

PLANT GROWTH REGULATORS IN MELONS

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PLANT GROWTH REGULATORS IN THE LOW DESERT IS LIKE THE TALE OF TWO CITIES

- IT IS THE BEST OF TIMES IN **ARIZONA** AS PRODUCTS ARE REGISTERED FOR USAGE
- IT IS THE WORST OF TIMES IN **CALIFORNIA** BECAUSE NOT MUCH IS REGISTERED



PLANT GROWTH REGULATORS ON MELONS

- PRODUCTS THAT ARE REGISTERED:
- AUXIGRO
- MESSENGER
- PROGIBB (4% & PLUS 2X)
- TRIGGRR (SOIL & FOLIAR FORMULATIONS)

LET'S TAKE A LOOK AT THE CURRENTLY REGISTERED PRODUCTS

- TWO HORMONES AS ACTIVE INGREDIENTS
- Gibberelic Acid = ProGibb 4%, ProGibb Plus 2x
- Cytokinin = Soil Triggrr, Foliar Triggrr
(also in a number of other products)

LET'S TAKE A LOOK AT THE CURRENTLY REGISTERED PRODUCTS *(continued)*

- TWO PRODUCTS THAT ARE NOT HORMONALLY BASED:
- **MESSENGER** (Active ingredient = Harpin Protein)
- **AUXIGRO** (Active ingredient = Glutamic Acid)



ProGibb 4%, ProGibb Plus 2x

- USED TO STIMULATE FRUIT SET DURING PERIODS OF COOL TEMPERATURE (*vines must be in good condition*)
- TIMINGS: ONE APPLICATION PRIOR TO BLOOM FOLLOWED BY 2 ADDITIONAL APPLICATIONS AT INTERVALS OF 10-14 DAYS ON CANTALOUPE AND WATERMELONS
- NOT FOR USE IN CALIFORNIA
- EFFECTIVE? NO LOW DESERT TRIALS COMPLETED BY UNIVERSITY RESEARCHERS IN THE PAST 15 YEARS BASED ON UA VEGETABLE REPORTS



CYTOKININ BASED PRODUCTS: SOIL APPLICATIONS

- USED TO IMPROVE EARLY SEEDLING VIGOR, IMPROVE ROOT GROWTH, STRESS RESISTANCE, AND INCREASED CROP UNIFORMITY
- TIMINGS: ONE APPLICATION PRE-PLANT OR 1ST FERTILIZATION AFTER EMERGENCE; 2ND APPLICATION BEFORE LAYBY OR WHEN PLANT BEGINS TO RUN



CYTOKININ BASED PRODUCTS: FOLIAR APPLICATIONS

- USED TO IMPROVE FLOWERING AND FRUIT SET, CROP UNIFORMITY AND SIZE
- ALSO TO INCREASE FRUIT RETENTION AND STIMULATE BLOOM IN WATERMELONS AND MUSKMELONS
- TIMINGS –
- CANTALoupES AND HONEYDEWS:
- 2 APPLICATIONS;
- 1ST @ 1ST OPEN FEMALE FLOWER,
- 2ND APPLICATION WHEN FIRST FRUIT IS 1 INCH IN DIAMETER



CYTOKININ BASED PRODUCTS: FOLIAR APPLICATIONS

- TIMINGS –
- WATERMELONS AND MUSKMELONS:
- 2-3 APPLICATIONS
- 1ST WHEN FIRST FRUIT IS 2 INCHES IN DIAMETER
- 2ND & 3RD AFTER HARVEST TO STIMULATE CONTINUED BLOOM



CYTOKININ BASED PRODUCTS

- NOT FOR USE IN CALIFORNIA
- EFFECTIVE??? NO LOW DESERT TRIALS COMPLETED BY UNIVERSITY RESEARCHERS IN THE PAST 15 YEARS BASED ON UA VEGETABLE REPORTS



MESSENGER

- **HARPIN PROTEIN** *(NOT A HORMONAL BASED PRODUCT)*
- **PURPOSE**: TO BOOST OVERALL PRODUCTION AND AID IN THE MANAGEMENT OF DISEASE SUCH AS CUCUMBER MOSAIC VIRUS AND TOBACCO MOSAIC VIRUS
- **APPLICATION TIMINGS**: AS FOLIAR SPRAY BEGINNING AT FIRST TRUE LEAF AND REPEATED AT APPROXIMATELY 14 DAY INTERVALS
- **NOT FOR USE IN CALIFORNIA**



MESSENGER

- SOME FIELD TRIALS IN THE LOW DESERT COMPLETED BY BOTH UCCE & UA COOPERATIVE EXTENSION (ACE)
- **UMEDA** – BOTH WATERMELONS AND CANTALOUPE: BI-WEEKLY VS. 3 TIMELY APPLICATIONS (*EARLY RUNNER, BLOOM, AND FRUITING*)
- **ZERKOUNE – CANTALOUPE:** COMPARISON OF 4 BI-WEEKLY APPLICATIONS VS. SINGLE APPLICATION AT 3 LEAF STAGE

MESSENGER *(CONTINUED)*

- UMEDA
- CANTALOUPE RESULTS:
- NO DIFFERENCES IN VINE GROWTH, NUMBER OF FRUIT SET, YIELD WEIGHT, OR FRUIT SIZES.
- WATERMELON RESULTS:
- THREE TIMELY APPLICATIONS TENDED TO RESULT IN SLIGHTLY MORE VIGOROUS PLANTS AT END OF SEASON THAN BI-WEEKLY APPLICATIONS *(NO STATISTICAL DIFFERENCES FOR THIS OR VINE LENGTH, NUMBER OF BLOOMS, OR HARVESTABLE YIELDS)*

MESSENGER *(CONTINUED)*

- ZERKOUNE RESULTS FROM CANTALOUPE
- VARIABLE RESULTS, NO SIGNIFICANT EFFECT OF MESSENGER ON PLANT GROWTH AND YIELD
- INDICATION THAT WHEN APPLIED AT 3 LEAF STAGE MESSENGER INDUCED SIGNIFICANTLY EARLIER MELON FORMATION (*0.96 VS. 0.6/VINE @ 27 DAT*), AND INCREASED NODES (*20 vs. 18.6*)



WHAT ABOUT MIXED MELONS?

- FIELD WITH 5 TYPES OF MELONS
(Honeydew, Crenshaw, Santa Claus, Persian, Casaba)
- 3 REPLICATIONS FOR EACH TYPE OF MELON
(4 for Honeydew)
- FIRST APPLICATION AT ~3 LEAF STAGE
(March 28, 2003, Blythe, CA)
- APPROXIMATELY 2.5 WEEK INTERVAL
(March 28, Apr. 11, May 2, 21)
- 4 APPLICATIONS TOTAL





Messenger

Field Trial Number: 200038 Date: 5/14/02
Crop: Melon Variety: Crenshaw
Treatment: Grower Standard
Application Rate: _____
Field/Farm Identification: Fisher Ranch
Comments: Field 202
Blythe, CA EDEN

Messenger

Field Trial Number: 200038 Date: 5/14/02
Crop: Melons Variety: Crenshaw
Treatment: Messenger
Application Rate: 3 Apps @ 4.5 oz
Field/Farm Identification: Fisher Ranch
Comments: Field 202
Blythe, CA EDEN



Messenger
Field Trial Number 200838 Date 5/14/08
Crop Melon Variety Honeydew
Treatment Grower Standard
Application Rate _____
Field Name Identification Fisher Ranch
Comments Field 202
Blythe, CA 95522

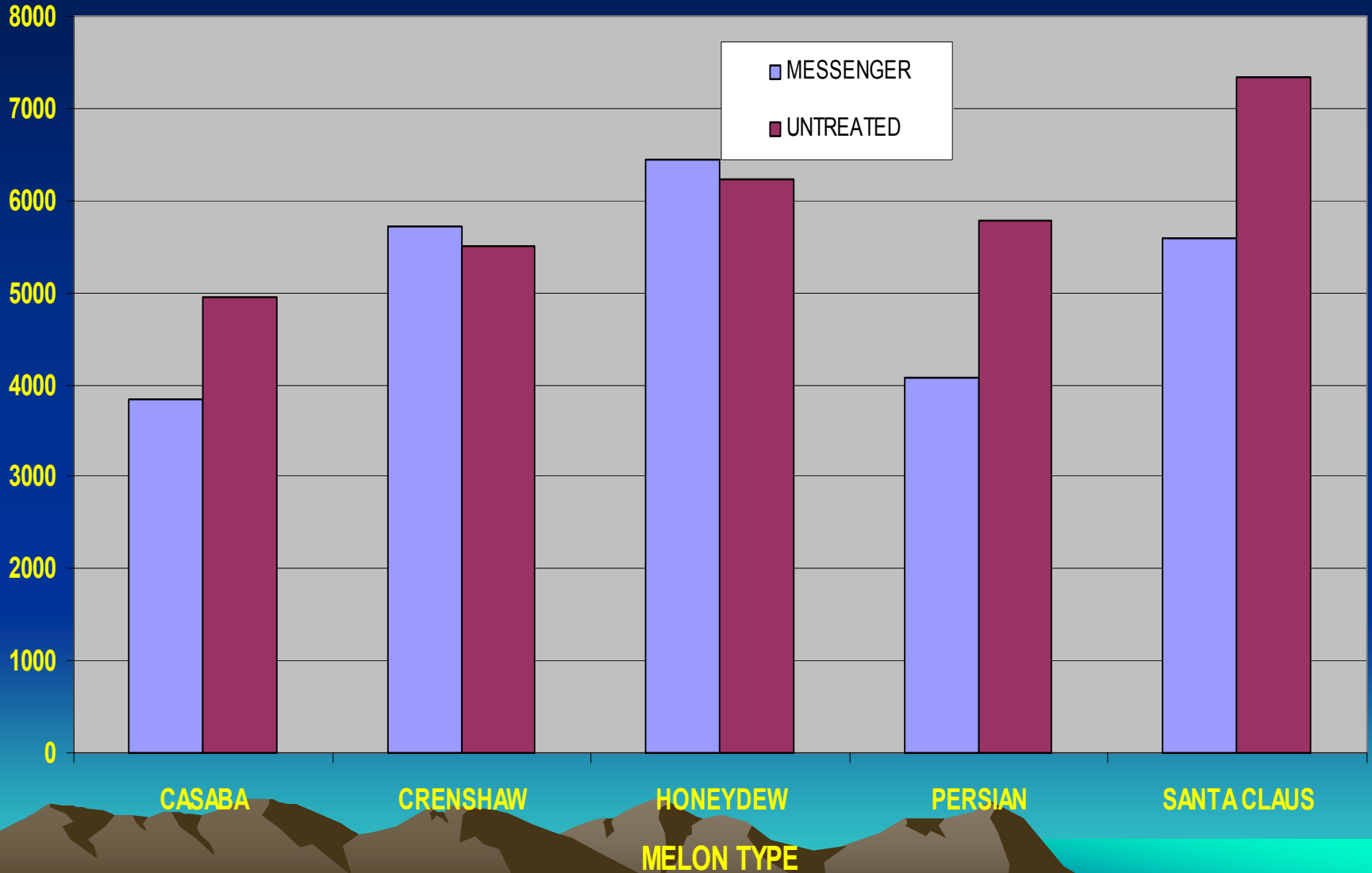
Messenger
Field Trial Number 200838 Date 5/14/08
Crop Melon Variety Honeydew
Treatment Messenger
Application Rate 3 Apps @ 4.5 gal
Field Name Identification Fisher Ranch
Comments Field 202
Blythe, CA 95522



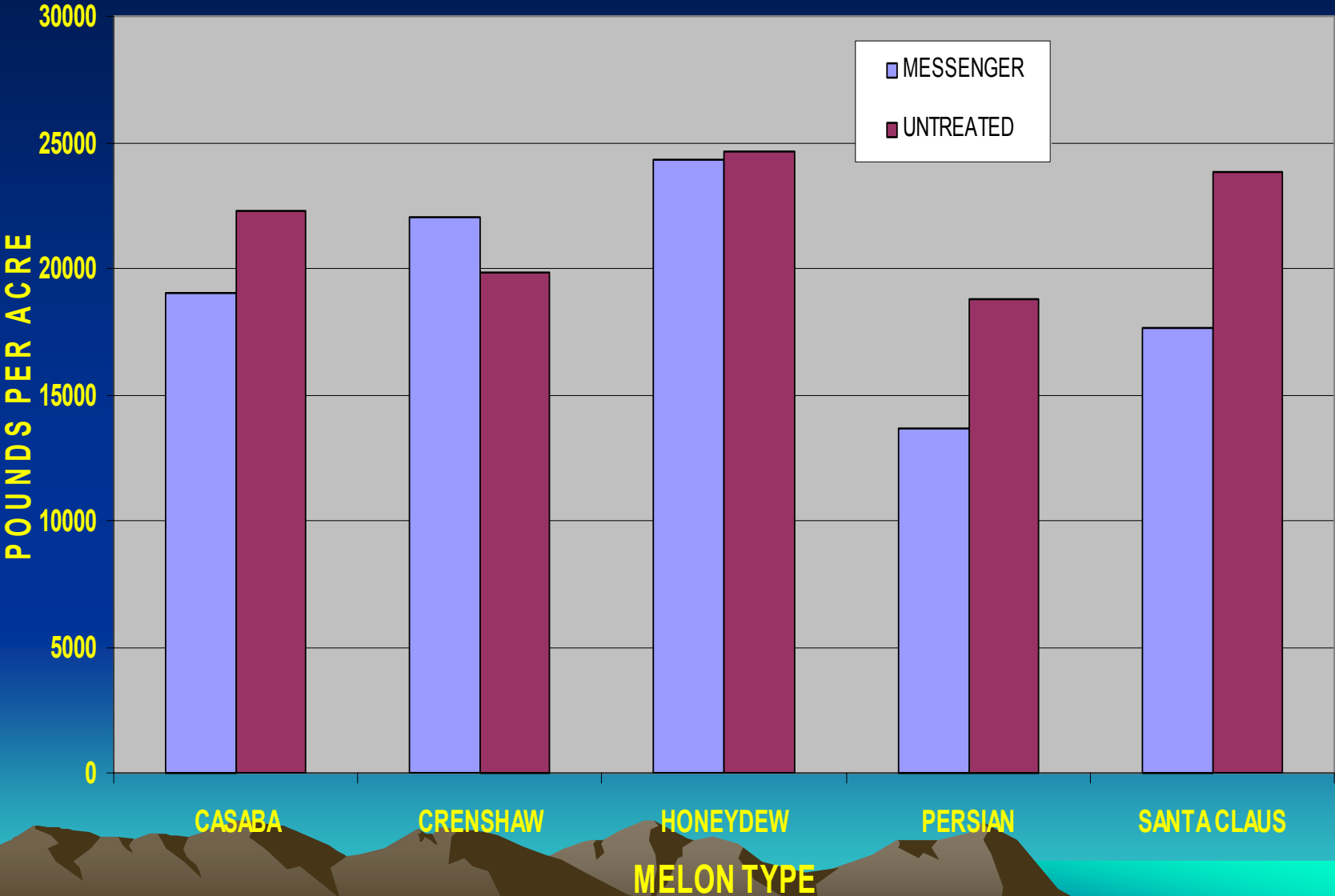
Messenger
Field Trial Number 200038 Date 5/14/02
Crop Melon Variety Santa Claus
Treatment Grover Standard
Application Rate _____
Field/Farm Identification Fisher Ranch
Comments Field 202
Blythe, CA IDLN

Messenger
Field Trial Number 200038 Date 5/14/02
Crop Melons Variety Santa Claus
Treatment Messenger
Application Rate 3 Apps @ 4.5 oz
Field/Farm Identification Fisher Ranch
Comments Field 202
Blythe, CA IDLN

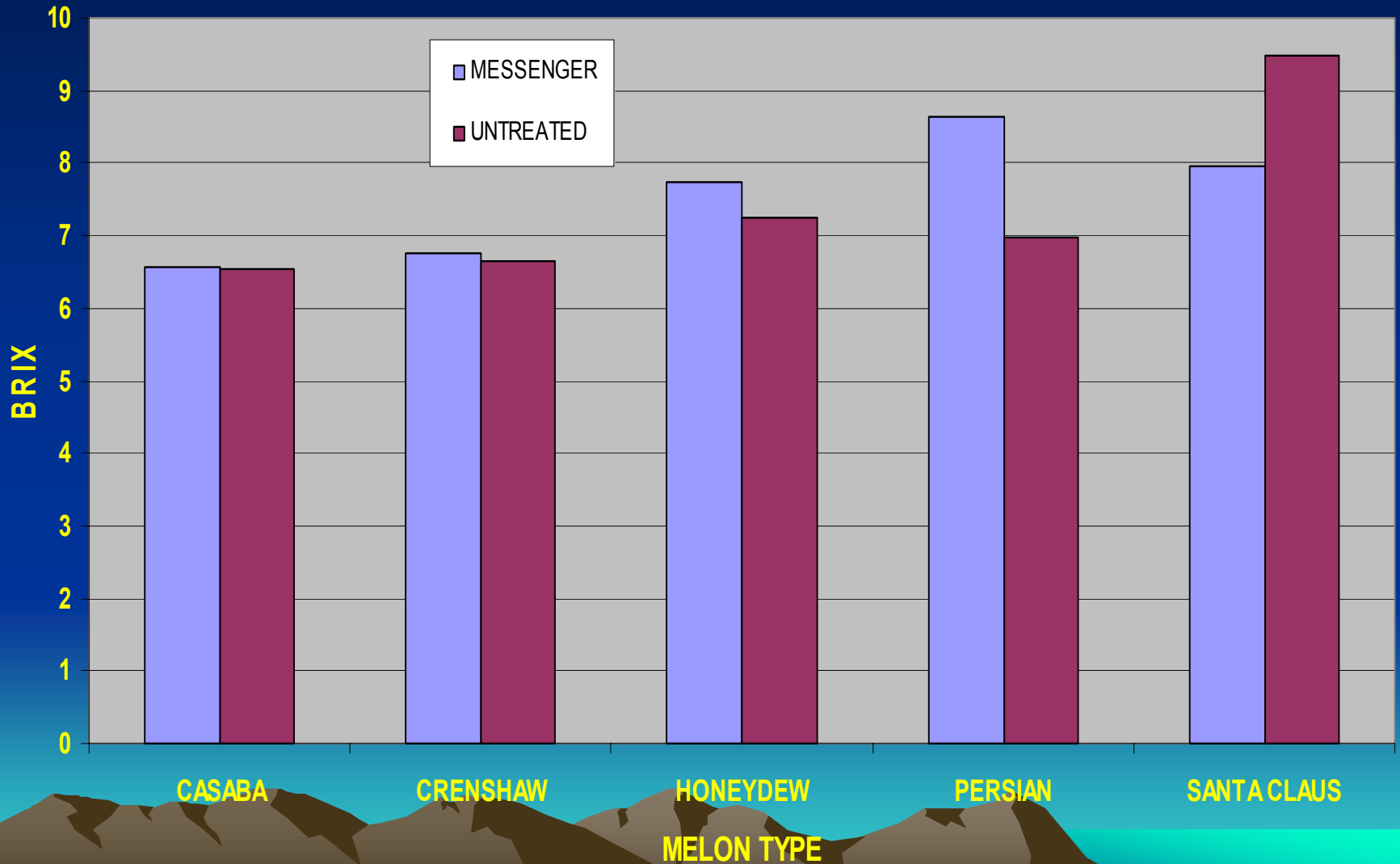
NUMBER OF MARKETABLE MELONS PER ACRE



MARKETABLE YIELDS PER ACRE



BRIX IN MELONS ON JUNE 6, 2002



MESSENGER EFFECTS

- EARLY APPLICATION DEFINITELY HELPED MELONS IN WEAK AREAS OF FIELD (COOL, WET, DISEASE)
- SOME MELON TYPES WITH GREATLY INCREASED FOLIAGE AND COVER
- MELON YIELDS FROM INCREASED FOLIAGE NOT SIGNIFICANTLY DIFFERENT THAN CHECK, BUT NUMERICALLY LOWER THAN UNTREATED CHECK

MESSENGER EFFECTS *(continued)*

- LOWER YIELDS THOUGHT DUE TO DIFFICULTY WITH BEES POLLINATING FLOWERS (HIDDEN BY COPIOUS AMOUNTS OF FOLIAGE AND/OR BY WINDY SPRING DAYS IF FLOWERS PEAKING ON DIFFERENT DAYS DUE TO TREATMENT)
- CRENSHAW YIELDS WERE NUMERICALLY INCREASED BY USE OF MESSENGER, BUT PERSIAN YIELDS WERE SIGNIFICANTLY REDUCED
- GROWERS MAY NEED TO ONLY USE MESSENGER EARLY (3 LEAF STAGE)?



AUXIGRO

PURPOSE: TO INCREASE THE YIELD
AND/OR QUALITY

- 2 APPLICATIONS:
- 1ST = 4 OZ/ACRE @ EARLY BLOOM JUST PRIOR TO RUNNING
- 2ND = 4 OZ/ACRE @ FEMALE FRUIT SET
(TYPICALLY 14-21 DAYS AFTER 1ST APPLICATION)

AUXIGRO *(continued)*

- CURRENTLY REGISTERED IN ARIZONA ON **WATERMELONS** ONLY
- HAS BEEN APPROVED IN CALIFORNIA BY DPR (*EMERALD BIOAGRICULTURE WAITING TO RECEIVE STAMPED LABEL*)
- NEW REGISTRATION (CALIFORNIA AND NATIONAL) WILL BE FOR **ALL MELONS**



AuxiGro® Effect on Melons

Cooperator	Type	Total Number of Melons#	Yield (lbs./plot)					
Trial No.	Location	Variety	Control	AuxiGro	Difference	Control	AuxiGro	Difference
Star Ag Consult. 280/01/01-001-TX	Raymondville, TX	Watermelon	13.3	19.5 *	46.6%	54.3	84.8	56.1%
B. Bauer 280/01/01-001-01	Escalon, CA	Watermelon Sumari	26.8	45.5 *	69.8%	300.6	460.0 *	53.0%
B. Bauer 280/01/01-001-02	Escalon, CA	Cantaloupes Oro Rico	172.0	227.8 *	32.4%	363.8	501.0 *	37.7%
B. Bauer 280/01/01-001-E2	Escalon, CA	Watermelon Sumari	14.5	18.5 *	27.6%	158.4	253.4	60.0%
B. Bauer 285/01/02-001-01	Escalon, CA	Watermelon Sumari	41.8	47.0	12.4%	296.2	397.8 *	34.3%
B. Bauer 285/01/02-001-02	Escalon, CA	Cantaloupes Oro Rico	159.0	194.5 *	22.3%	364.4	428.2 *	36.1%
B. Bauer 285/01/02-001-E2	Escalon, CA	Watermelon Fiesta	13.5	19.0	40.7%	157.0	217.8	38.7%
B. Bauer 280/02/01-001-04	Escalon, CA	Watermelon Syngenta 313	20.8	24.3	16.8%	333.0	392.3	17.8%
		Watermelon Fiesta (pollinator)	7.8	11.3 *	44.9%	153.0	228.5 *	49.3%
B. Bauer 280/02/01-001-05	Escalon, CA	Orange Flesh Honeydew	58.5	67.5	15.4%	193.3	218.8	13.2%

AVERAGE INCREASE

31.4 %

38.7 %

AUXIGRO TEST RESULTS FROM EMERALD BIOAGRICULTURE

- 4 OZ CONSISTENTLY BETTER THAN OTHER RATES, ALTHOUGH LINEAR RESPONSES SOMETIMES NOTED *(8 OZ HAD MORE YIELD THAN 4 OZ, WHICH WAS HIGHER THAN 2 OZ)*
- CALIFORNIA DATA FROM ESCALON *(NORTH OF MODESTO, MAY HAVE HAD HIGHER DISEASE PRESSURES THAN IN LOW DESERT)*



LOW DESERT TEST RESULTS

- FALL 2003 – HONEYDEW MELONS
- TWO HIGH RATES (16 AND 32 OZ/ACRE) IN SINGLE APPLICATION MADE WHEN FEMALE FLOWERS FIRST REACHED 10% ON RUNNERS
- NO DIFFERENCES IN YIELD OR QUALITY NOTED FOR THIS TYPE OF MELON AT THESE HIGH RATES IN 2003

