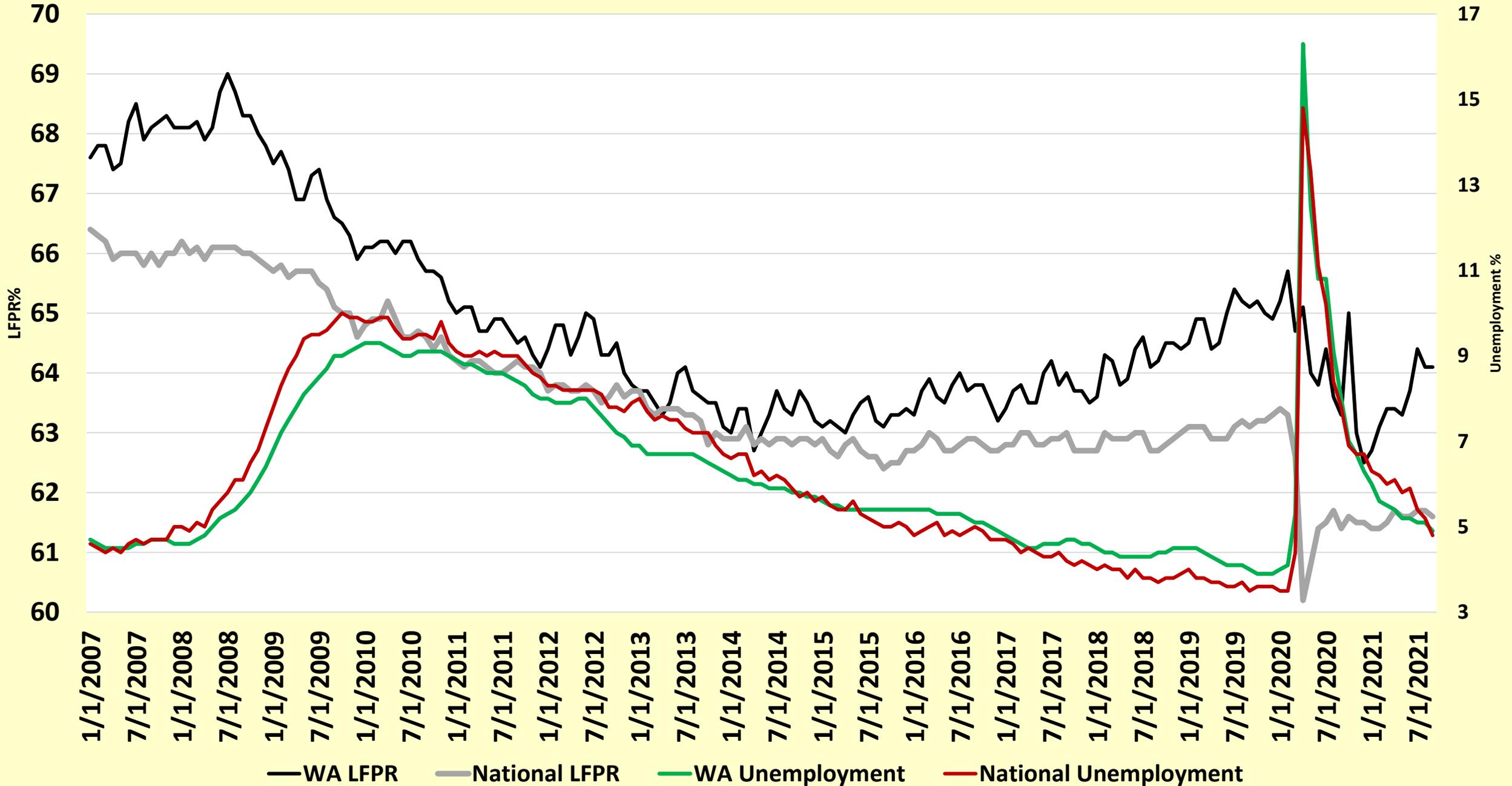
- Custom Fertilize \$7-\$12 
- Hand Crews Weeding \$50-\$350
- Less Use 
- Crop Insurance \$80

**Labor**

# Percent of Employment in Agriculture 1970-2012



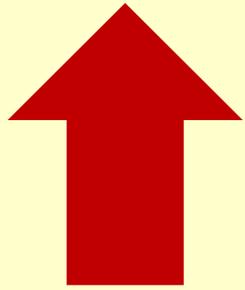
# Labor Force Participation and Unemployment National vs Washington State



# Effective Wage Rates Labor 2021

Labor Type	Payroll Overhead
<b>H2A-\$16.34 (WA) +overhead \$20.43</b>	<b>+20% (Meal, Transportation Housing)</b> <b>+25%-2021</b> <b>+30%-2022</b>
<b>Equipment Operators</b> <b>\$19.75 +overhead \$24.68</b>	<b>+25% (FICA, SUTA, FUTA Workman's Comp)</b>
<b>Other</b> <b>\$17.50 + overhead \$20.12</b>	<b>+15% (FICA, SUTA, FUTA Workman's Comp)</b>

# Labor



**\$381/Acre W/O Drip**  
**+Drip \$545**

**\$0.32-0.45 Per 50# Sack**

# Fixed Costs

- **Land Rent \$525**
  - USDA Cash land rent survey (WA)
  - Varies by County
- **Depreciation (Capital Recovery) \$364**
  - Replacement Value
- **Interest, Housing, Insurance-\$225**
  - Interest on All Capital Outlay
- **Overhead-2.5% Operating Costs**
- **Management-5% Operating Costs**

# How are we doing



# 2021 Operating (Input Costs) WA

• Before Packing  $\$3731/595 = \$6.27$  cwt

\$3.14 50 # Sack

+ \$3.50 Packing

\$0.00 No Storage

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**\$6.64 No Return to Management, Land Charge, Capital Recovery**

# 2021 Operating (Input Costs) WA

• Before Packing  $\$3731/595 = \$6.27$  cwt

\$3.14 50 # Sack

+ \$3.50 Packing

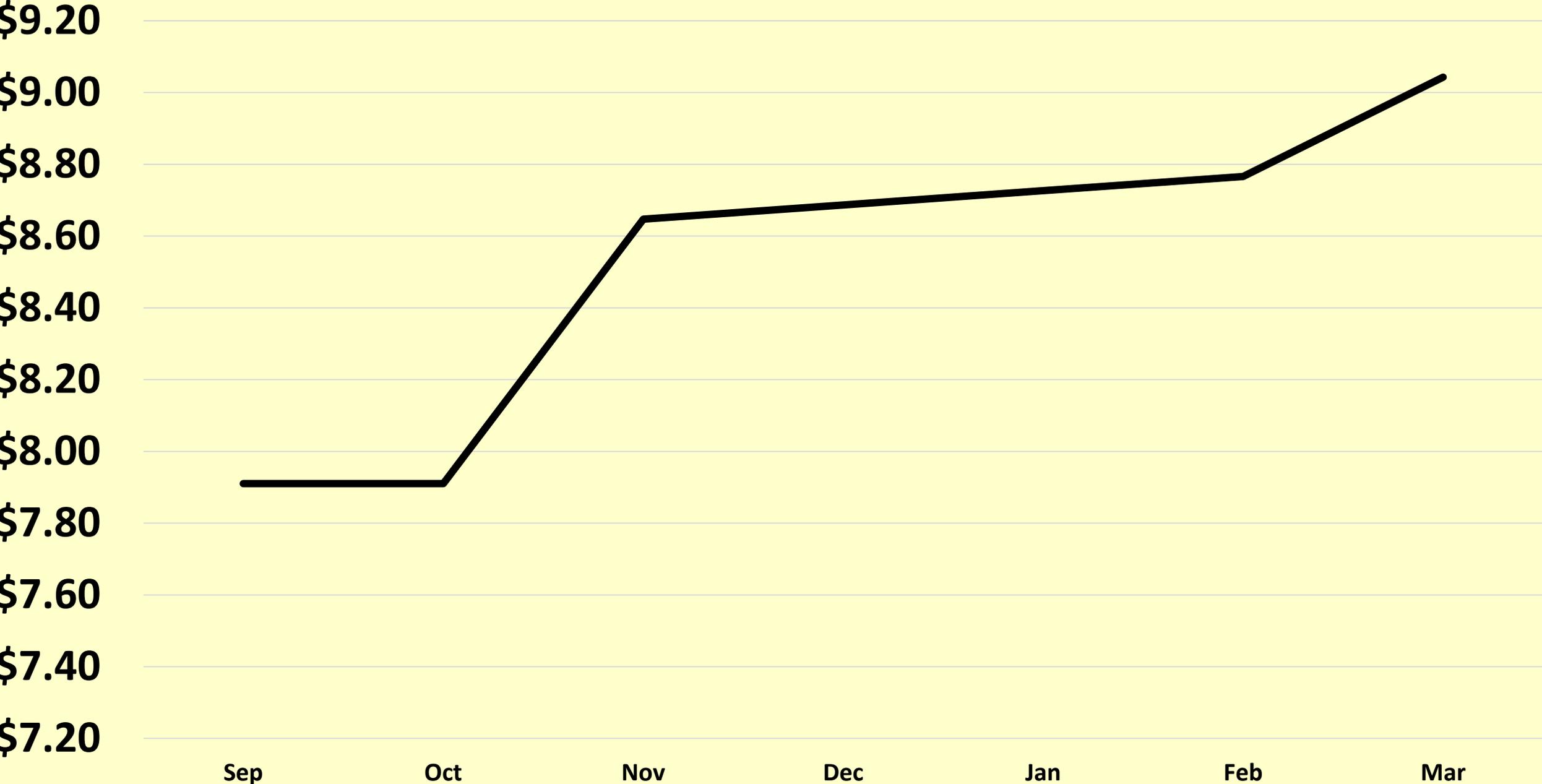
\$0.50 Storage (No Shrink)

**\$7.14 No Return to Management, Land Charge, Capital Recovery**

# Fixed Costs

- $1,506/595 = \$2.53/\text{cwt}$
- \$1.27 per 50# Sack
- Without storage ~\$7.91
- Need ~\$8.41 per 50# with storage (No Shrink)

# Monthly Break Even Over Total Costs



# Can you grow an onion for less?

- Yes
- I don't cut corners
- Quality Onion

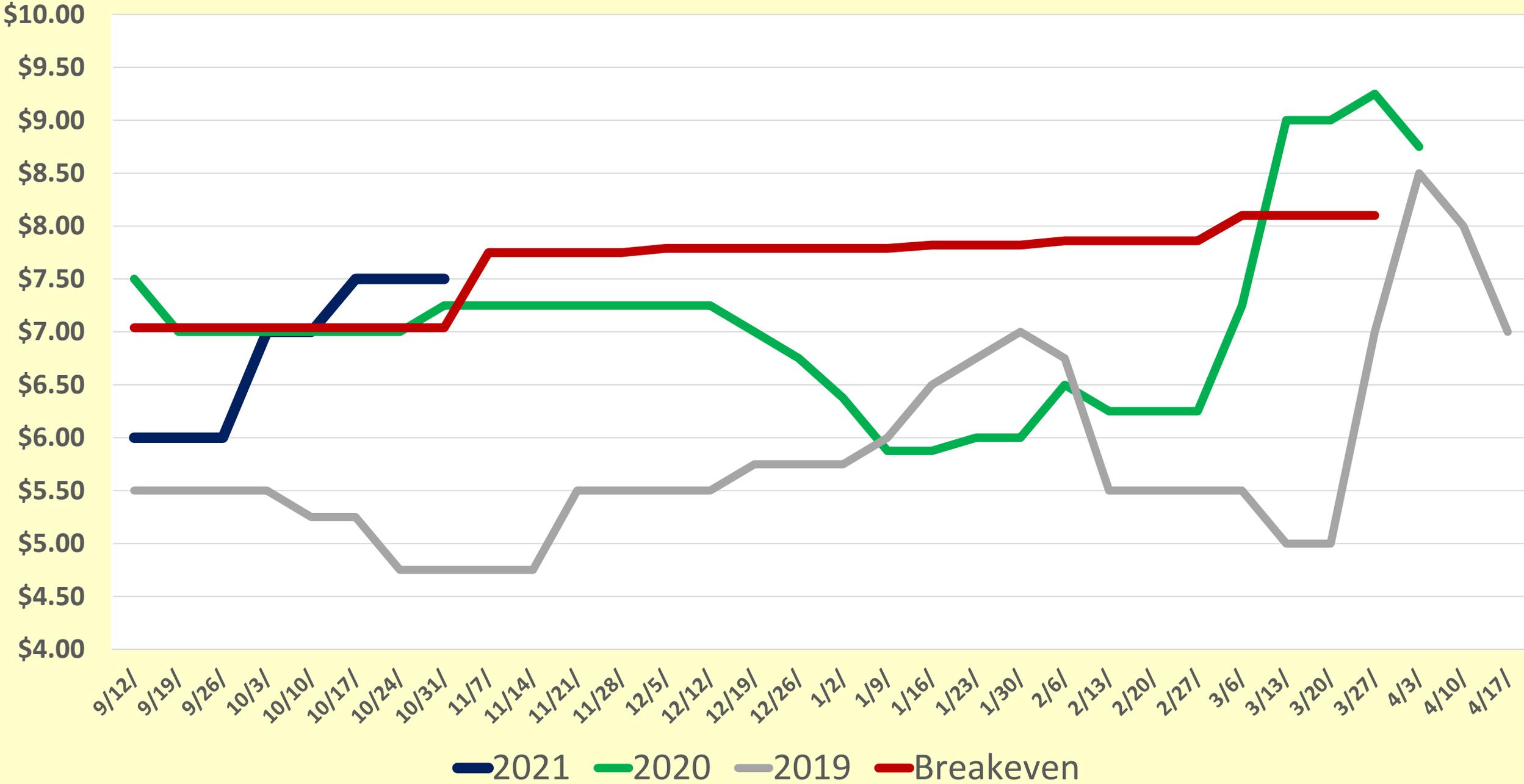
# Pricing Scenario –No Storage

Marketable Yield				
Colossal	140	50 # Sack	\$15.00	\$2,100.00
Jumbo	420	50 # Sack	\$12.00	\$5,040.00
Medium	630	50# Sack	\$5.75	\$3,622.50
Total	1,190	50 # Sack	<b>\$9.044</b>	\$10,762.50
Total Costs			\$7.91	\$9,413
Profit			\$1.134	\$1,349.50

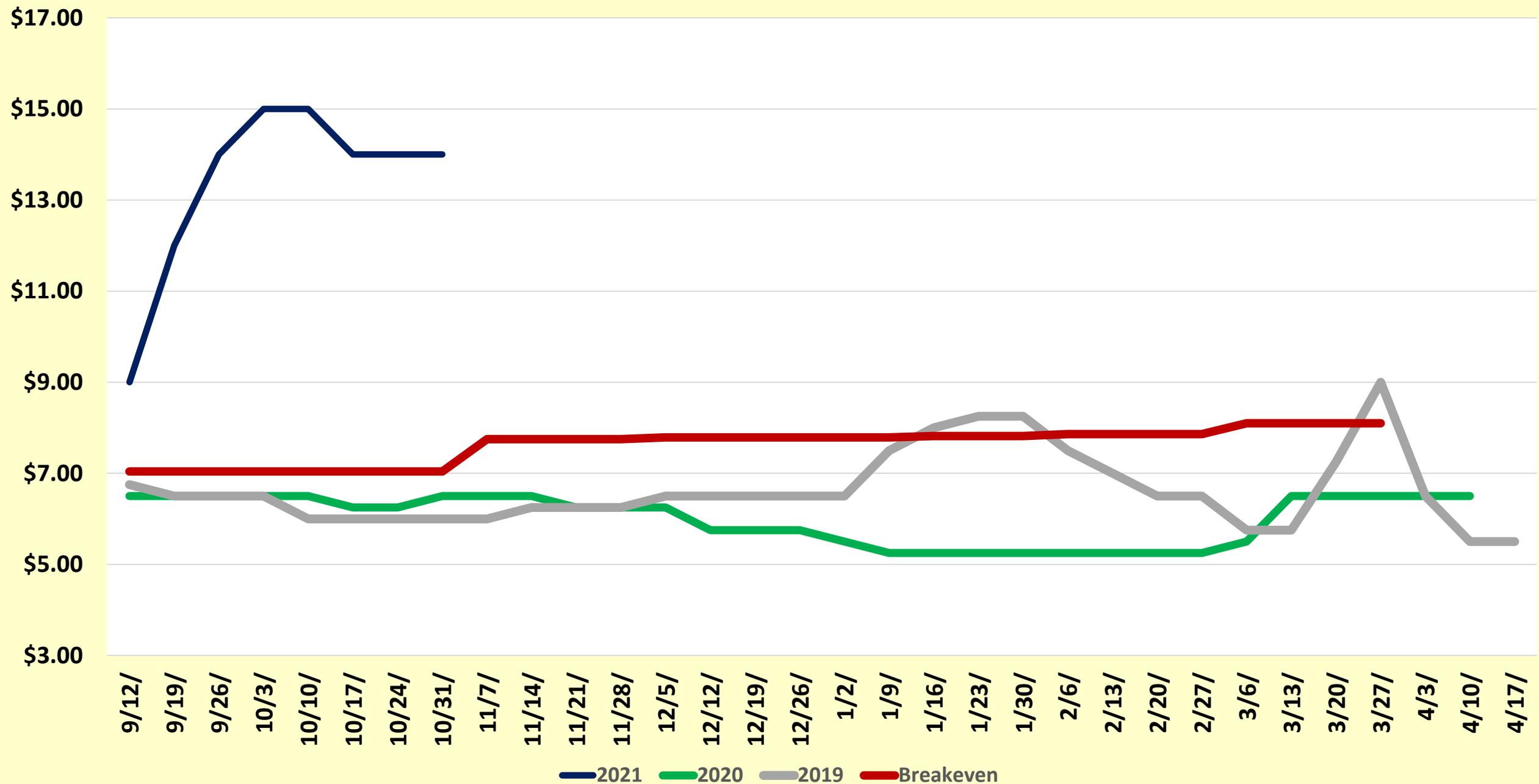
# Pricing With Storage and Shrink

<b>Marketable Yield</b>				
<b>Colossal</b>	<b>140</b>	<b>50 # Sack</b>	<b>\$16.00</b>	<b>\$2,240.00</b>
<b>Jumbo</b>	<b>420</b>	<b>50 # Sack</b>	<b>\$13.00</b>	<b>\$5,460.00</b>
<b>Medium</b>	<b>630</b>	<b>50 # Sack</b>	<b>\$7.00</b>	<b>\$4,410.00</b>
<b>Total</b>	<b>1,190</b>	<b>50 # Sack</b>	<b>\$10.176</b>	<b>\$12,110.00</b>
<b>Total Costs</b>			<b>\$8.65</b>	<b>\$10,293.50</b>
<b>Profit</b>			<b>\$1.526</b>	<b>\$1,816.50</b>

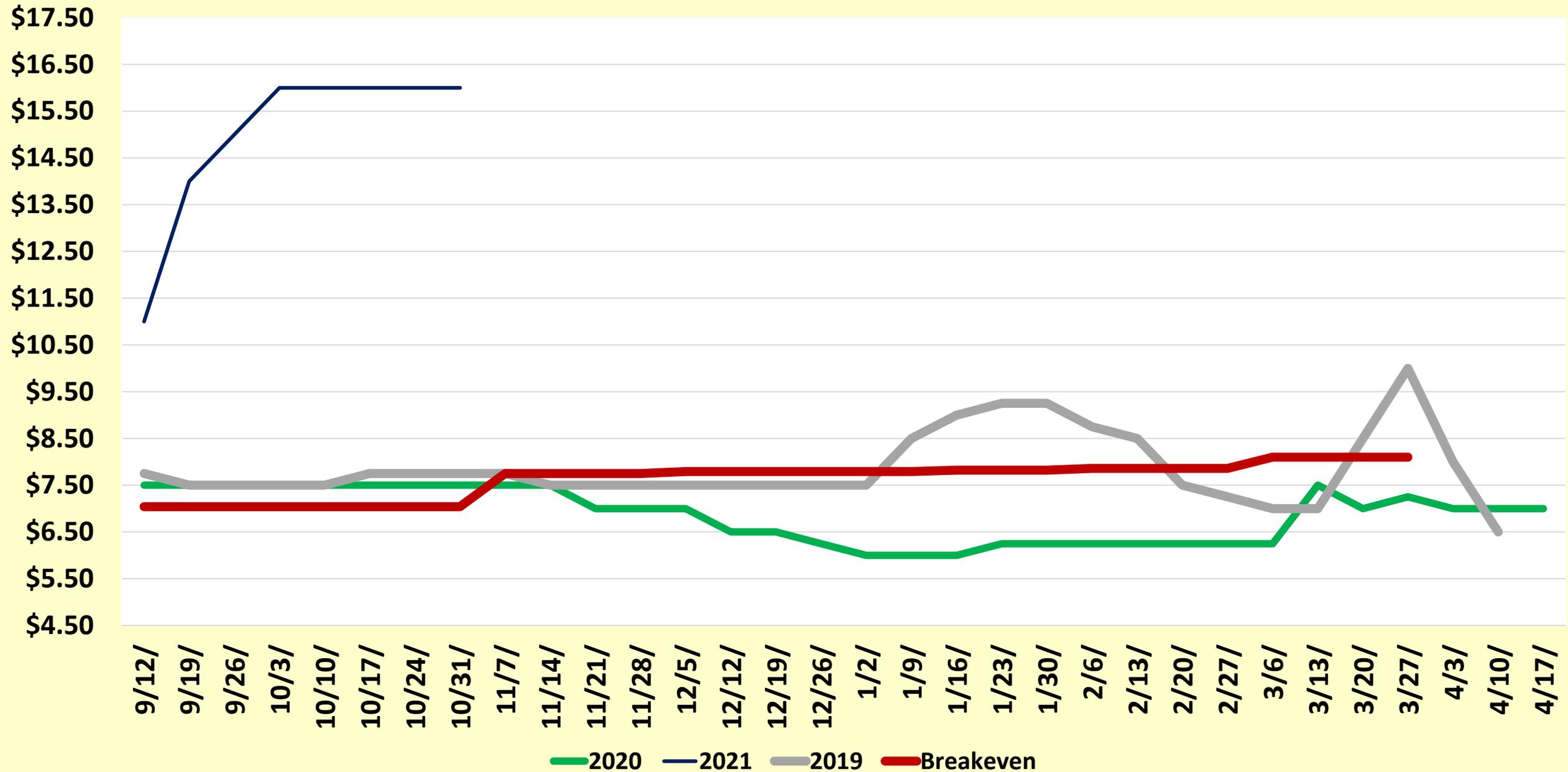
### Weekly Average Price Medium Yellows 2019-2021 Columbia Basin



# Jumbo Yellows 2019-2021 Weekly Average Price Columbia Basin



Colossal Weekly Average Price 2019-2021 Columbia Basin



# Sincere Appreciation

- **All aspects of the onion industry**
- **IEO Onion Committee**
- **SCRI- Development and delivery of IPM packages for the most serious pests and diseases impacting the US Allium Industries**
- **University Collaborators**
  - **WSU**
  - **OSU**
    - **Malheur County Experiment Station Crew**

# Contact Info

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**If you would like to participate in the thrips survey please reach out!**