
GO
COUGS!
WASHINGTON STATE UNIVERSITY.

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Soil & Foliar

Nutrition

Not An Exact Science

Snake Oils Do Exist

Soil Nutrition

Apply nitrogen after harvest to get into buds for following year's crop.

Stay with a lab you trust

Sample properly

Compare with top blocks

Soil Nutrition

Relatively Immobile Elements

Zinc	**2 PPM**
Iron	**10 PPM (2 times that of Mn)**
Magnesium	**10% of exchangeable bases**
Manganese	**3 PPM**
Calcium	**65-70% exchangable bases**

Soil Nutrition

Slightly Soluble Elements In Soil

P 20 PPM pretty immobile in soil

K 5-7% of exchangeable bases

17 lbs actual K per acre to raise soil level 1 PPM

Moves reasonable well thru soil

Soil Nutrition

3 Very Soluble Elements In Soil

Nitrogen ?

Sulfur 20 PPM *1:5 ratio with nitrogen*

Boron 2 PPM

Nutrients Mined From The Soil When A Crop Is Picked

Assume Red Delicious At 50 Bins Per Acre

Moisture content at 83.4%

Average bin weight 875 lbs

Dry matter content (16.6%) = 7,262 lbs

Nutrients Mined From The Soil When A Crop Is Picked

Mined Nutrients – lbs per acre

K (potassium)	**6910 ppm = 50 lbs K/acre**
N (nitrogen)	**2500 ppm = 18 lbs N/acre**
P (phosphorous)	**760 ppm = 5.5 lbs P/acre**
Ca (calcium)	**542 ppm = 4 lbs Ca/acre**
Mg (magnesium)	**350 ppm = 2.5 lbs Mg/acre**
S (sulfur)	**255 ppm = 2 lbs S/acre**

Soil Nutrition

Soil Biologicals

- **Carbon**
- **Beneficials**

Soluble Paste extract testing

Foliar Nutrition

Leaf Tissue Nutrition

- Stay with a lab you trust
- Sample properly
- Compare with top blocks

Ideal Leaf N

- Fujis & Goldens 2.1-2.3%
- Galas 2.3-2.5%

Foliar Nutrition

Leaf Feeds W/O Chelates

Solubles	Insolubles
Nitrates	Carbonates
Sulfates	Phosphates
Chlorides	Oxides
Urea	

Chelates

EDTA's, Amino Acids, Organic acids, Citric acid

Fruitlet Analysis
N:CA ratios

Hard 7:1 **Soft 12:1**

Non Bitter Pit 7:1 **Bitter Pit 11:1**

$\frac{K+Mg}{CA}$ **is bad if close to 30 & desirable is ≤ 24**

PGR's

Maxcell (6-BA) 5-15 MM

3 day average highs of 75° (62° average) worked

3 day average highs of 66° (54° average) didn't work well

Sevin (Carbaryl)-same temperatures

Provide (GA_4+GA_7 (Typrus or Nova Gibb)

NAA

Ethrel (Ethephon)

Promalin (GA_4+GA_7+6BA) (Typy)

Surfactants

1. Oils
2. Non-Ionic
   - Regulaid-(Simulaid)
   - Silicones-(Sylgard, Silwet, SI-100)
3. Stickers
   - Nu-Film 17, Shur-stik