
Blueberries as a New and Exciting Crop.
Benny Fouche – Small Farms & Specialty Crops
UCCE-San Joaquin County-January 2006

The Never Ending Story
New & Better Varieties Produced Every Year

- Many Breeding Programs:
- USDA, Several Locations
- Oregon
- Florida, Maine Ag Experiment Station
- North Carolina State, University of Georgia
- New Zealand, Australia
- New Jersey, University of Arkansas
- University of Minnissota,
- Michigan State Univ.
- Private Programs - Driscoll

Do You Want to be Chasing Varieties?

- Variety A, 4 Rows, Variety B, 4 Rows
- Variety C, 4 Rows, Variety D, 4 Rows

- Over time, remove less profitable plants and plant new ones.

- 50% to 75% of acreage in high production


UC Variety Test Site, Bellota, CA


Grown by Organic Standards, but not Certified
Not for Sale-For Research Purposes Only – Taste Testing Being A Very Important Factor to Evaluate
NOP & OMRI
Approved
Materials Only

Injection of Acetic and Citric Acids

BLUEBERRY BLOOM PERIOD 2006
ROBERTS ISLAND, CA OBSERVATIONAL

	MARCH				APRIL				MAY			
	1	2	3	4	1	2	3	4	1	2	3	4
Variety												
Earlyblue								XX				
Spartan									XX			
Santa Fe			XX									
Emerald				XX								
Blue Crisp			XX									
Duke									XX			
Blue Crop									XX			
Ozark blue									XX			
Chandler								XX				
Elliot									XX			

XX FULL BLOOM

BLOOM PERIOD

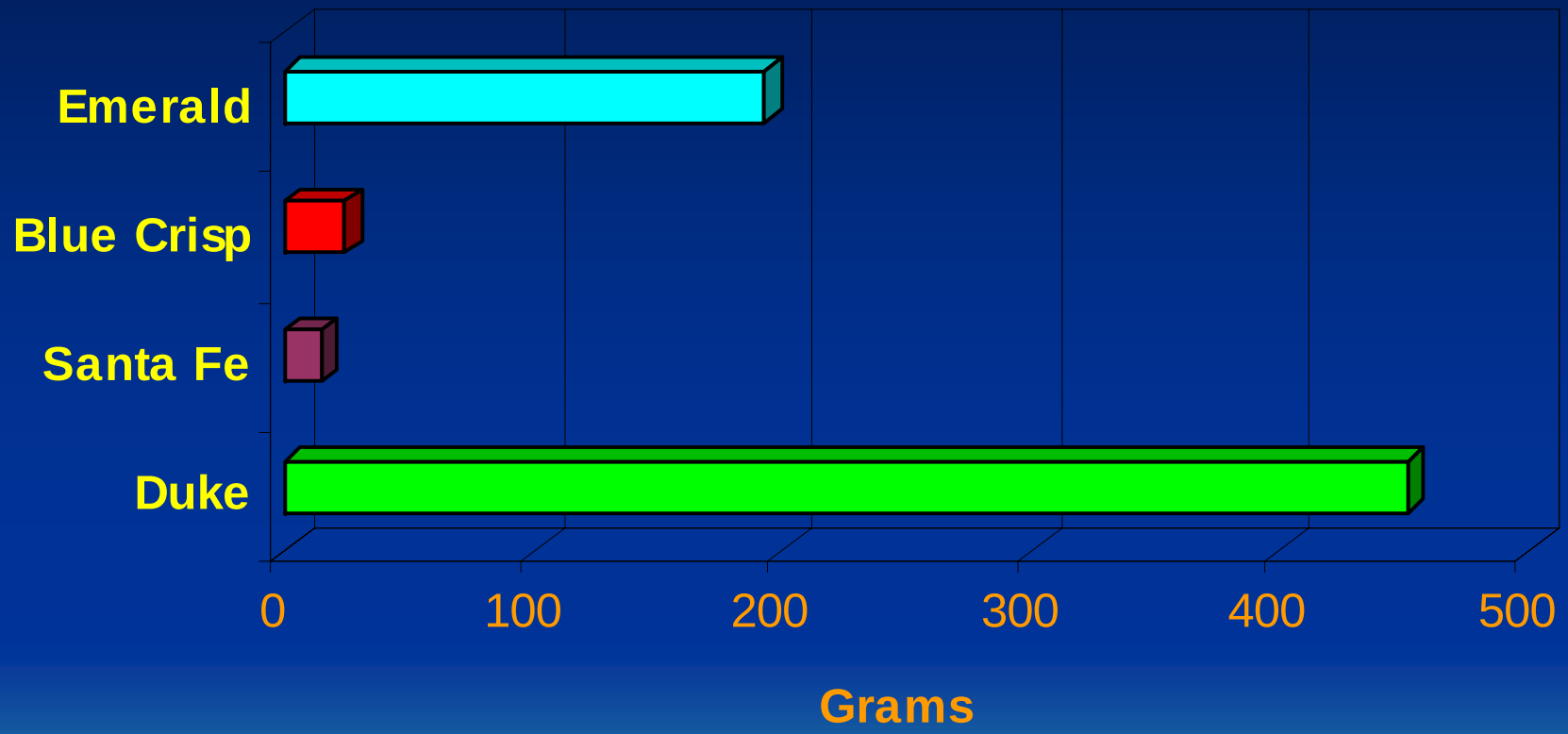
BLUEBERRY HARVEST DATES - 2006
ROBERTS ISLAND, CA OBSERVATIONAL

Variety	Jun 2	Jun 7	Jun 14	Jun 20	Jun 29	Jul 07	Jul 14	Jul 21	Jul 27	Aug 4	Aug 11
Earlyblue	XX										
Spartan			XX								
Santa Fe											
Emerald		XX									
Blue Crisp											
Duke				XX							
Blue Crop					XX						
Ozark blue						XX					
Chandler					XX						
Elliot								XX			

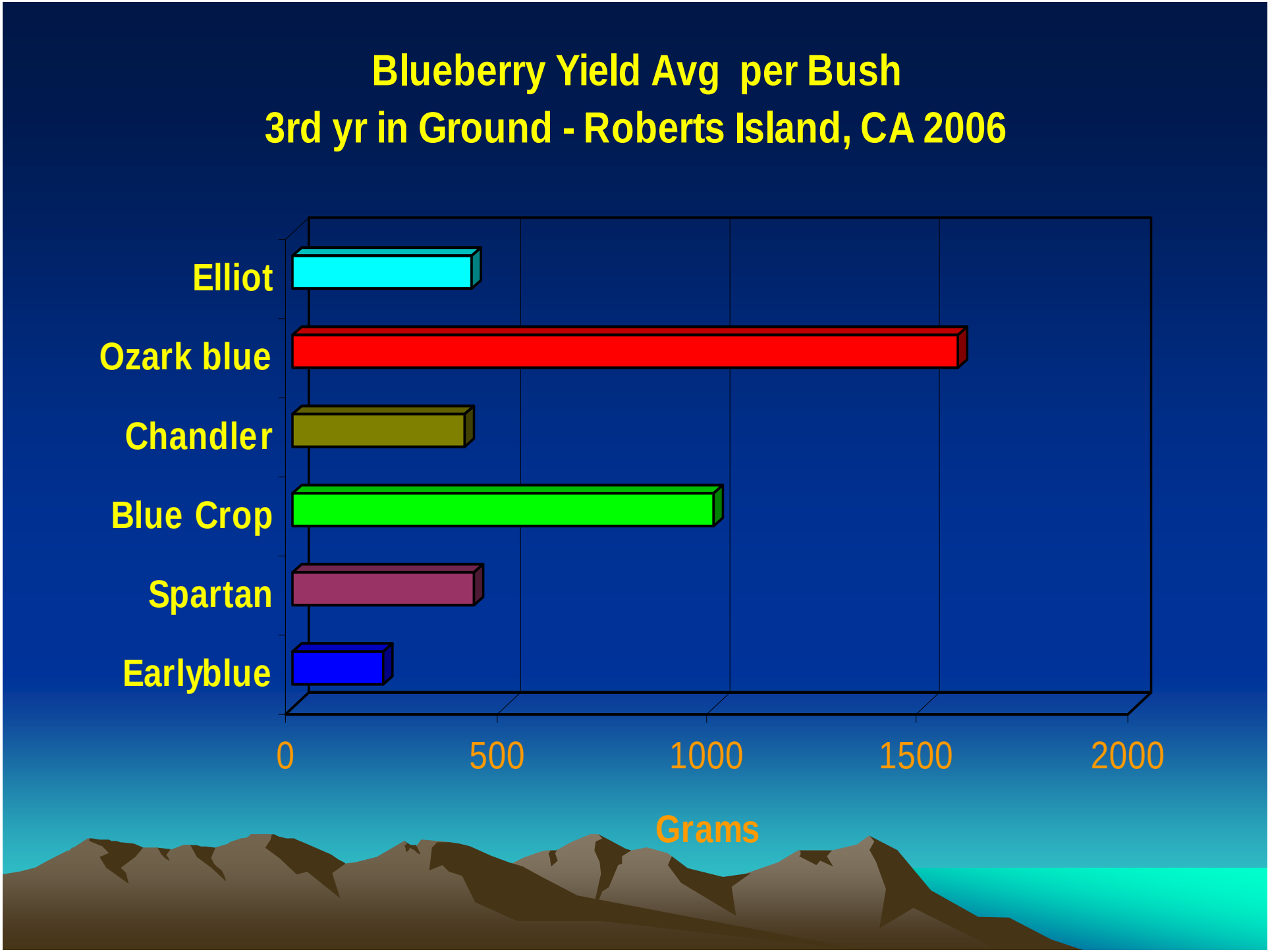
XX PEAK HARVEST

HARVEST PERIOD

Blueberry Yield Avg per Bush
2nd yr in Ground - Roberts Island, CA 2006



Blueberry Yield Avg per Bush
3rd yr in Ground - Roberts Island, CA 2006



BLUEBERRY BLOOM PERIOD 2006
BELLOTA, CA Avg of 3 replications

	FEBRUARY		MARCH				APRIL				MAY			
	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Variety														
Earliblue										XX				
Spartan										XX				
Bluecrop											XX			
Chandler										XX				
Ozarkblue											XX			
Elliot													XX	

XX FULL BLOOM

BLOOM PERIOD

BLUEBERRY HARVEST DATES 2006
BELLOTA, CA Avg of 3 replications

Variety	27-May	2-Jun	9-Jun	16-Jun	23-Jun	30-Jun	5-Jul	14-Jul	20-Jul	25-Jul	4-Aug	15-Aug	22-Aug
Earliblue			XX										
Spartan			XX										
Bluecrop					XX								
Chandler								XX					
Ozark Blue								XX					
Elliot											XX		

XX PEAK HARVEST

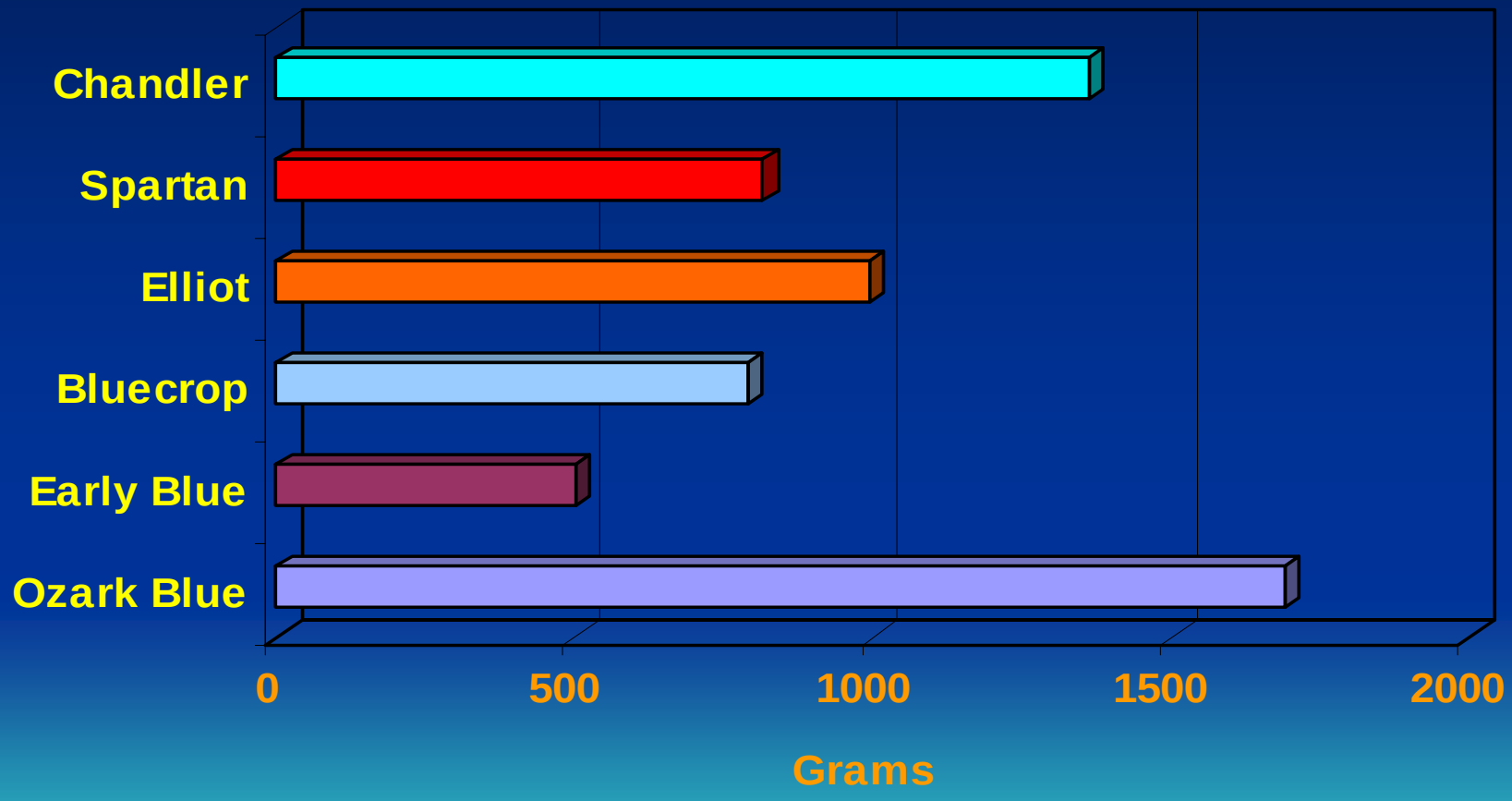
HARVEST PERIOD

Mean No. Grams per Bush by Variety - avg of 3 replications 3rd Year in Ground - Bellota, CA

Variety	Mean No. Grams
Earliblue	500d
Bluecrop	788.6c
Spartan	814.6c
Elliot	996.6c
Chandler	1364b
Ozarkblue	1691.3a

Lsd 95.0 %

Blueberry Avg Yield per Bush
3rd Year in Ground - Bellota, CA 3 Replications




Mature Plants in Delta Soils
Private Test Location


New Early Variety, Will it work here?
We will know in 5 years
Santa Fe
168

Growers are Experimenting with Plastic Mulches for Weed Control


An Early Variety with Excellent Quality Fruit
4
JEWEL

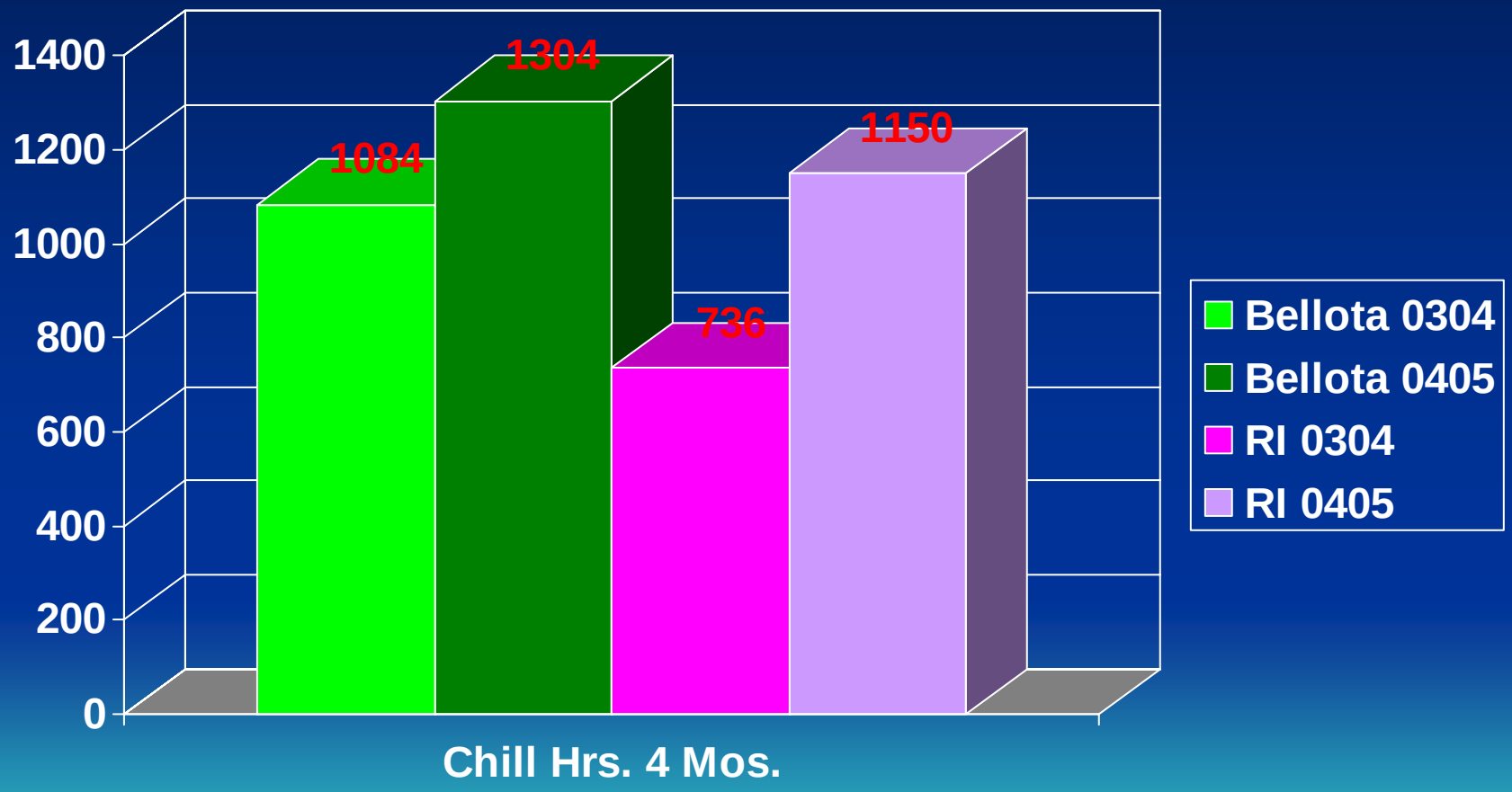

Duke being grown for mechanical harvest

What Are We Planting in San Joaquin County- 2006

- Large Scale Production, Machine Harvest:
  Star, Jewel, *Sante Fe*, Emerald ,Duke, Legacy

- Small Scale Production, Farmers Markets:
  Star, Jewel, Emerald, Spartan, Bluecrop, Chandler, Legacy, Darrow, Ozarkblue, Powderblue

Chill Hours


1400
1200
1000
800
600
400
200
0
1084
1304
736
1150
Bellota 0304
Bellota 0405
RI 0304
RI 0405
Chill Hrs. 4 Mos.

Acquiring Information Is Important

- Northern California Growers Sharing Information
- Oregon has a lot of good information and resources for Northern California Growers.
- OSU - Bernadine Strick & Wei Yang
  - Field Days
  - Short Courses
  - Nurseries
- Books, Videos, whatever works for you

Step 2

- Determine who your buyers will be before you plant
- Rob a bank or inherit enough $$ to make your business plan work
- $10,000 to $15,000 and more per acre for establishment costs. Use cost studies and modify for your location
- Full production in 5 to 7 years

Step 3

- **Dedicate time and resources**
- **Blueberries are high-maintenance**
  - Sports Car of Fruits
  - Works well when well tuned
- Don’t produce when left on their own

Horticultural Needs

Good Drainage

If you don’t have it, make it happen

- Blueberry roots need air
- Compaction, Hard Pan, Shallow soils won’t allow plants to produce high volumes of fruit.

Horticultural Needs

- **Organic Soils and Or:**

- Organic Matter in ground and above ground
- Green Waste
- Wood Chips
- Compost, if Ph is appropriate
- Green Manures
- Careful with Animal Manures – Salt? Weed Seeds
- After Planting, mulch over roots


And this is a small pile of mulch


This used to be an apple orchard


The beginning of UC Test Plot-utilizing recycled wood products.

The best way to move a lot of material on to berms.


Another way of applying plastic mulch

Water

- Frequent, daily or every other day enough to wet root zone. Most growers going to drip or micro irrigation systems. Many still swear by overhead sprinklers for cooling and thrips control.
- Low Ph and preferably free of calcium carbonates. Add acids through injection systems to lower Ph to 5-6
- Low Salt, less than 700 ppm Variety dependent

Horticultural Needs

- **Learn to measure Ph in soil and water with whatever works for <u>you.</u>**
- Paper, meters, use buffers to check and calibrate meters often
- Soil and Soil Sulfur. Many OMRI approved products. Tiger Sulfur works well
- Sulfur Acid, N/Phuric 15/49,
- Organic Growers - Acetic Acid, Citric Acid


An injection pump for acids and fertilizers

Labor Needs

- Lots of it for pruning
- If not going for Mechanical Harvest then,
- Lots of willing, trained hands to harvest. Variety dependent. Size of fruit, compactness of bloom and harvest intervals.

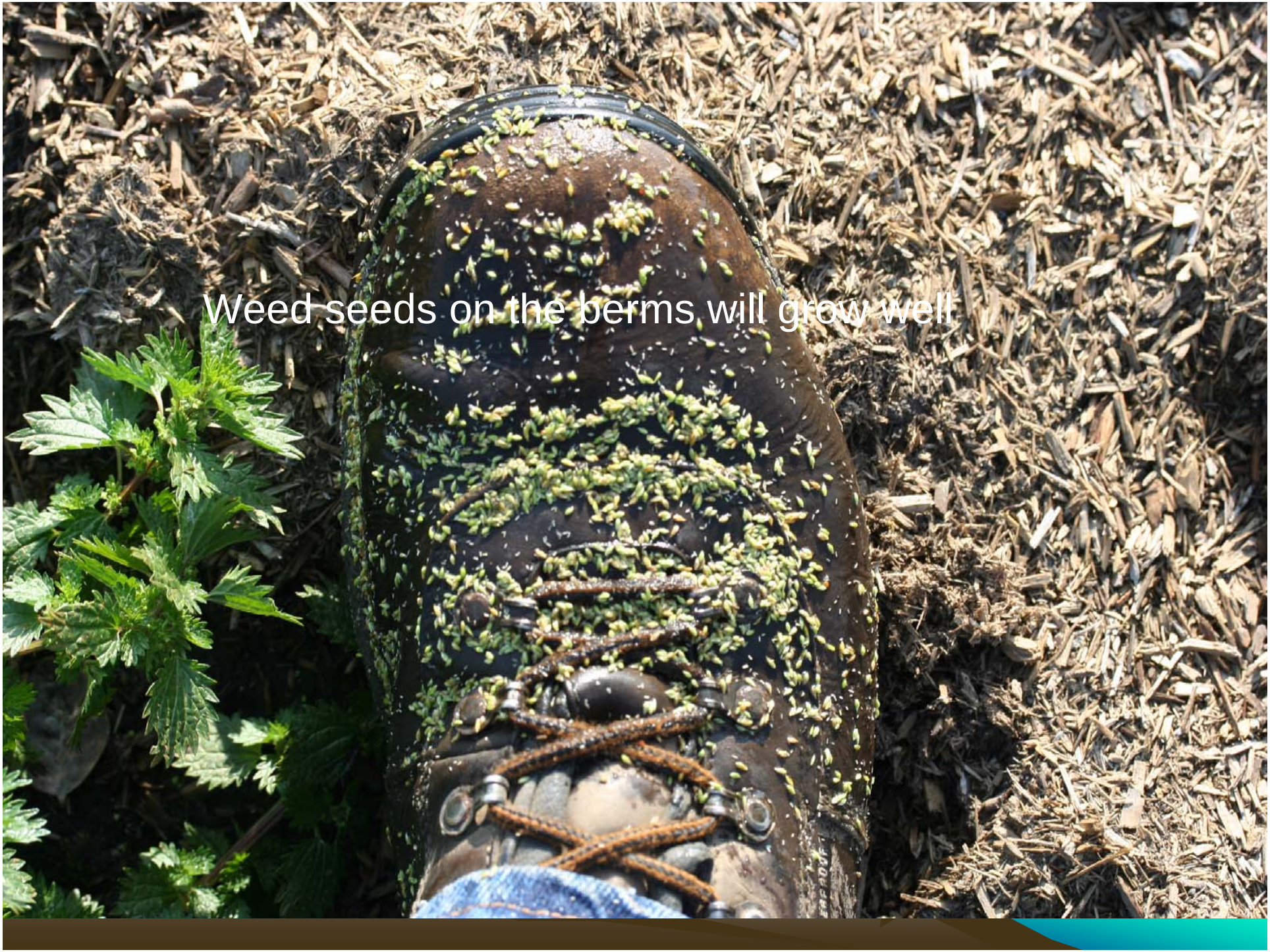
Animal Control

- Some farms escape bird damage, but most have serious issues. Birds love blueberries.
- With cover crops and mulches, gophers and voles are a constant threat.
- Deer, cattle, rabbits, turkeys, raccoons, foxes,
- Coyotes? Why not, they love asparagus berries.
- **Two legged bandits**


UC Plot with Deer Fence Installed at End of First Year

Field Trials at the OSU Farm


Weeds will always be there


Weed seeds on the berms will grow well


Berms with a dip to improve water penetration.

Be careful with application of herbicides


Both winter and summer weeds are a problem

Pre-plant fumigations can be cost effective


Earth dams for water retention

Flooding for weed control and salt removal


Solarization is a good way to control weeds

2001 Study-Mature Plants

- Devrinol 4 lb ai / acre
- Simazine 3.96 lb ai / acre
- ½ label rate of each, tank mixed and applied in 30 gallons water/acre.
- Best control of yellow nutsedge and common purslane provided by combination of materials.
- Surflan is safe for young plants

Contact Materials-Keep Away From Foliage and Green Stems

- Glyphosate
- Paraquat
- Future Possibilities but NOT REGISTERED YET: Outlook, Chateau, Matrix, Visor
- Certified Organic Growers Can Use, Acids, Oils, Flames for Small Broadleaf Weed Species.
- Synthetic Mulches Conserve Moisture and Reduce the Amount of Hand Hoeing and Pulling

Don’t Forget the Wind-
It can rub off the pretty color on the surface of blueberries
However, the birds will find your windbreak a good place to rest

There are Three Groups of Growers

- A Group - High Profits
- B Group - High Losses
- C Group - Waits until most of the risk is gone, and the market is saturated.
  - Not much risk, not much profit.