New Herbicides for Weed Management of Berry Crops

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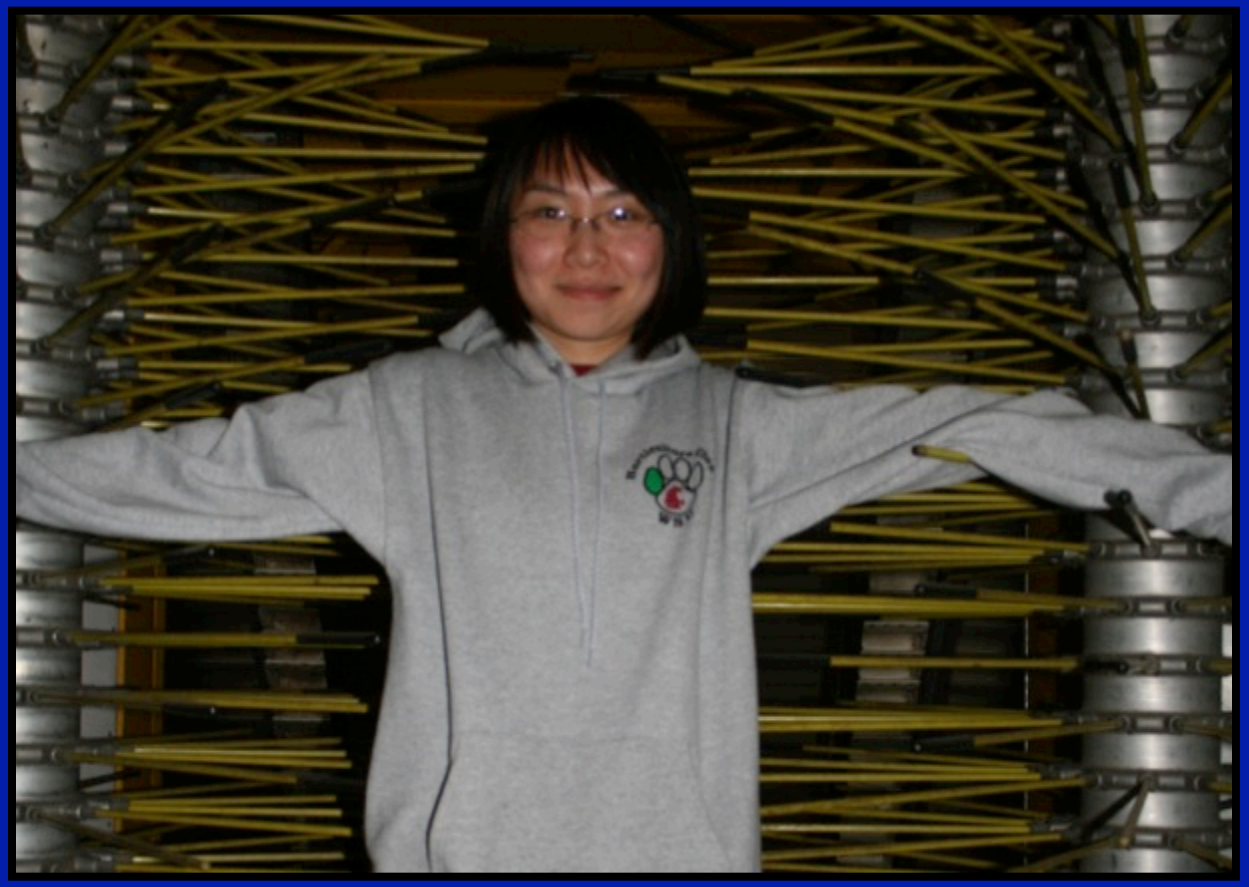
Selected Berry Trials, 2012

- Raspberry
  - Cane Burning Trial
  - IR-4 Trials
- Blueberry
- Strawberry
  - Established

Red Raspberry Trials

Cane Burning in Red Raspberry

Yushan Duan
M.S., 2011



Cane Burning Trial

Trial 1, Commercial Fields

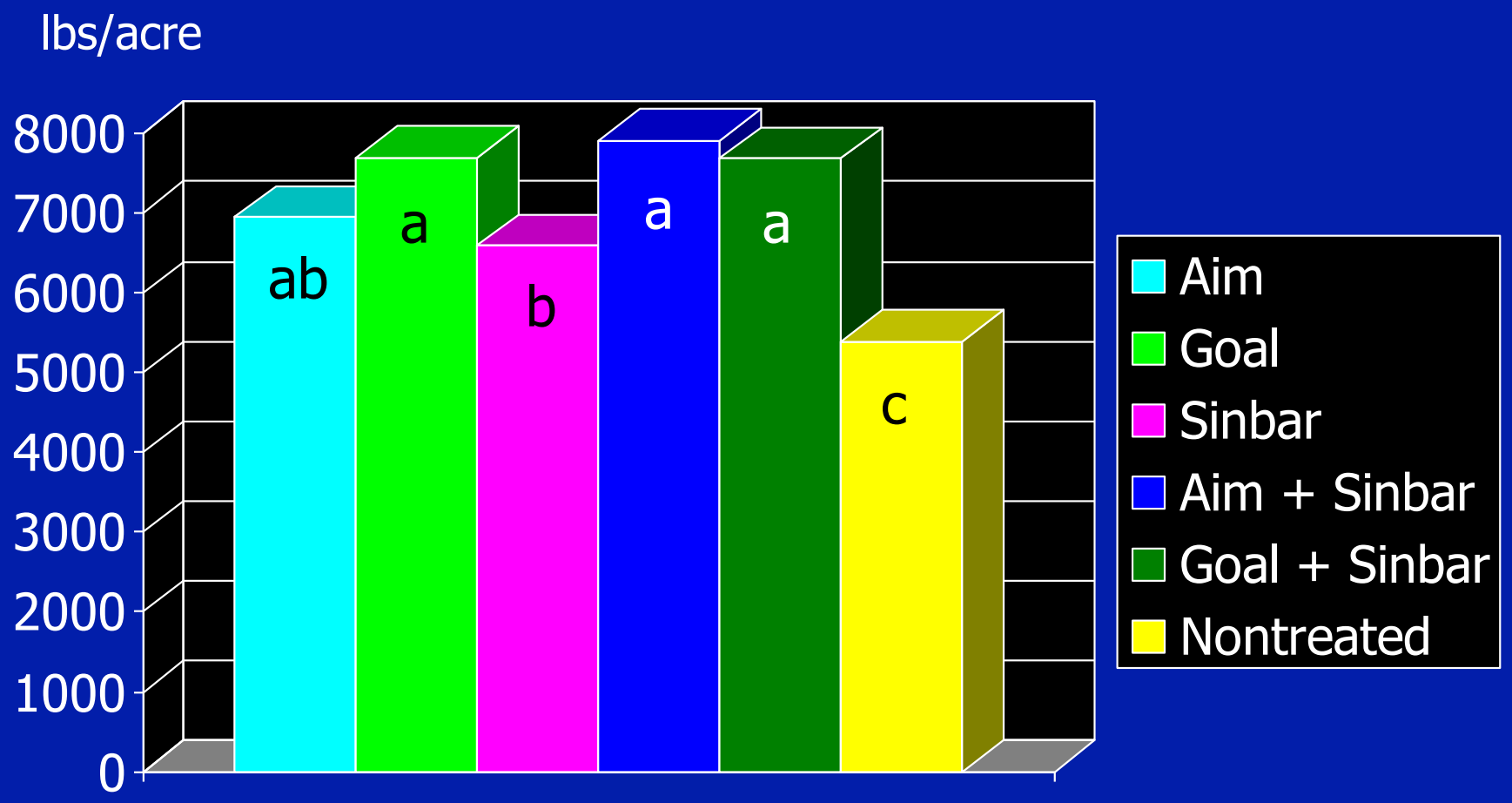
- Treatments were Aim, Goal, Sinbar, Aim + Sinbar, Goal + Sinbar, and nontreated
  - 2010 'Meeker' and 'Coho'
  - 2011-12 'Meeker' and 'Cascade Bounty'
- Measurements included primocane growth, berry yield, and weed control

Cane Burning Trial
Trial 2, On-Station Fields

- Treatments were Aim, Goal, and nontreated
  - 2010-12 'Meeker' and 'Cascade Bounty'
- Measurements included primocane growth, floricane fruiting, berry yield, and time for pr

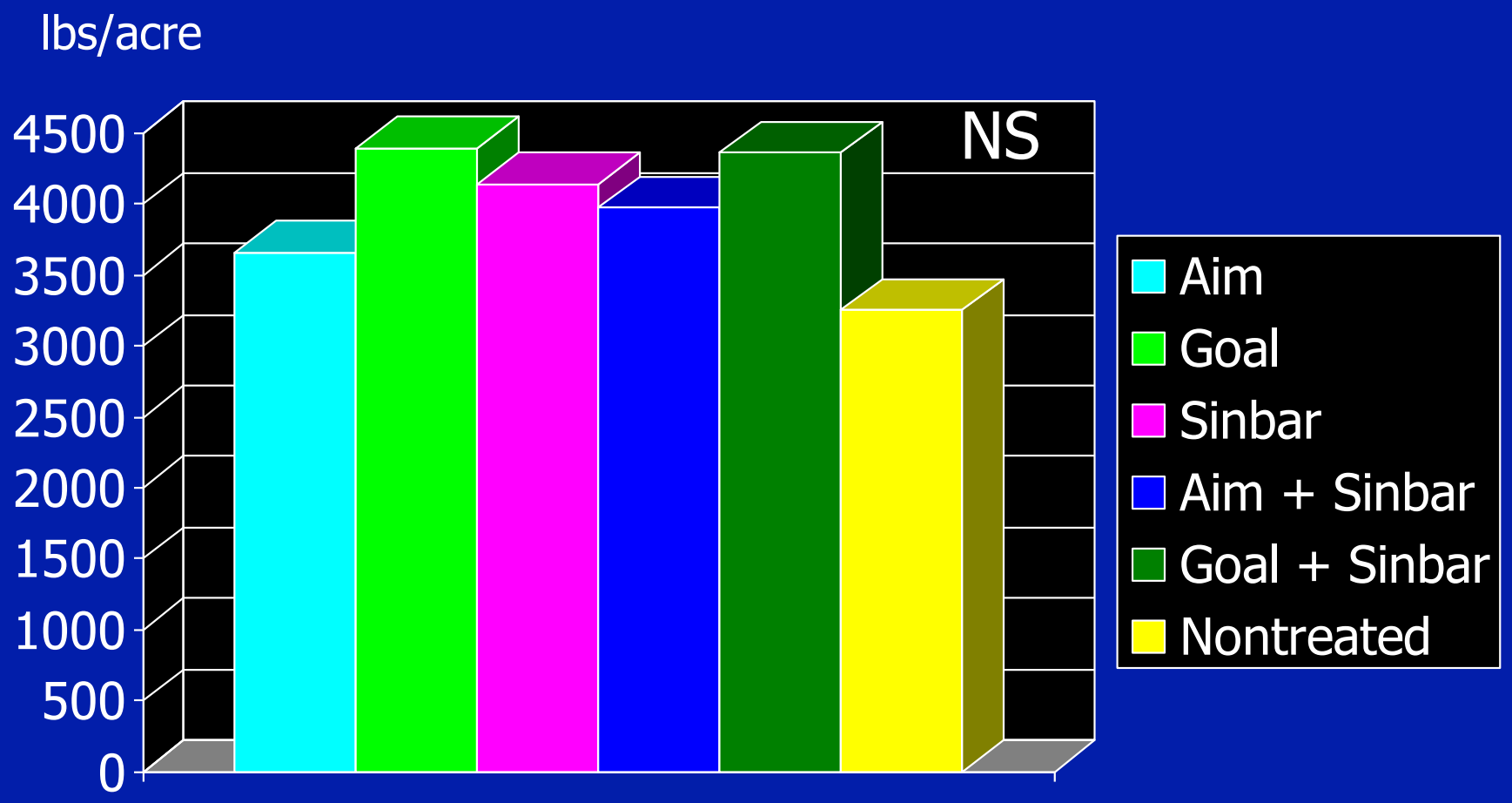
Trial 1 'Meeker' Berry Yield

Three-year Average



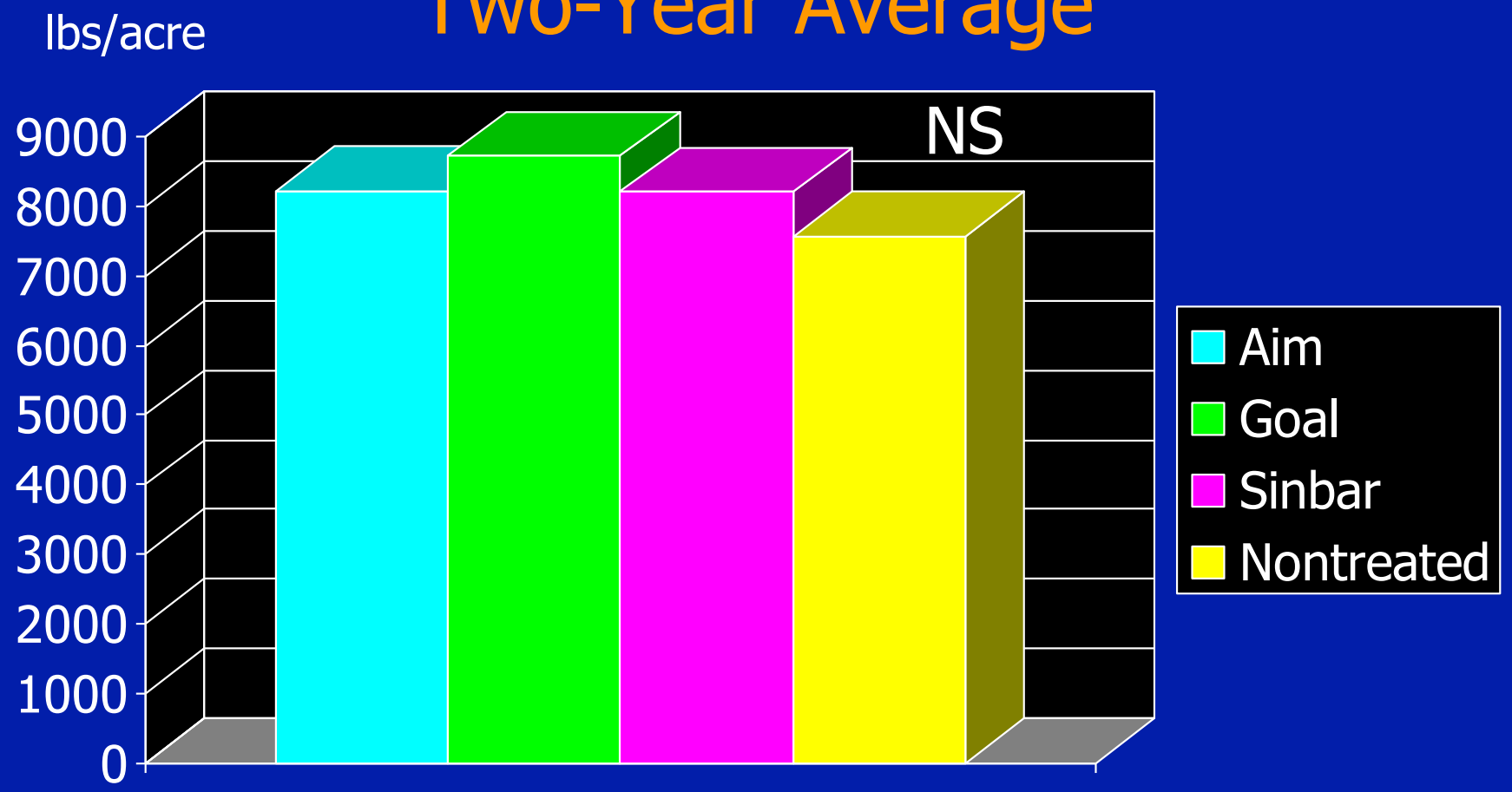
Trial 1 'Coho' Berry Yield

2010



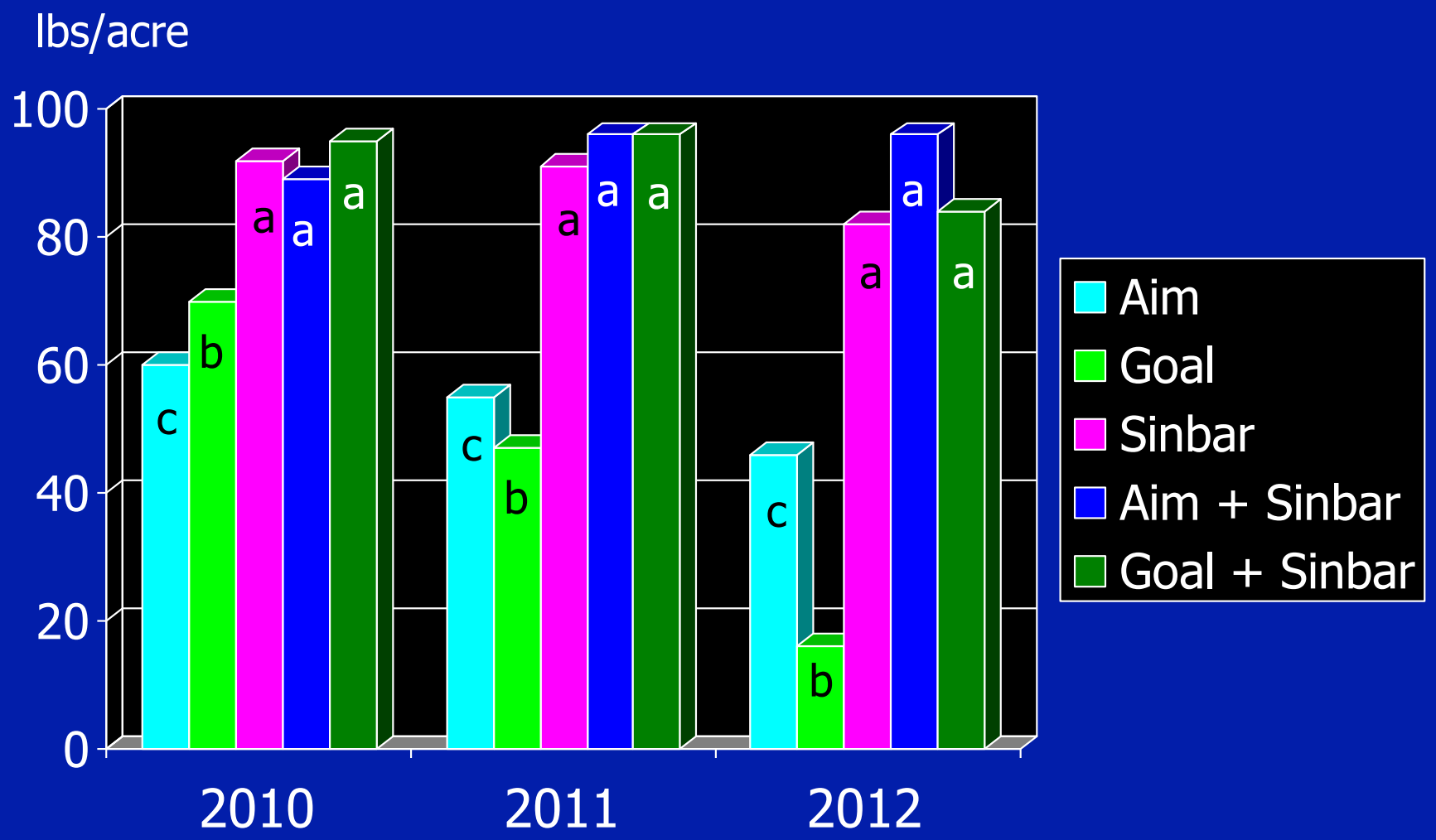
Trial 1 'Cascade Bounty' Berry Yield

Two-Year Average



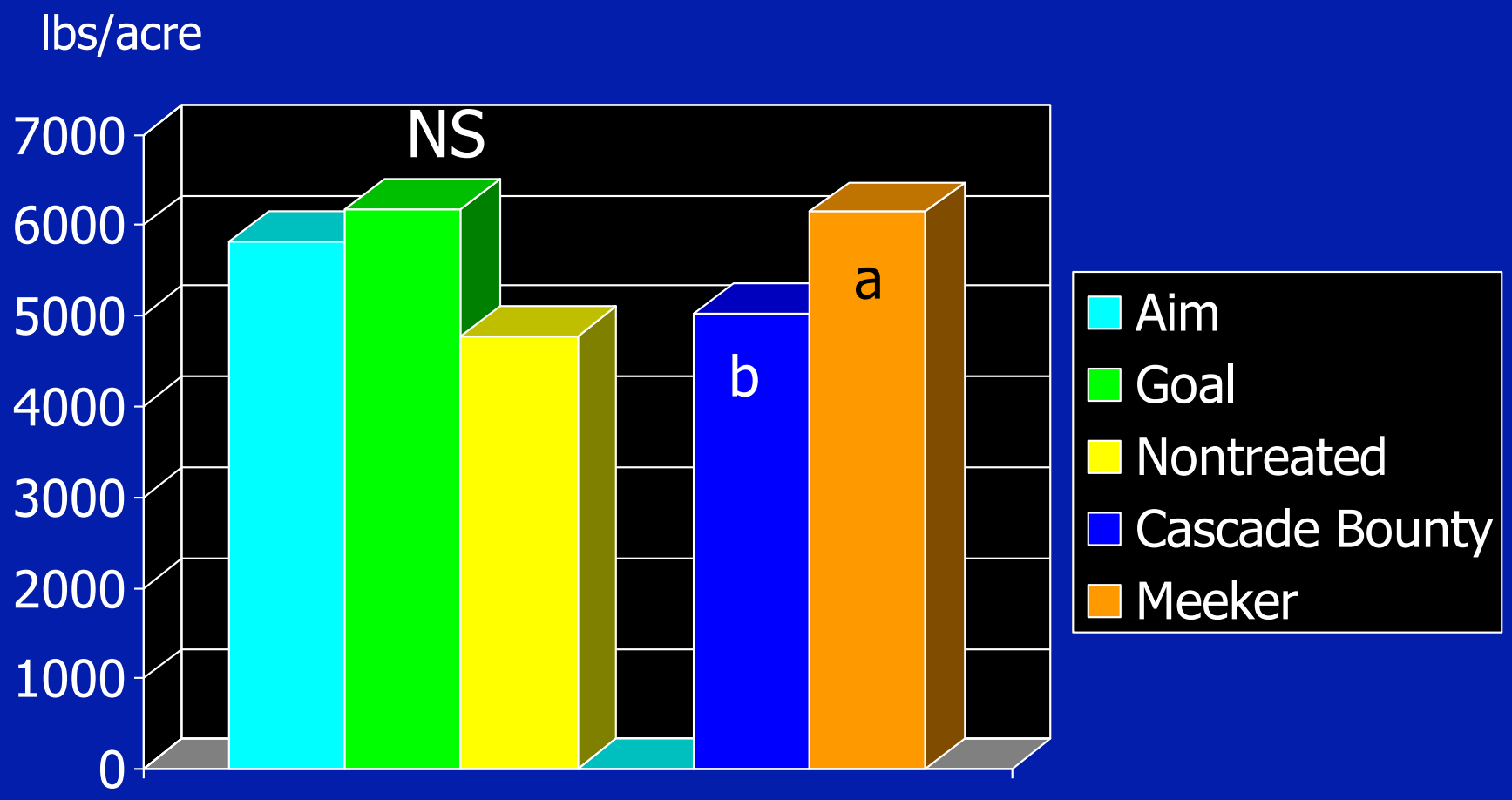
Trial 1 Weed Control

August, 2010-12

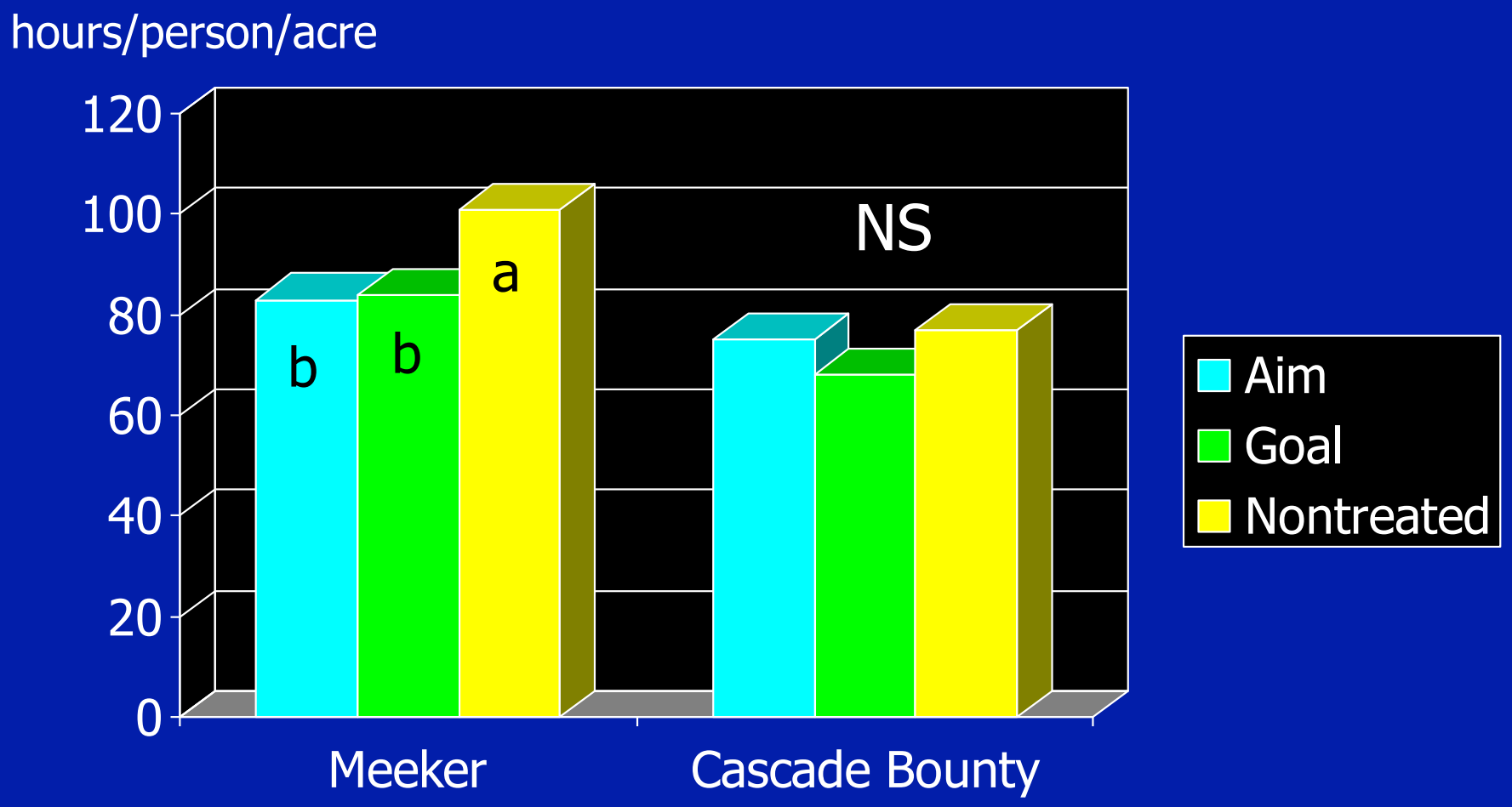


Trial 2 Raspberry Yield

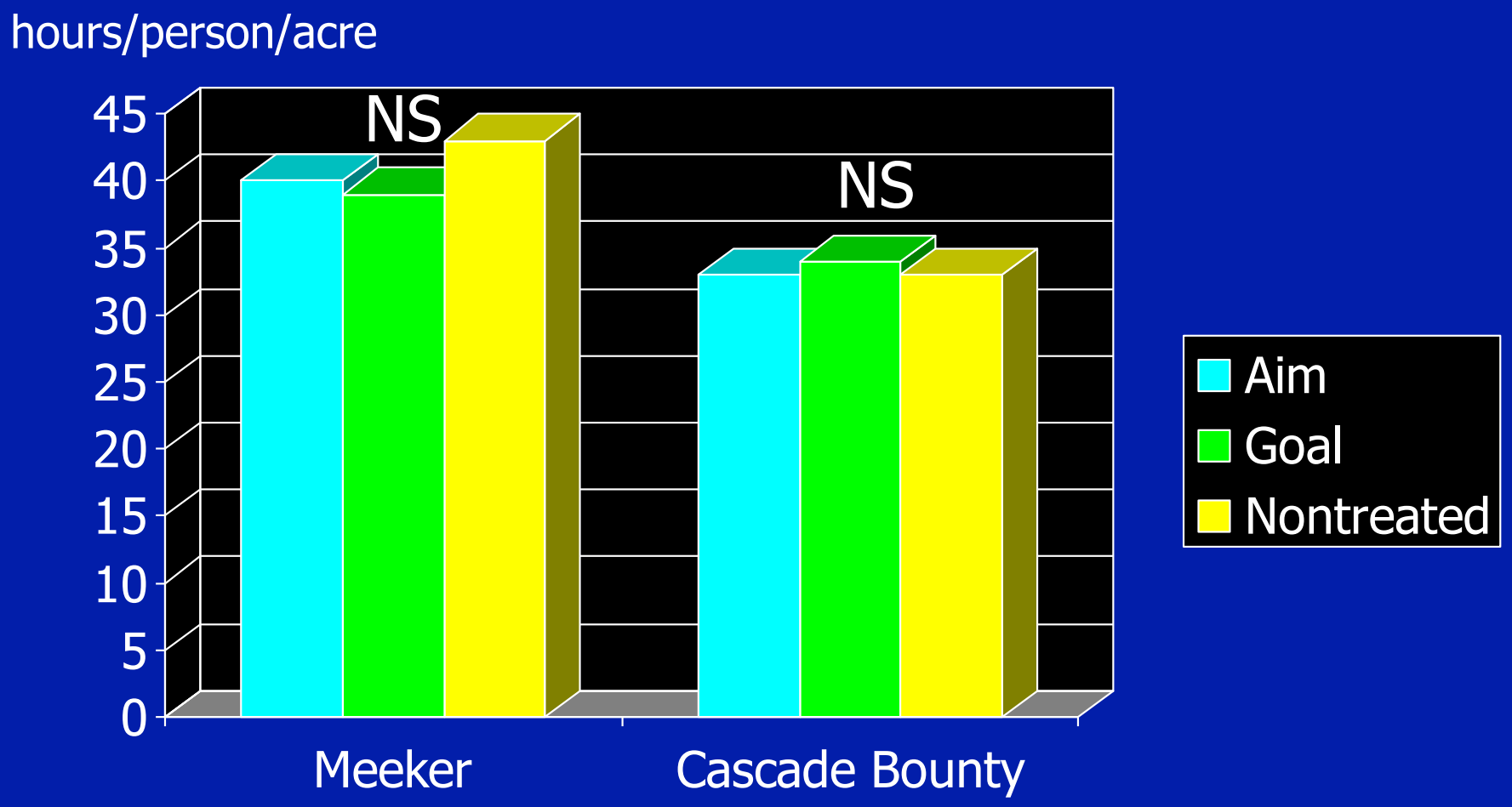
Three-Year Average



Trial 2 Pruning/Training Time
2010-11



Trial 2 Pruning/Training Time
2011-12



Preliminary Conclusions

- Cane burning increased yield of Meeker, but not Coho and Cascade Bounty
  - Nonsignificant increase in Coho, less with Cascade Bounty
- Weed control by August was poor when only cane burning herbicides were used
  - Weed control was progressively worse each year that only cane burning products were used
- Training efficiency was far better with cane burning for Meeker in 2010-11, but not for Cascade Bounty
  - No difference in 2011-12

IR-4 Trials

- Crop injury and efficacy trials were conducted for potential registration in raspberry (2011-12)
  - Prowl H2O (will assist in control of many annual weed species)
  - Quali-Pro Quinclorac (assist with field and hedge bindweed)
- No crop injury noted and no negative effects on yield

Note: Dual Magnum was included as a treatment, registration was gained in 2012

Blueberry Herbicide Trial
2011-12

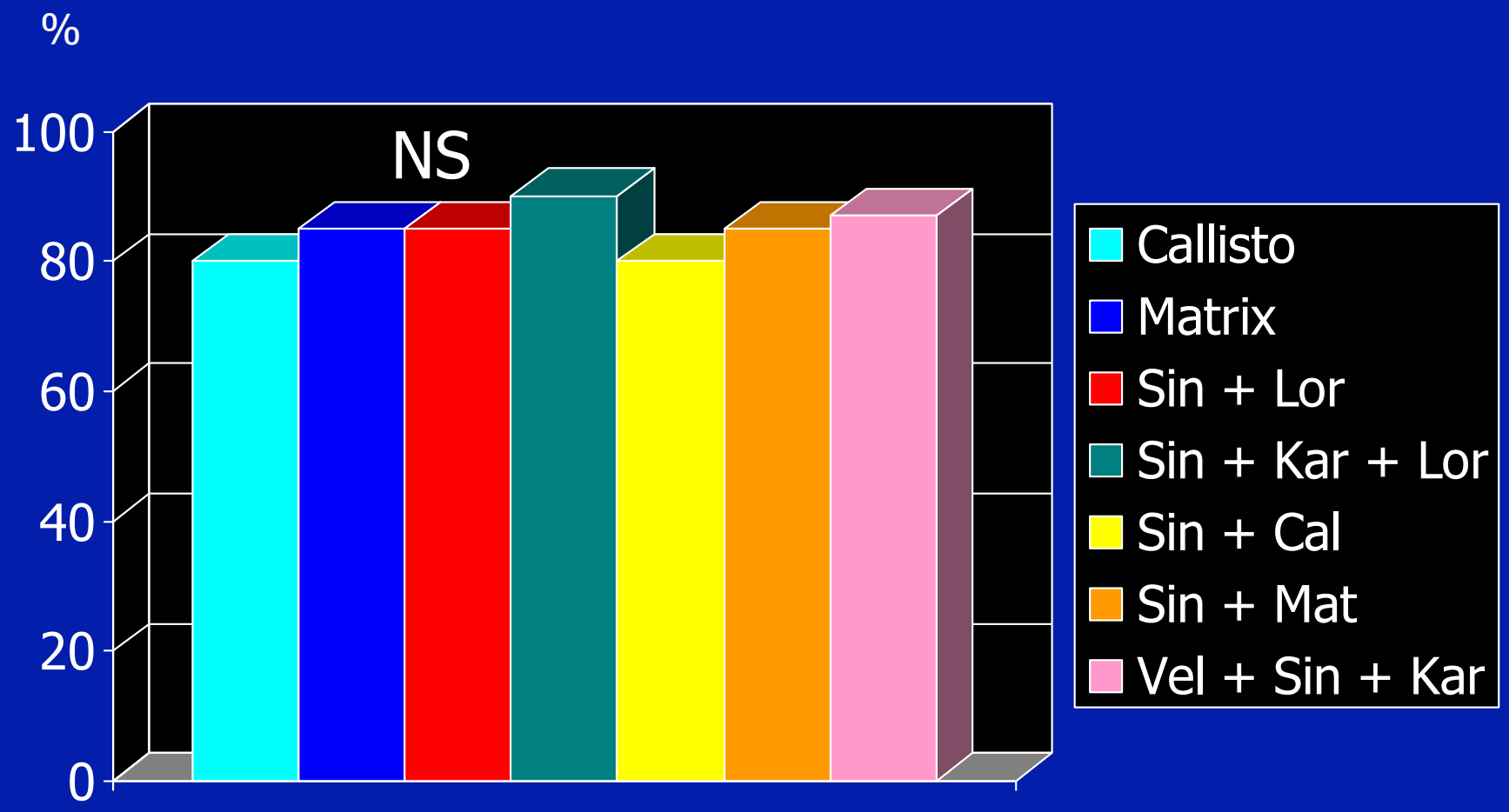
Blueberry Herbicide Trial

- Testing of dormant and POST herbicides for perennial weed control
  - Conducted in 2011 in Mount Vernon on established 'Duke'
  - Conducted in 2012 in Lynden on newly-planted 'Draper'

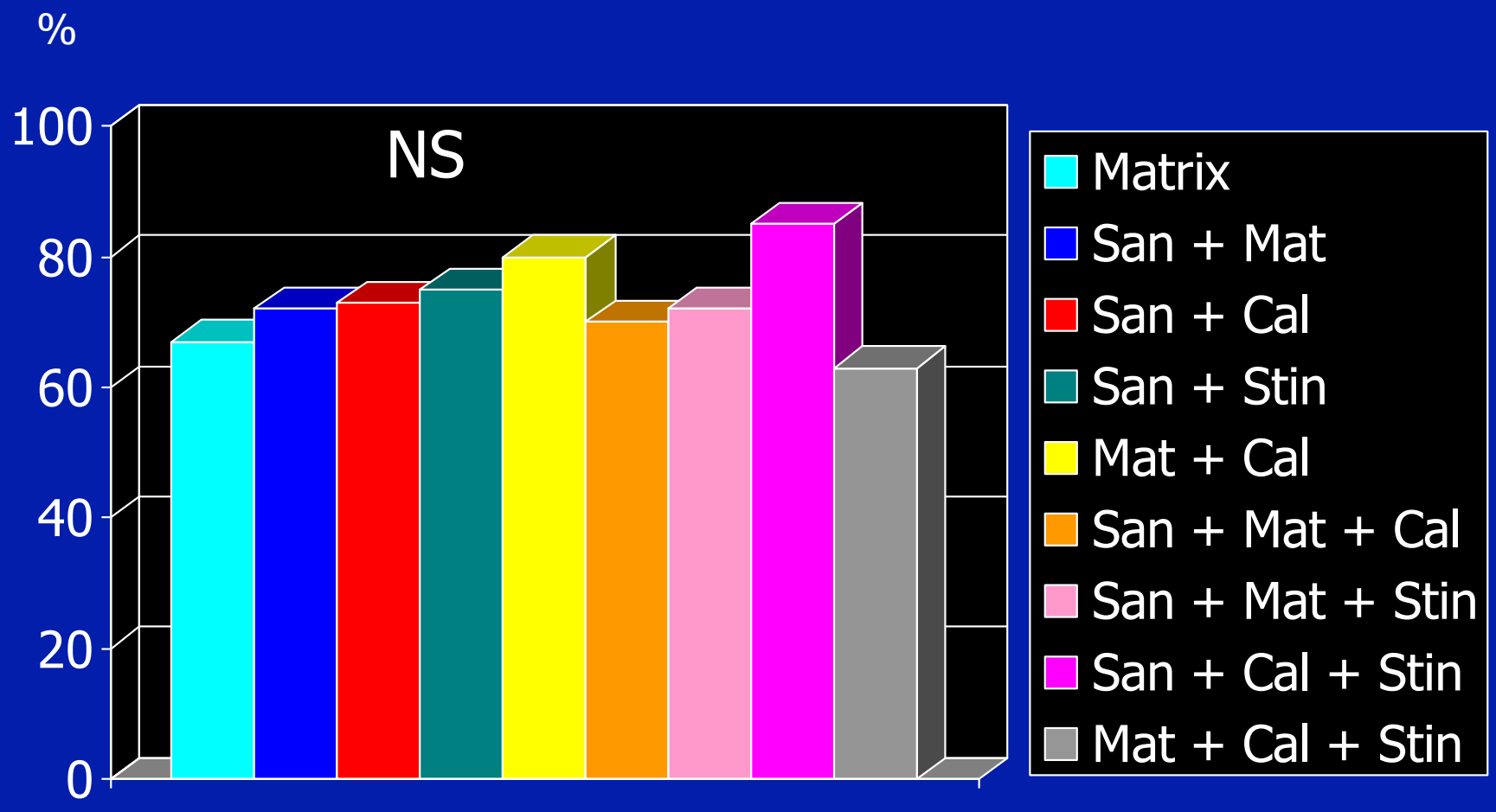
Blueberry Herbicide Trial 2011

- Dormant-season products tested were Sinbar, Karmex, Callisto, Matrix, Velpar, Sandea, and Stinger
  - Also tested Lorox (NovaSource, not registered)
  - Treatments were applied March 24, 2011
- Post-budbreak products tested were Sandea, Matrix, Callisto, and Stinger
  - Treatments were applied June 17, 2011

Weed Control in Blueberry
Dormant, 2011



Weed Control in Blueberry
POST, 2011



Blueberry Herbicide Trial 2011

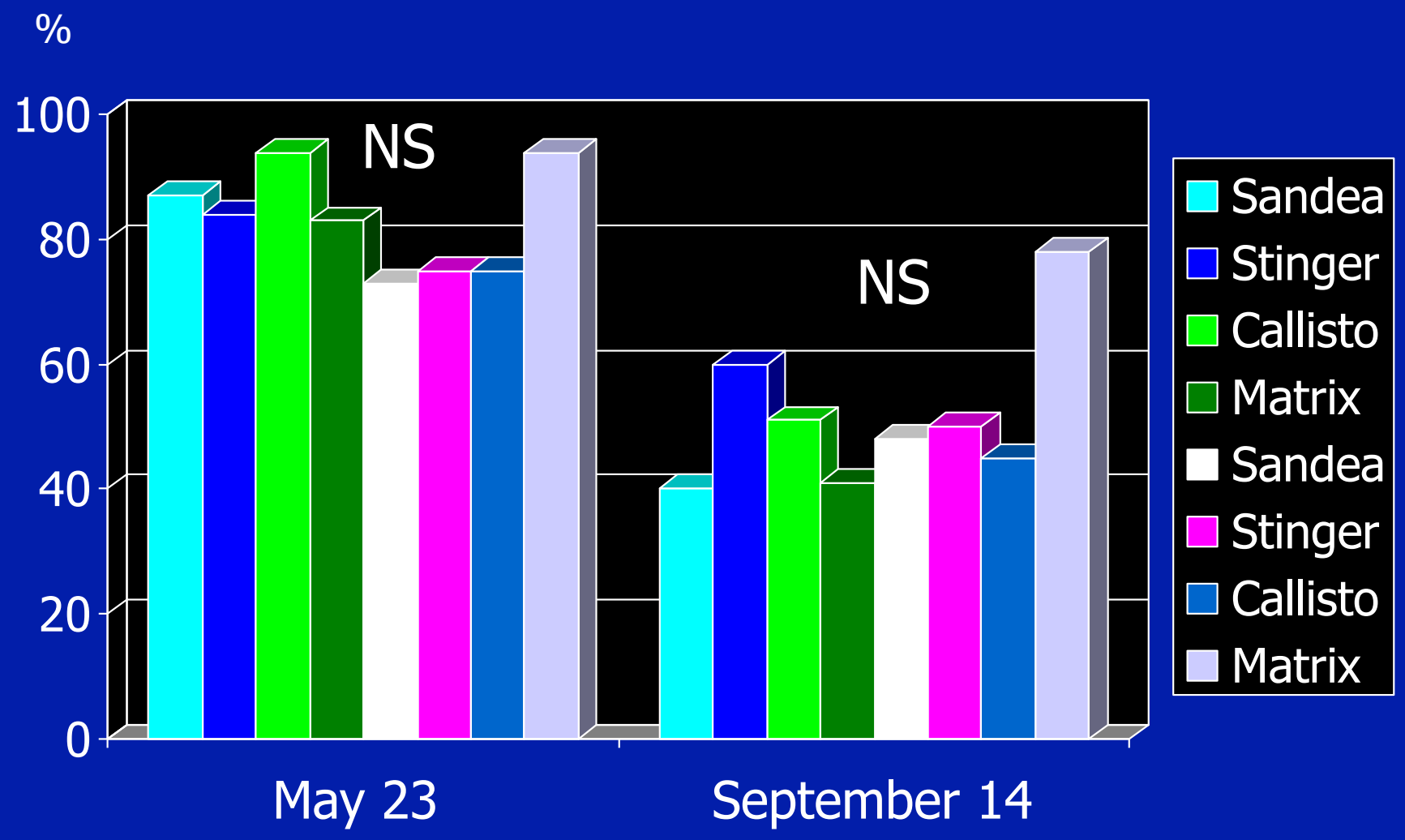
- No observable crop injury
- Weed control ranged from 50 to 90% in August
- Yield parameters did not differ significantly
- All these herbicides look good for perennial weed control, particularly when used in combination

Blueberry Herbicide Trial 2012

- Herbicides expanded to include three other non-registered products Alion (indaziflam, new from Bayer), Reflex (fomesafen, old from Syngenta), and Treevix (saflufenacil, new from BASF)
  - Dormant-season treatments were applied March 8-9, 2012
  - Post-budbreak treatments were applied May 2, 2012

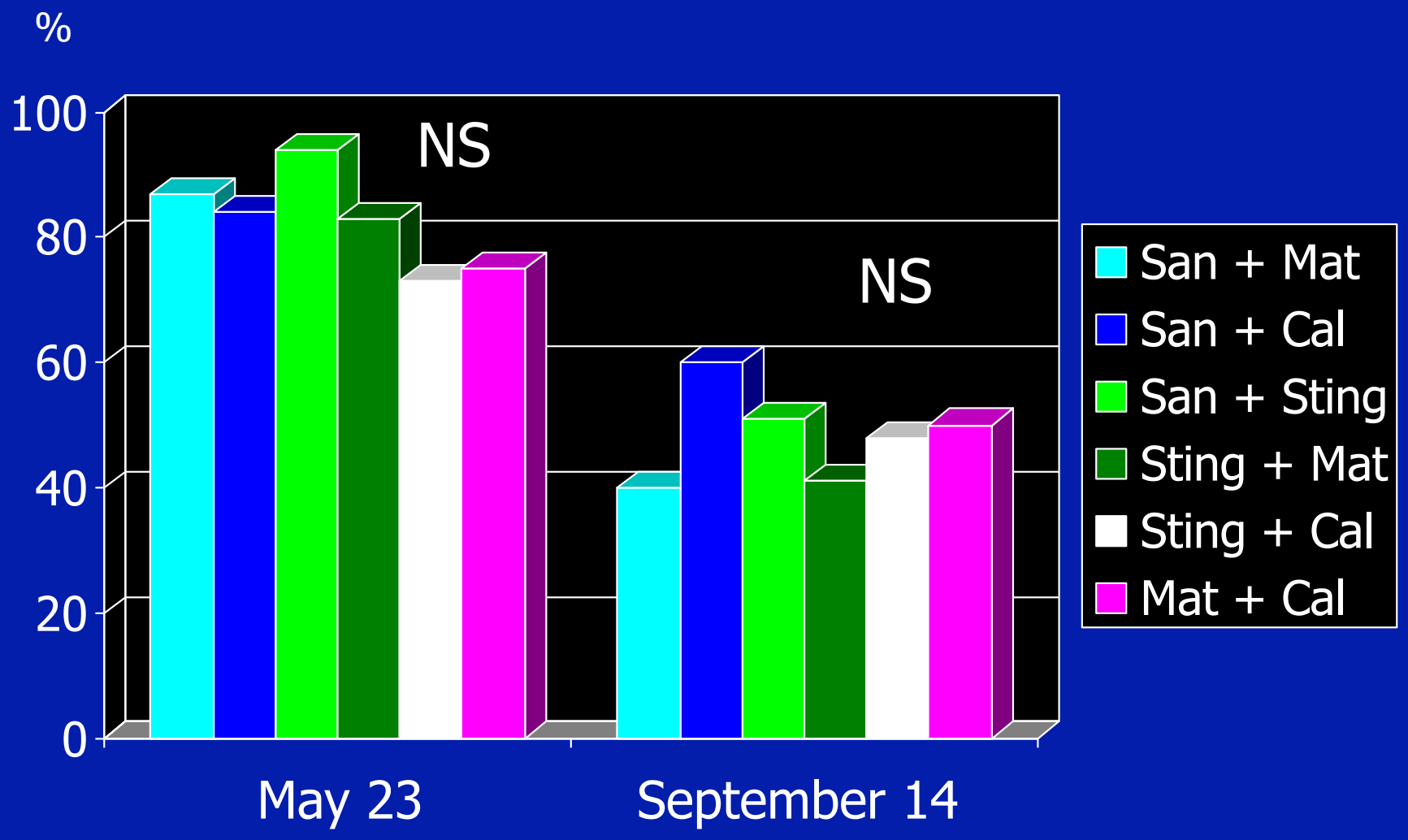
Weed Control in Blueberry

Single Products

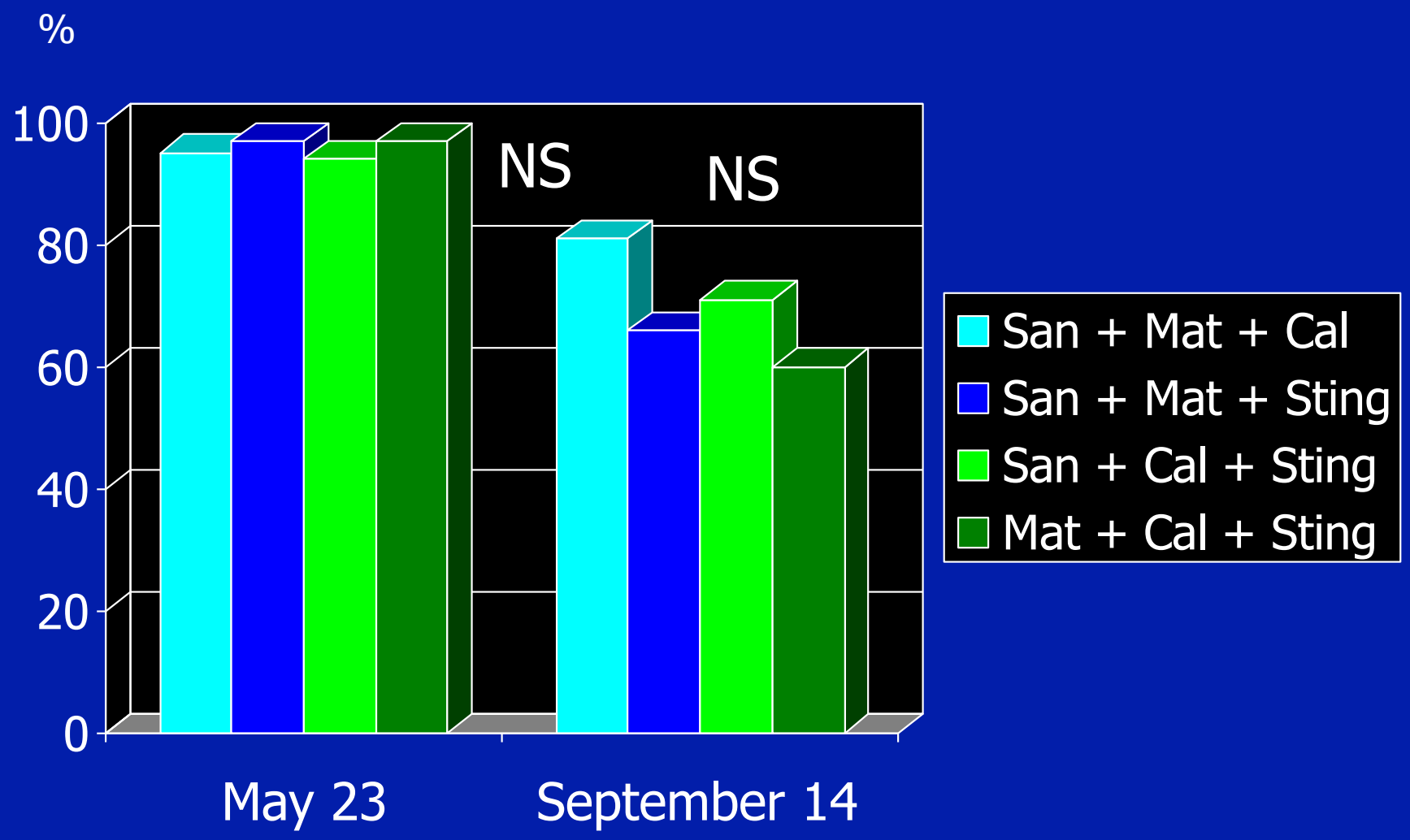


Weed Control in Blueberry

Two-way Tank Mixtures

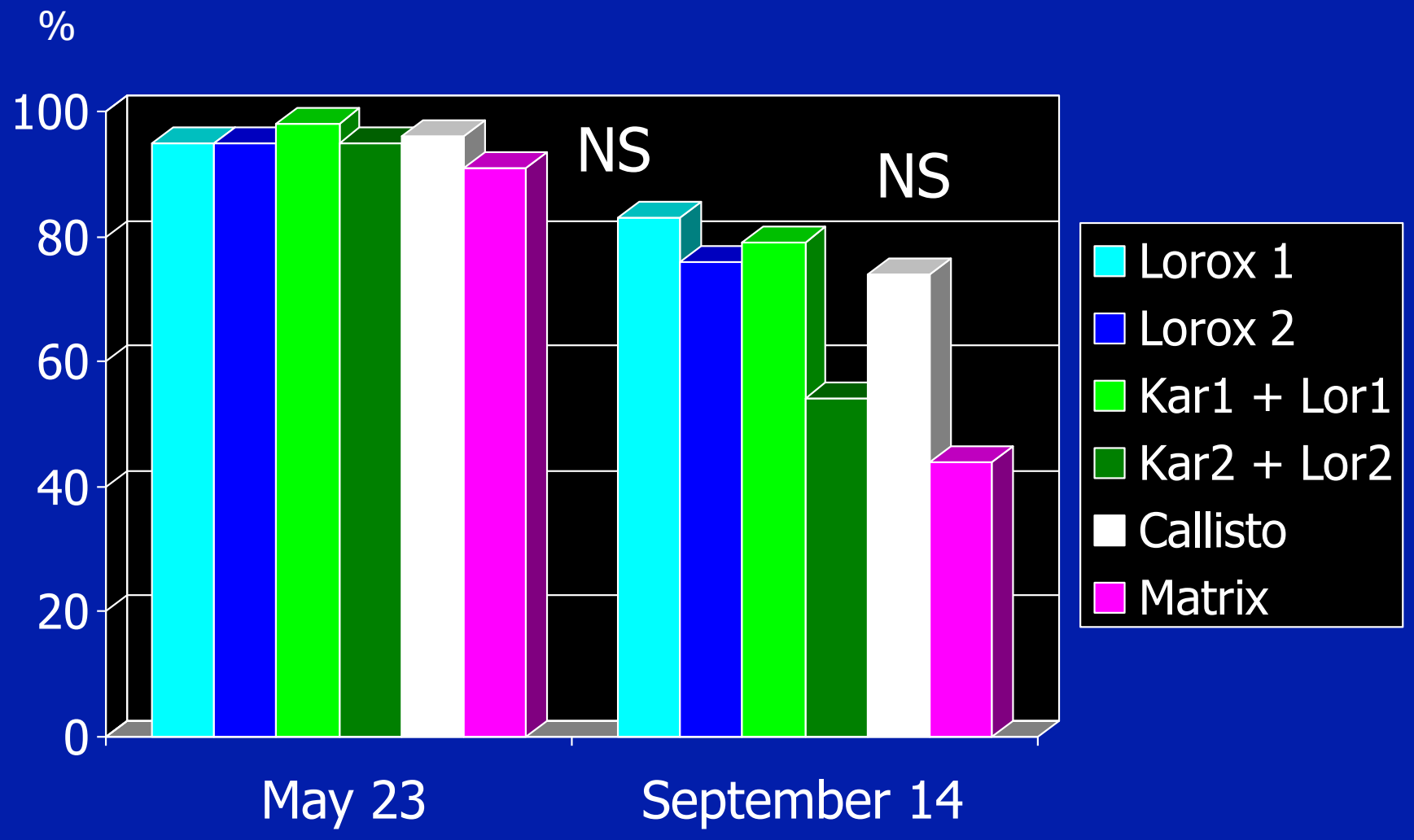


Weed Control in Blueberry
Three-way Tank Mixtures



Weed Control in Blueberry

Mixes with Sinbar (2 lbs/a)



Blueberry Herbicide Trial 2012

- No observable crop injury, good news for newly-planted blueberry
- Weed control ranged from 48 to 83% in September
- New herbicides looked good, and testing will be expanded in 2013

Established Strawberry Trial

Established Strawberry Trial

- 'Totem' strawberry transplanted in June, 2011
  - Treated with Spartan and Prowl H2O shortly after transplanting, and with Poast in October, 2011
  - Roto-tilled several times during establishment, and once more prior to dormancy
- Split-block simazine was applied in November, 2011 and herbicide combinations were applied in March, 2012
- Tested herbicides included:
  - Registered: Chateau, Devrinol, Sinbar, and Spartan
  - Nonregistered: Alion, Callisto, Dual Magnum, Fierce, Gallery, Prowl H2O*, Reflex, and Treevix

Established Strawberry Trial
Results

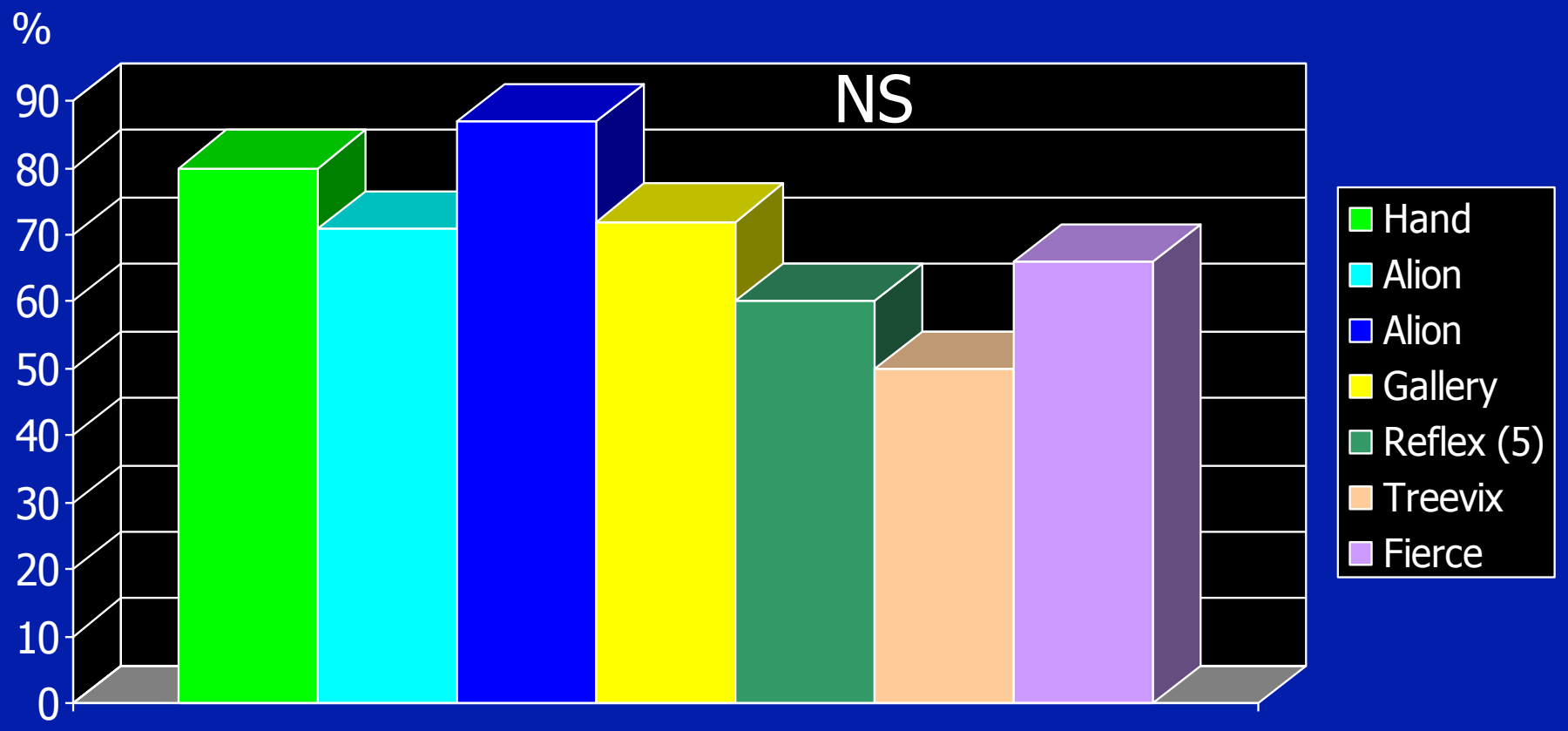
- Crop injury was very low, with one exception: Callisto (94% injury by May and it didn't get any better)
  - Newly-planted strawberry was also killed by Callisto (don't even think about it!)
- Weed control with Gallery, Alion, and Fierce was similar to handweeded strawberry
- Differences in weed control due to simazine were small
  - 84 and 78% (with/without) in May and 64 and 61% in June

Established Strawberry Trial
Results

- Berry yield was not affected by simazine
  - Yield with Gallery + Spartan and Alion exceeded handweeded strawberry
- Average fruit weight increased from 13.5 g/fruit to 14.8 g/fruit when simazine was used
  - Average fruit weights after herbicide treatments did not differ from handweeded strawberry

Established Strawberry Trial

Weed Control in June, Nonregistered Products



Conclusions
Established Strawberry Trial

- Weed control was excellent through harvest with most combinations
  - Simazine increased weed control in 2009 and 2011, but not in 2010
- Crop injury was often high in March, but less than 10% by April, with or without simazine
- Berry size and yield not reduced by any treatments

Many Thanks

- Funding for these trials was provided by:
  - Washington State Blueberry, Red Raspberry and Strawberry Commissions
  - Washington State Department of Agriculture
  - Western Region IR-4
  - Industry support
- Sakuma Brothers Farms for plant material
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