

NRCS Agricultural Management Assistance IPM Practices (595) 2006

595 Pest Management

Correlated Practices -

Weather and Growing Degree Days Monitorin	NO	\$375.00	FR	100
Adv PM Tree Fruit Insect & disease monitorin	AC	\$45.00	FR	100
Use of precision application technology	AC	\$15.00	FR	100
Basic Pest Management for Tree Fruit	AC	\$35.00	FR	100
Nonchemical control methods-Increase benefi	AC	\$8.00	FR	100
Adv PM Tree Fruit-area-wide mating disruptio	AC	\$78.00	FR	100
Adv PM Tree Fruit-area-wide mating disruptio	AC	\$38.00	FR	100
Adv PM Tree Fruit-reduced risk pesticides	AC	\$50.00	FR	100
Field Crops	AC	\$8.00	FR	100

NRCS 595 Integrated Pest Management For Tree Fruit

Level 1 IPM

➤ Basic PM for Tree Fruit

Pheromone Traps

Apple & Pear – CM & OFM

Peach & Nectarine – OFM & Borers

Follow PSU Tree Fruit Monitoring Guide.

Resistance management spray alternations for disease, insect & mite control.

Avoid use of pyrethroids post-bloom in apple.

Time sprays according to infection periods and pheromone trap catches.

\$20/A

➤ Weather Monitoring w/o use of pest phenology models.

Use weather data to time applications around high wind periods to reduce drift and around rain events to reduce wash off & improve efficacy.

\$375/Season

Level 2 IPM

➤ Advanced PM mating disruption – 1 species.

Peach – OFM \$38/A, Borers \$50/A

Apple – OFM \$38/A, CM - \$100/A

See specification

➤ Advanced PM mating disruption – 2 species.

Peach – OFM & Borers - \$88/A

Apple – OFM & CM \$110/A

See specification

➤ Weather Monitoring w/ use of predictive pest phenology models - \$395/season

See specification

➤ Precision application technology - \$15/A

See specification

➤ Avoidance techniques – plant disease resistant varieties - \$50/A

See specification

Level 3 IPM

➤ Advanced PM intensive disease, insect, & mite monitoring - \$45/A

See specification

➤ Advanced PM reduced risk insect & mite management.

Apple - \$70/A Peach - \$30/A

Must be used in conjunction w/ advanced intensive pest monitoring above.

See specification

➤ Area-wide mating disruption for pome and stone fruits - \$100/A.

Recommended to be used in conjunction w/ advanced intensive pest monitoring above.

See specification

➤ Non-chemical control methods for tree fruit pests (biological control of mites with *T. pyri*) - \$20/A.

See specification

NRCS 595 Integrated Pest Management For Tree Fruit

Level 1 IPM

Basic IPM for Tree Fruit - Scouting

- 1. Follow PSU Tree Fruit Monitoring Guide**
- 2. Be familiar with tables: re-entry periods, pre-harvest intervals, use recommended rates, timings & application methods.**
- 3. Pheromone trapping - 1 trap of each species/10 acres**
 - Apple & Pear – CM & OFM**
 - Peach, Nectarine & Cherry – OFM , LPTB, PTB**
 - Use pheromone trap catch thresholds for spraying.**
- 4. Resistance management spray alternations for disease, insect & mite control.**
- 5. Avoid use of pyrethroids post-bloom in apple.**

\$20/A → \$35/A

NRCS 595 Integrated Pest Management For Tree Fruit

Level 1 IPM

Weather Monitoring

w/o use of pest phenology models.

1. Use weather data to time applications around high wind periods to reduce drift and around rain events to reduce wash off & improve efficacy.

\$375/Season

NRCS 595 Integrated Pest Management For Tree Fruit

Level 2 IPM

Advanced PM mating disruption – 1 species (\$38/A)

OFM

- Isomate M-100 – 100 ties/A, last 100 days, about \$38/A
- Isomate Rosso – 200 ties/A, last 120 days, \$55-76/A
- 3M sprayable – 1.7 fl oz/A ARM, lasts about 4 wks, \$10/fl oz

CM

- Isomate CM+ – 400 ties/A, full season, \$106/A
- Isomate CTT – 200 ties/A, full season, \$100/A
- 3M sprayable – **Doesn't work.**

PTB & LPTB

- Isomate LPTB – 200 ties/A, full season, \$50-72/A

NRCS 595 Integrated Pest Management For Tree Fruit

Level 2 IPM

Advanced PM mating disruption – 2 species (\$75/A).

Peach

- OFM & Borers - \$88-148/A, sprayable OFM & borer?

Apple

- Isomate OFM/CM TT – 200/A, full season, \$110-120/A
- Run traps for both species being controlled
- 1 trap/10 acres or better
- CM 10X traps on poles for Isomate OFM/CM TT in apple.

NRCS 595 Integrated Pest Management For Tree Fruit

Level 2 IPM

Weather Monitoring w/ use of predictive pest phenology models - \$395/season (\$375)

- Disease models for scab, fireblight, sooty blotch.
- Egg hatch models for CM, OFM, TABM, OBLR, leafminer and Apple Maggot – need to call in biofixes.

Precision Application Technology - \$15/A

- Smart sprayers w/ sensors to turn off between trees. Useful in high density plantings?

~~**Avoidance Techniques**~~

- ~~➤ plant disease resistant varieties - \$50/A (\$15/A)~~

NRCS 595 Integrated Pest Management For Tree Fruit

Level 3 IPM

Intensive disease, insect, & mite monitoring - \$45/A

- See specification.
- Monitor at least 4 pest species w/ pheromone traps, i.e. CM, OFM, TABM, OBLR in apple and OFM, TABM, LPTB, & PTB in peach. Graph out trap catches weekly.
- Midseason and harvest evaluations of fruit for internal worm, leafroller, or other insect injury.
- Use pest phenology models & weather data to time insecticide and fungicide sprays.
- Develop resistance management strategy for insecticide/fungicides.
- Know pesticide classifications, rates, spectrum of activity (including impacts on beneficials), incompatibilities, and pre-harvest intervals.

NRCS 595 Integrated Pest Management For Tree Fruit

Level 3 IPM

Reduced Risk Insect & Mite Management (\$50/A)

➤ **Apple** - \$70/A **Peach** - \$30/A

➤ Must be used in conjunction w/ advanced intensive pest monitoring.

➤ Use complete sprays where recommended at higher water volume to ensure spray coverage (100 gal/A or more).

➤ Spray timings may be different than conventional products and spray thresholds may be lower.

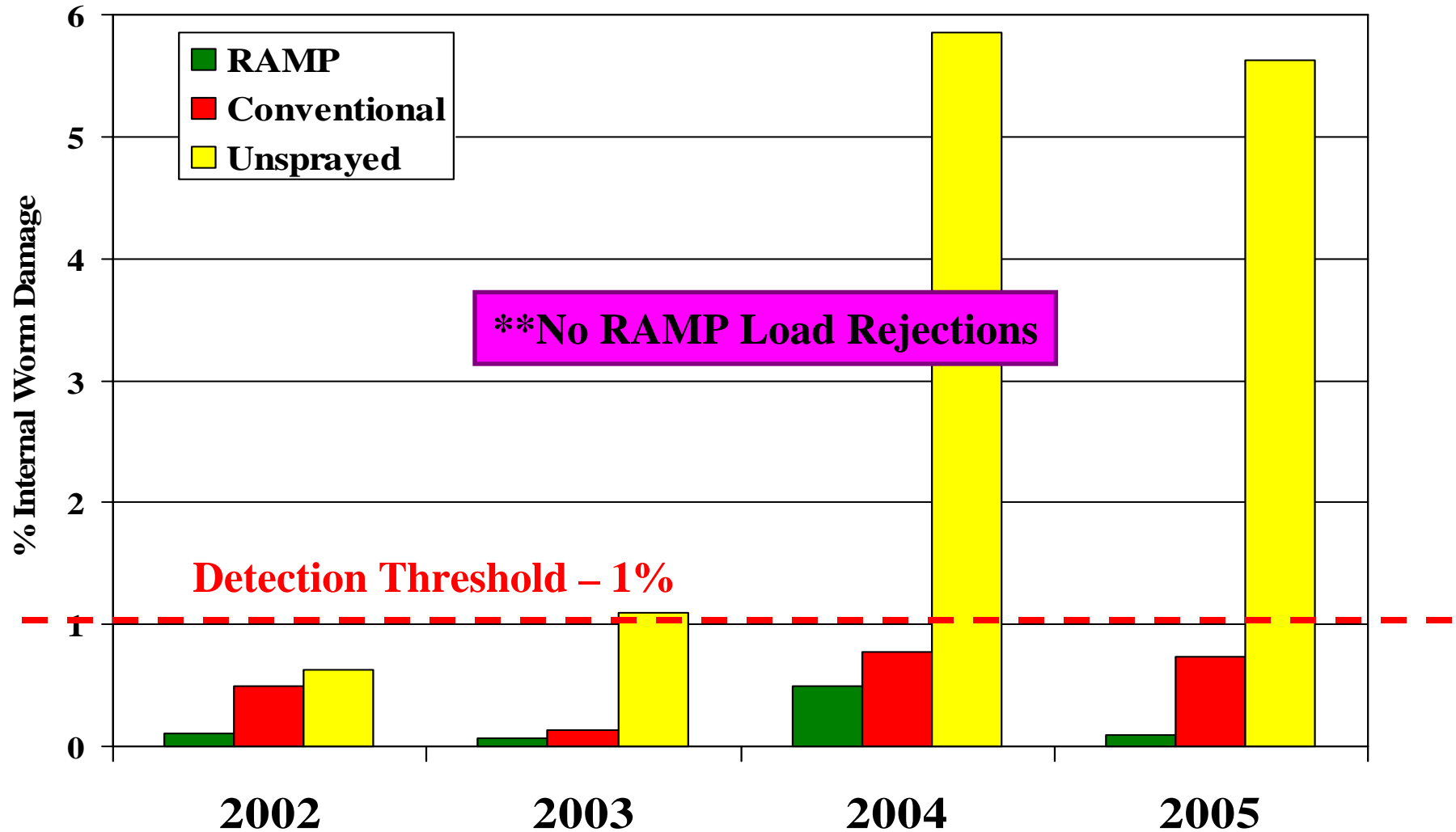
➤ **Apple** - No OP sprays, no Lannate or pyrethroids post-bloom, Sevin for fruit thinning only.

➤ **Peach** – No OP or Lannate sprays, pyrethroids and Sevin sprays allowed, rely on MD, Actara, Provado, Intrepid & Spintor.

See specification

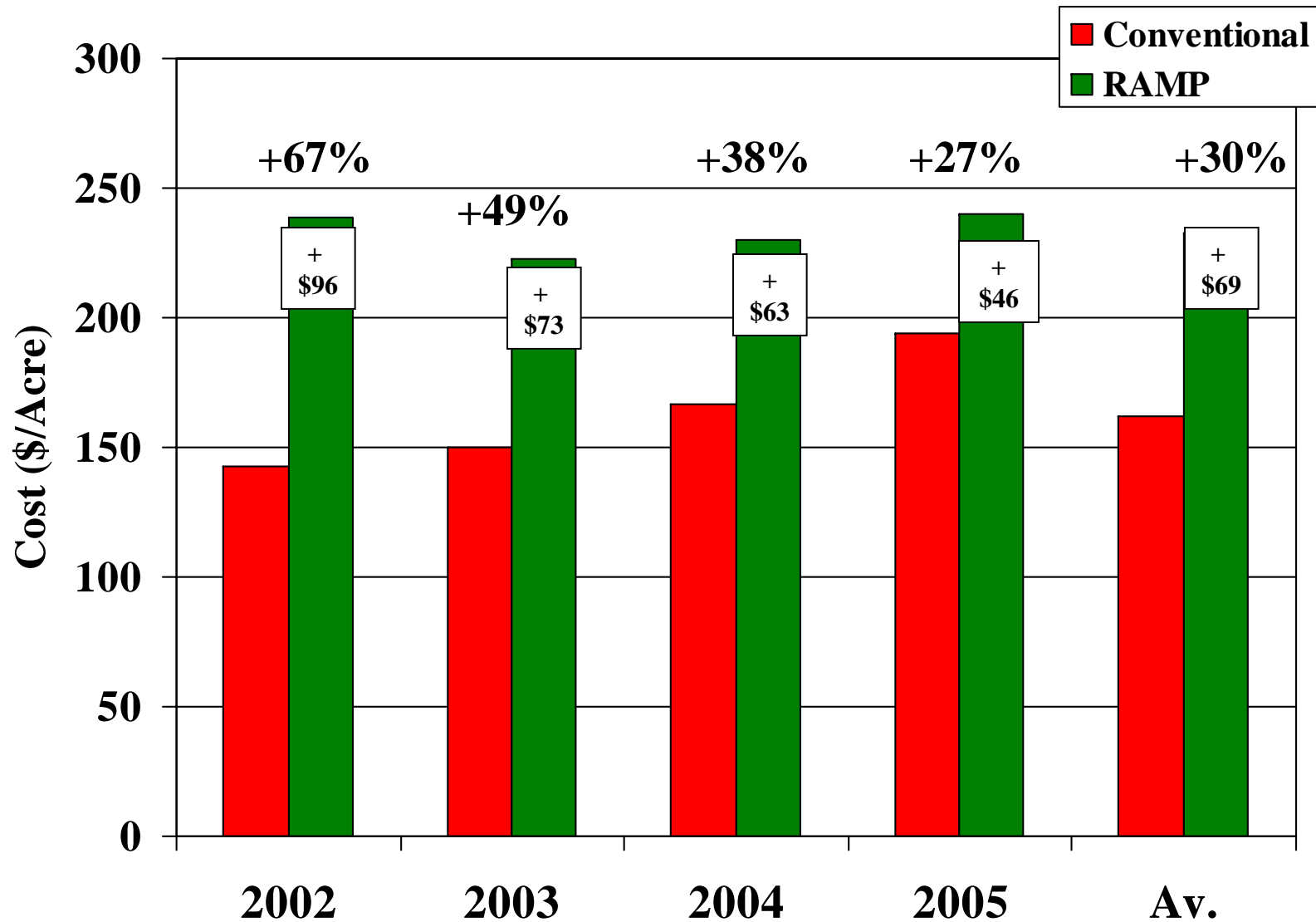
Relative Internal Worm Control of RAMP Apple Programs

7 Orchard Average



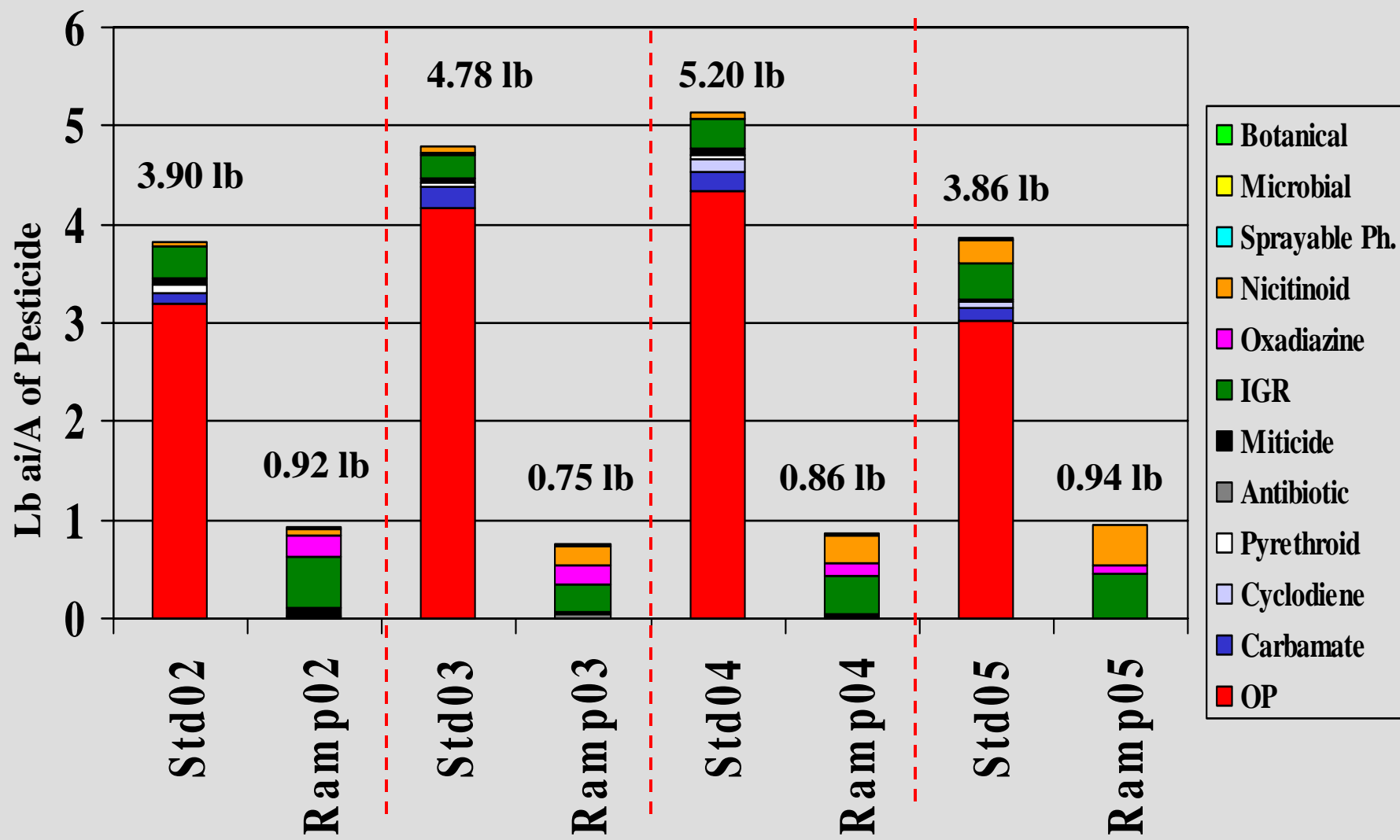
Relative Cost of RAMP Apple Programs

7 Orchard Average - PA

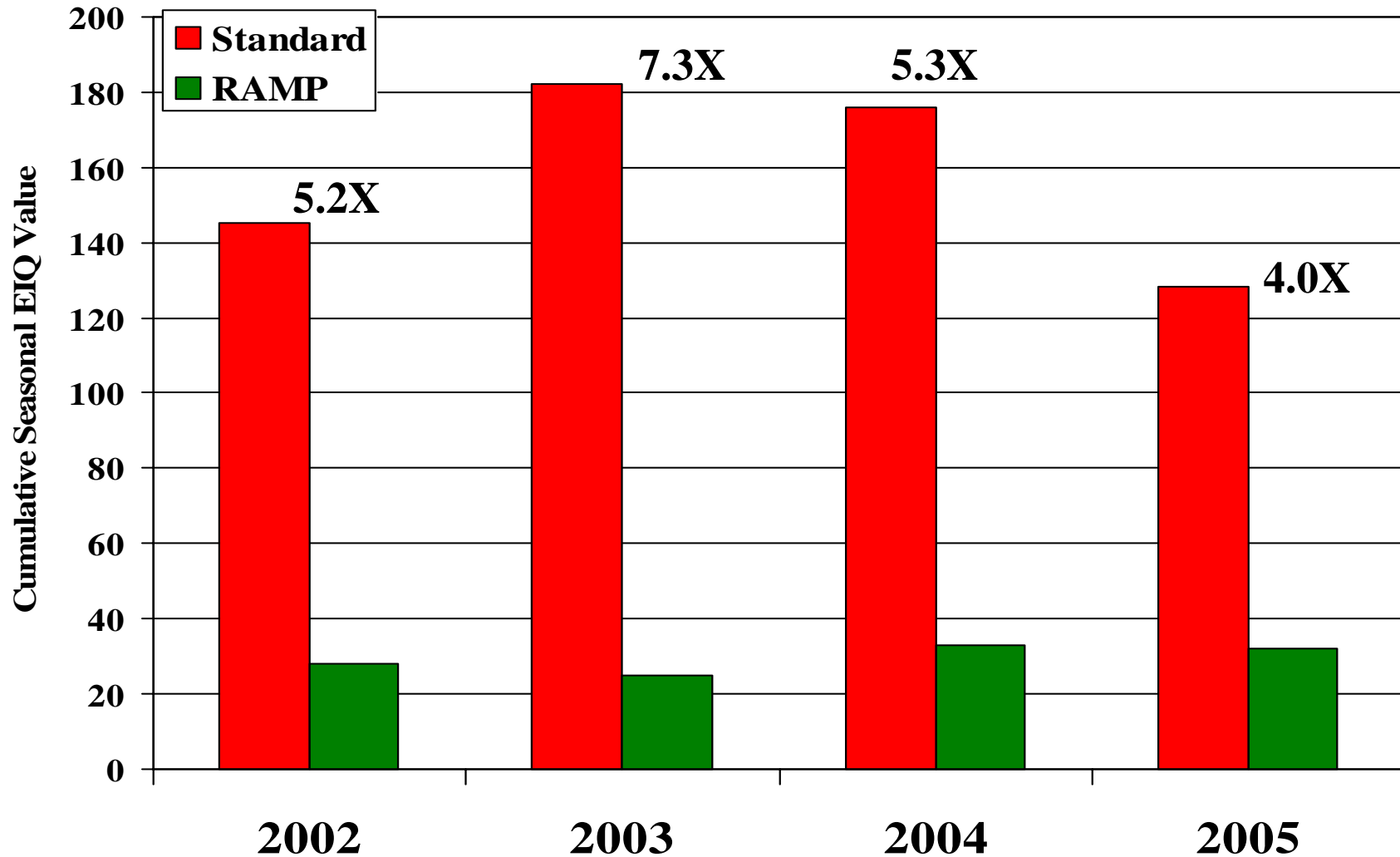


Seasonal Pesticide Use In PA Apples

Standard vs. RAMP Programs (7/7)



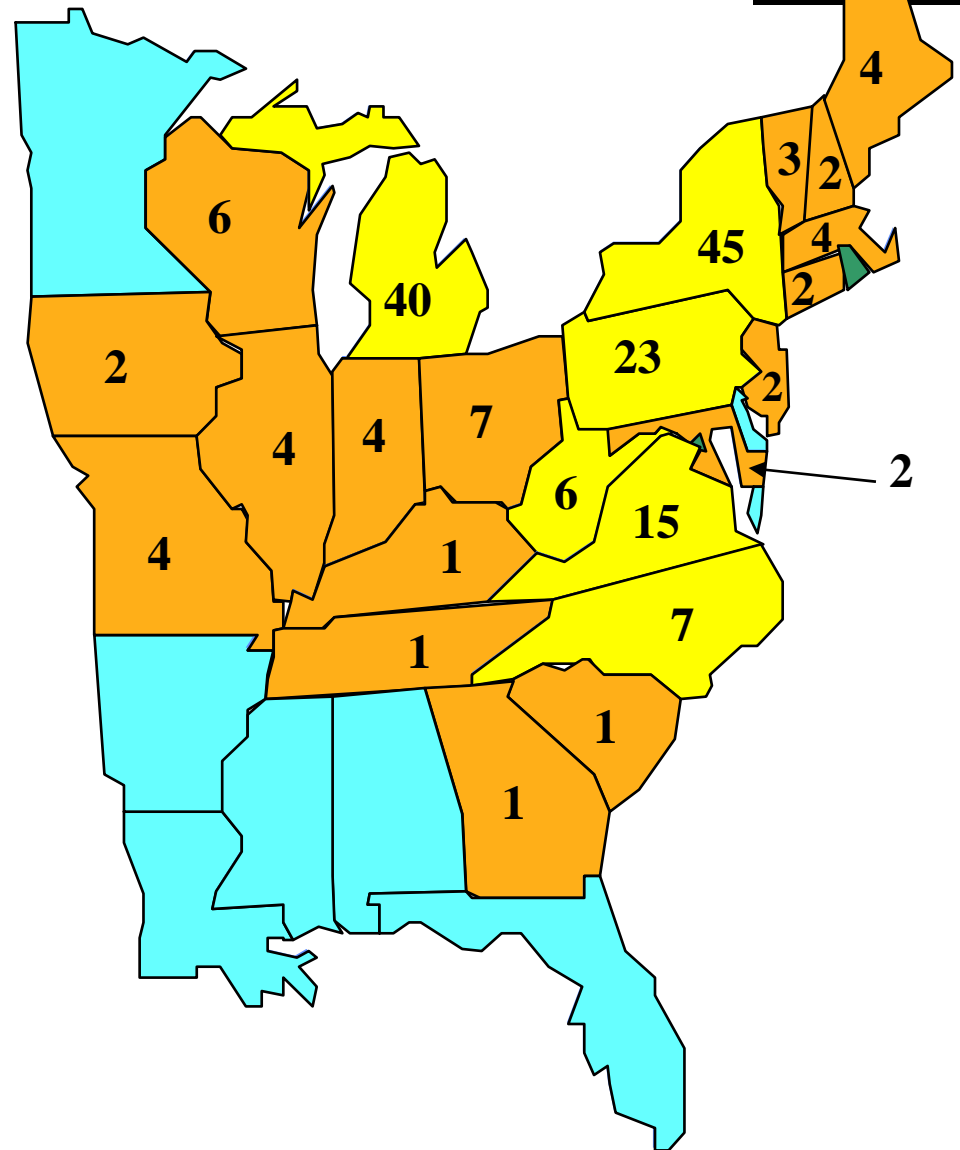
Relative Ecological Toxicity (EIQ) In RAMP Apple Programs 7 Orchard Average



2004 Apple Acres X 1,000

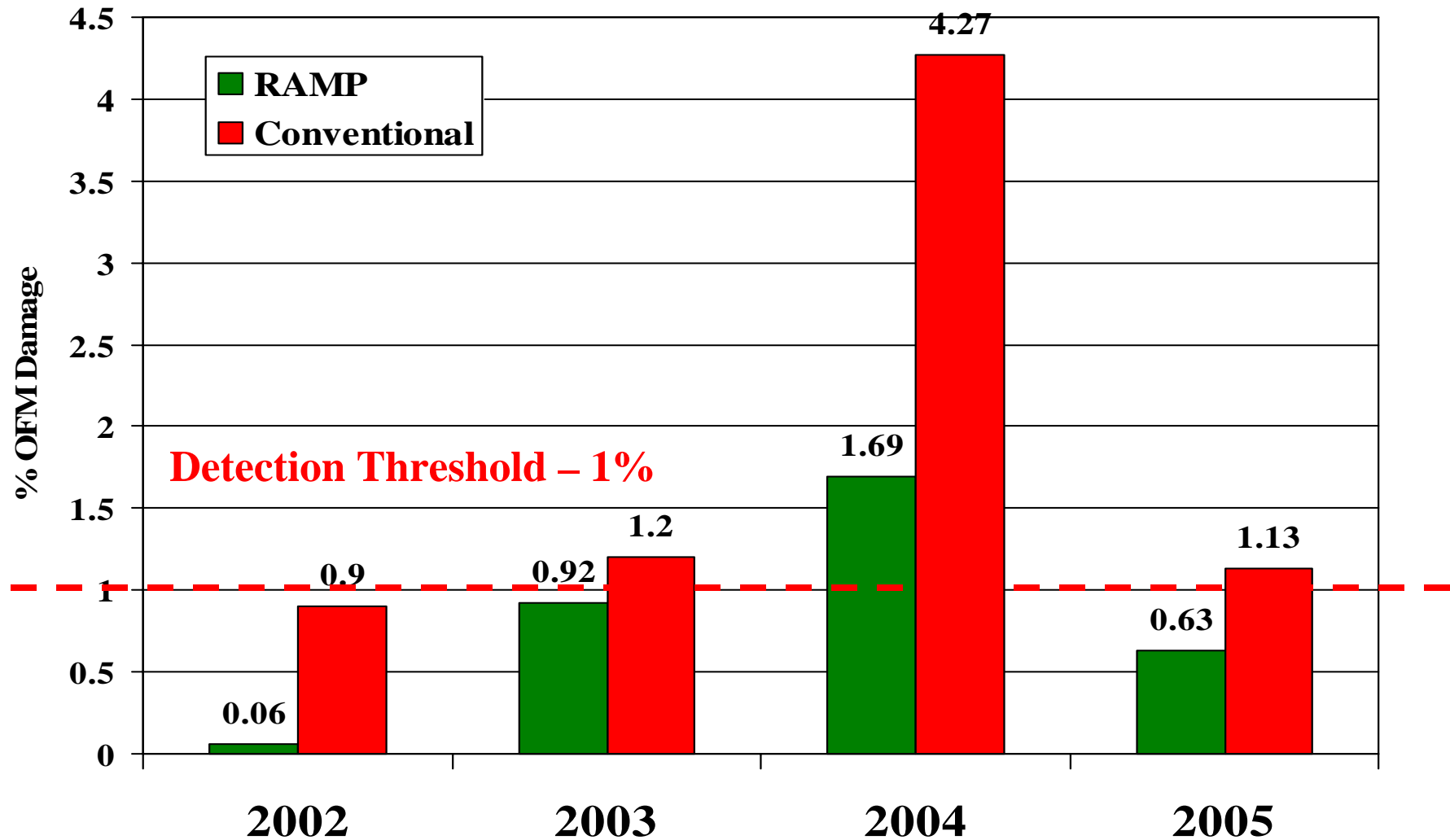


- Represent 73% of Eastern apple acreage.
- Av. lb ai/A for all states 6.06 lb of which 84% are OPs & 6% are CBs .
- Av. ai/A reduction of 83.1%.
- Total tons ai/A for insecticides /miticides in East – **614 tons.**
- Potential ai/A reduction of **381 tons in RAMP states**; potentially **513 tons in all Eastern states.**
- Preliminary results as of 2/7/06.



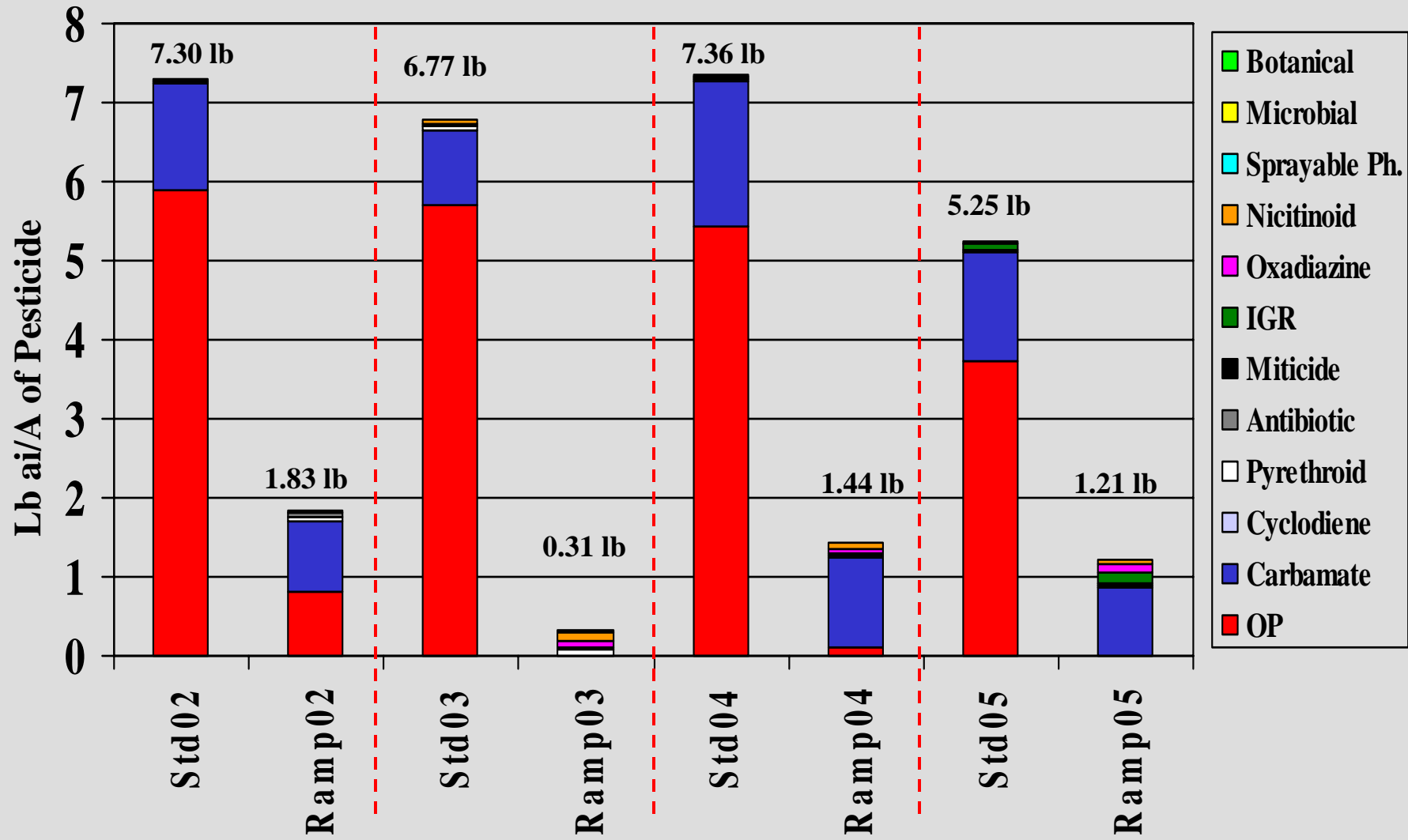
Relative OFM Control of RAMP Peach Programs

5 Orchard Average - PA

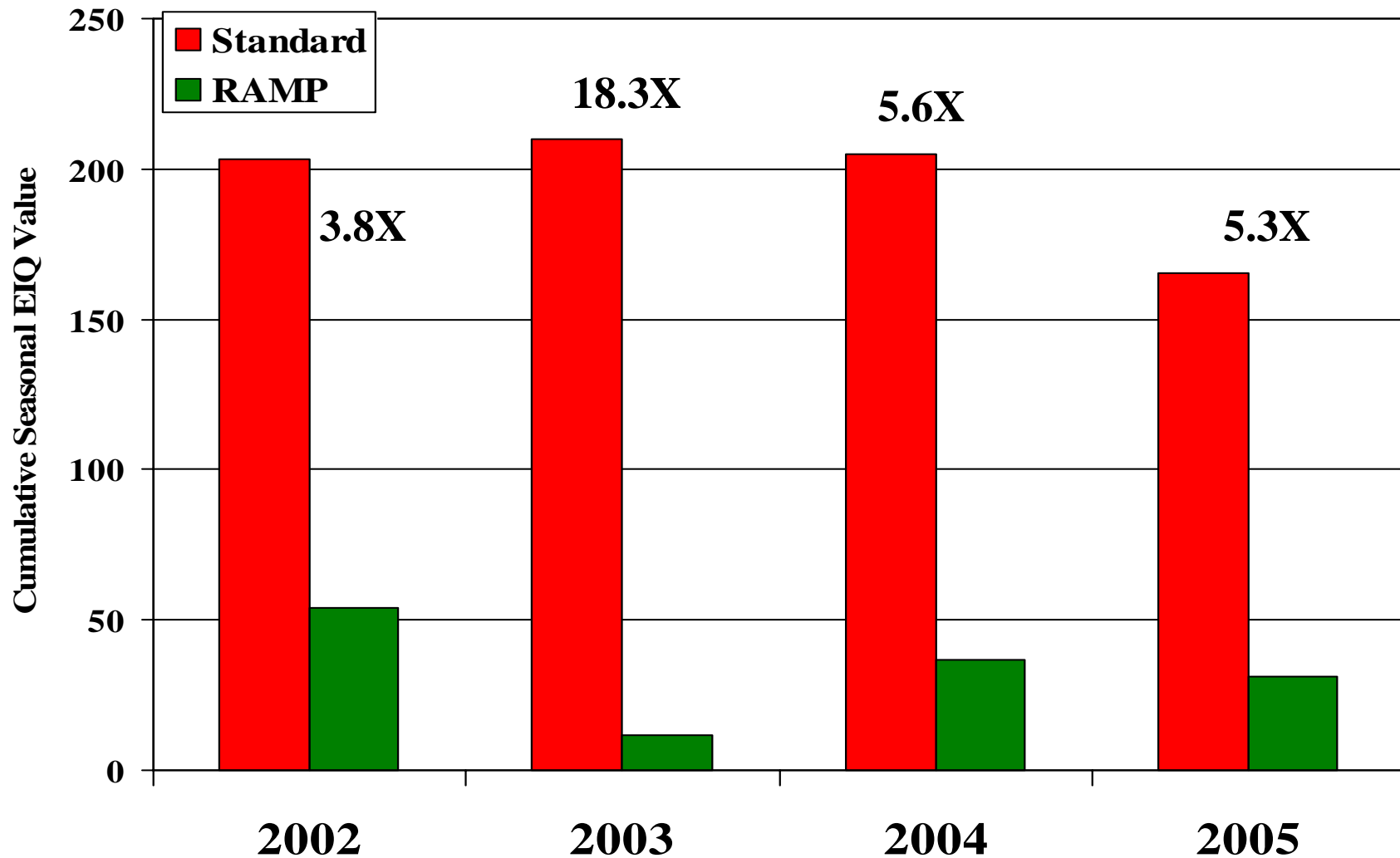


Seasonal Pesticide Use In PA Peaches 2002-5

Standard vs. RAMP Programs (4/5)

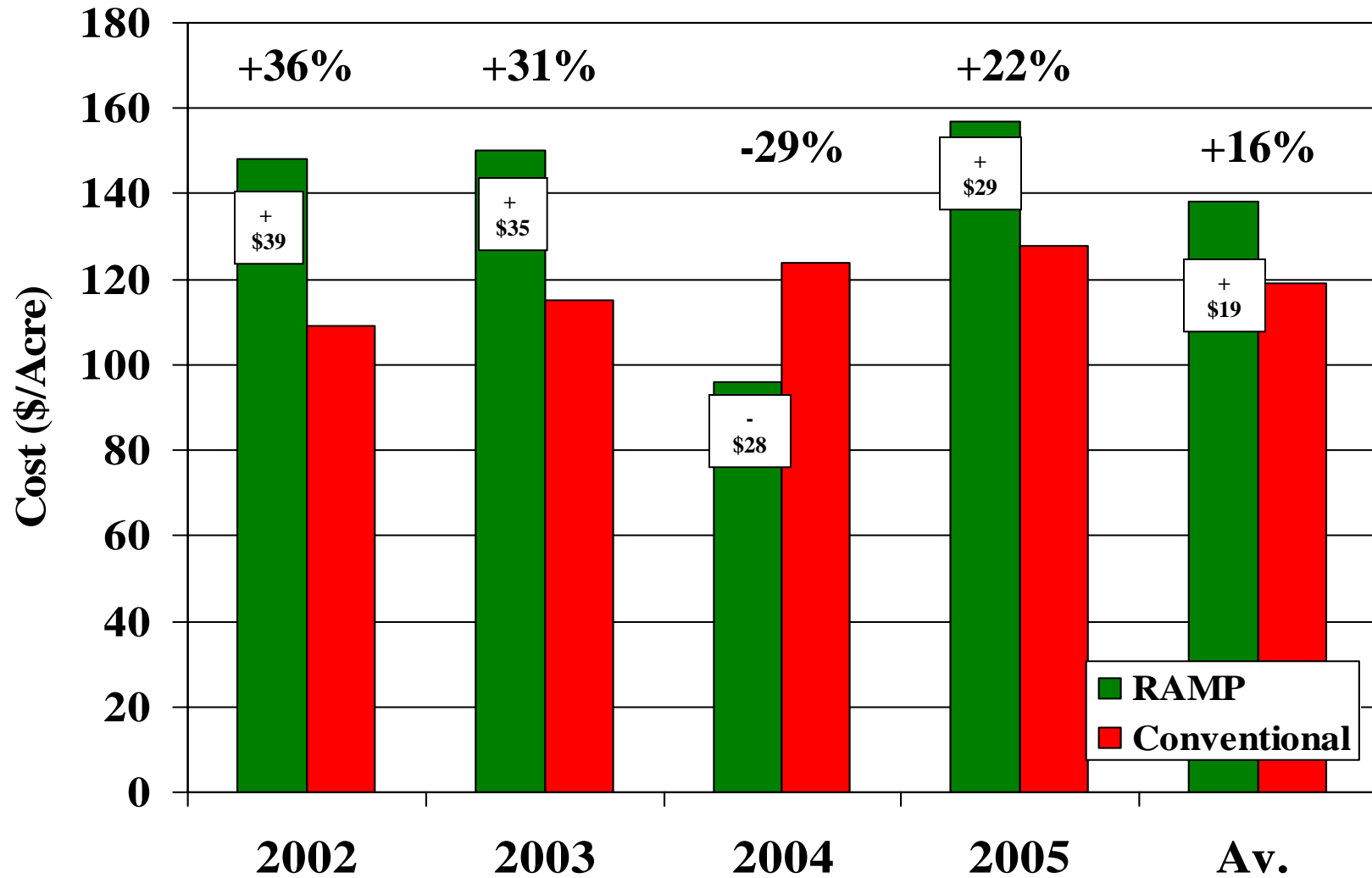


Relative Ecological Toxicity (EIQ) In RAMP Peach Programs 5 Orchard Average - PA



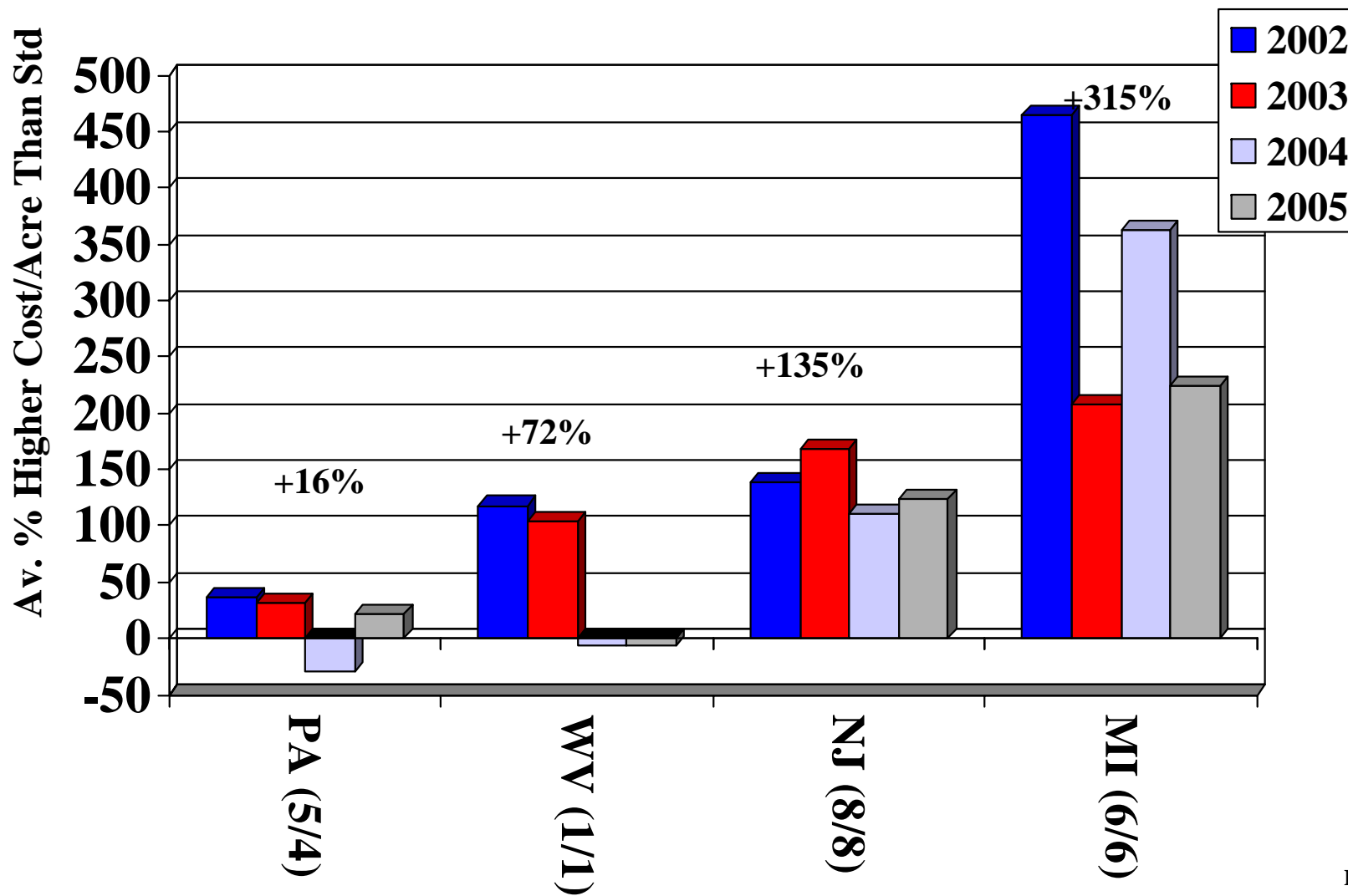
Relative Cost of RAMP Peach Programs

PA 5 Orchard Average - PA



Multi-State Peach RAMP 2002-5

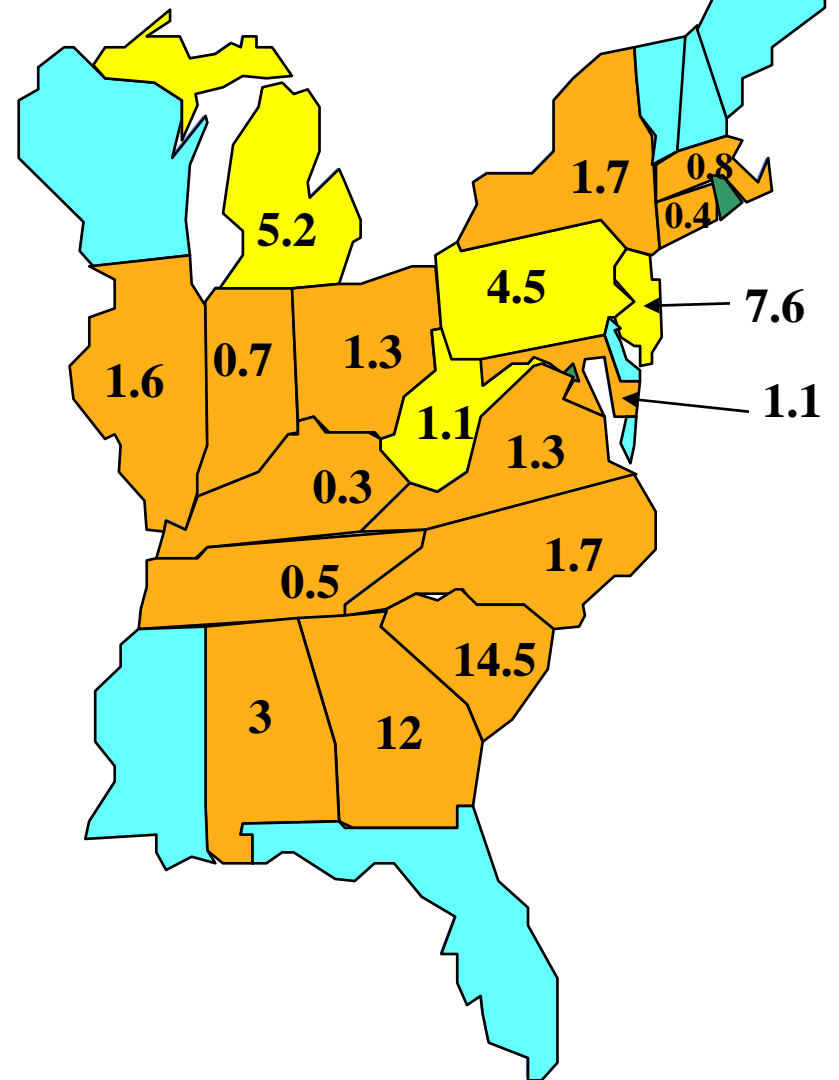
Insecticide/Miticicide/Pheromone Disruption Costs (\$/A)



2004 Peach Acres X 1,000



- Represent 30% of Eastern peach acreage.
- Av. lb ai/A for all states 4.39 lb - 83% are OPs & 13% CBs.
- Av. ai/A reduction of 77.7%.
- Total tons ai/A for insecticides/miticides in East – **128 tons.**
- Potential ai/A reduction of **37 tons in RAMP states**; potentially **97 tons in all Eastern states.**



NRCS 595 Integrated Pest Management For Tree Fruit

Level 3 IPM

Non-chemical control methods for tree fruit pests (biological control of mites with *T. pyri*) - \$20/A (\$6/A).

- See specification.
- Introduce *T. pyri* into apple orchards if not present.
- Conserve it once established – no post-bloom pyrethroids, no Lannate.
- PSU will work with you to certify that you have *T. pyri*.
- Use only selective miticides if necessary.

NRCS 595 Integrated Pest Management For Tree Fruit

Possible New IPM Practices for the Future?

Horticulture & Entomology

- Plant disease resistant varieties.
- Plant trap crops for Stink Bugs or Leafroller parasitoids.
- Areawide or whole farm MD.
- Use of horticultural oils for dormant sprays and summer miticides.

Extension Education

- Reimbursement for Scout and Consultant level training and certification (i.e. internal worms schools, special winter training courses., twilight meetings etc.