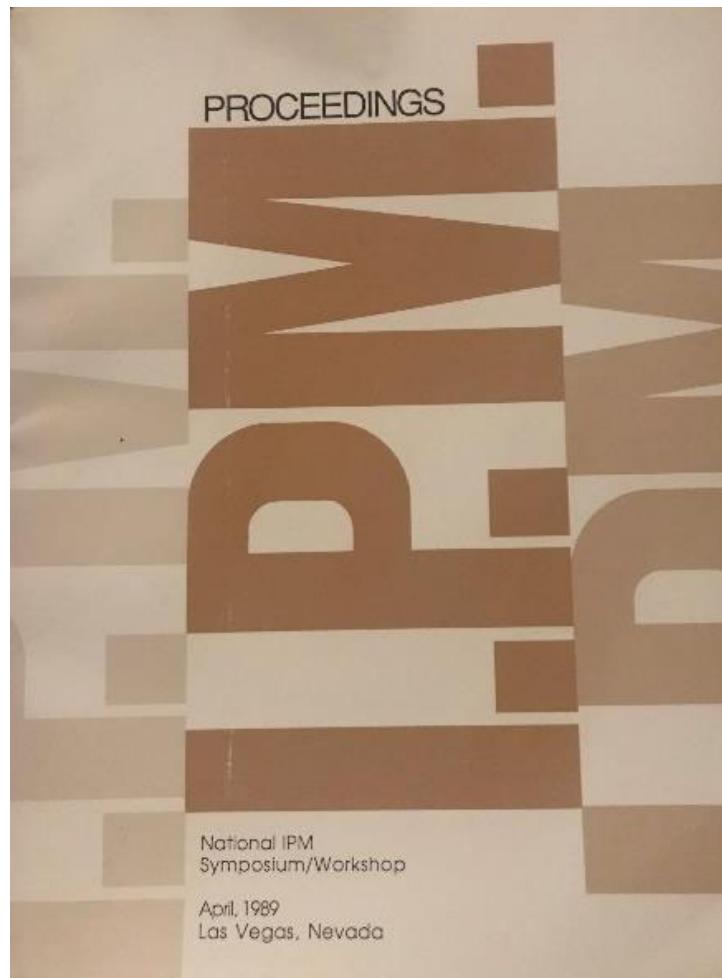


Keynote Address: “Recent Successes, Current Initiatives, and Future Possibilities in IPM”

Dr. Tom Green, Founder and President of the IPM Institute of North America



Harnessing Marketplace Power to Improve Health, Environment and Economics



RECENT SUCCESSES, CURRENT INITIATIVES, AND FUTURE POSSIBILITIES IN IPM: PART I

A CRITICAL LOOK AT IPM IN THE US

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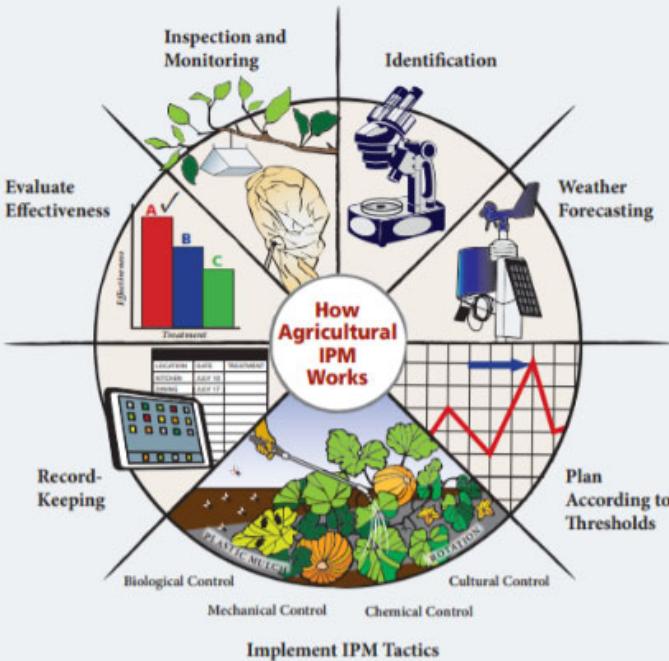


YOUR
OPINION
SUCKS

Rotten
Tomatoes®

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More Examples of Tactics

Cultural Control

Select proper sites, rotate crops, plant disease-resistant varieties, starve planting time and spacing to discourage certain pests and diseases.



Mechanical Control

Protect pastures with physical barriers, cultivate soil to disrupt weed seedlings and break pest cycles, eliminate weeds used by pests.



Biological Control

Import natural enemies of pests, select chemicals that conserve beneficials, cultivate species that attract beneficials, and use natural enemies to control pests. **READ THE LABEL.**



Chemical Control

Use the IPM toolbox, select chemicals that conserve beneficials, cultivate species that attract beneficials, and use natural enemies to control pests. **READ THE LABEL.**



Integrated Pest Management (IPM)

Integrated Pest Management is a sound, sensible approach to dealing with pests—*insects, plant diseases, weeds, and more*—with methods that protect human health and the environment while saving money.

The Steps of IPM ...

... for Agriculture:

Inspection and Monitoring

- Survey fields/locate pests
- Use traps to monitor pest activity and numbers



Identification

- Identify pests to species
- Know life cycle and all life stages of pest
- Effective treatment depends on proper pest identification



Weather Forecasting

- Use weather data/precipitation to determine when to treat to prevent crop and environmental damage



Plan According to Thresholds

- Pest prevention—keep pastures, don't let pests, keep plants healthy
- Determine when action is really needed and whether a threshold has been crossed
- Consider environmental, human health, commercial benefits and costs equally
- Use proper techniques and timing for required management



... for Structures and Communities:

Inspection and Monitoring

- Survey landscapes and buildings to locate pests
- Monitor buildings inside and out for visual checks, traps, and traps
- Know how many pests and what they are infesting



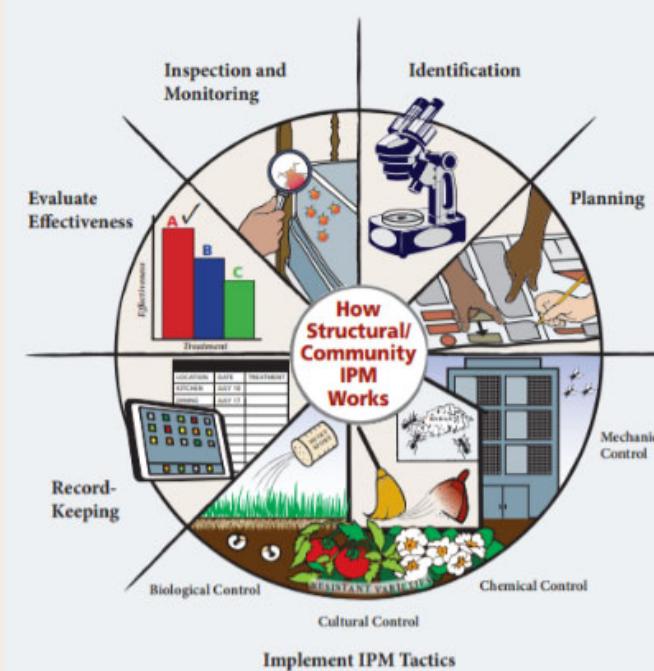
Identification

- Identify pests to species
- Know life cycle and all life stages of pest
- Effective treatment depends on proper pest identification



Planning

- Pest prevention—keep pastures, don't let pests, keep plants healthy
- Determine when action is really needed and whether a threshold has been crossed
- Consider environmental, human health, commercial benefits and costs equally
- Use proper techniques and timing for required management



More Examples of Tactics

Cultural Control

Plant the right plants, rotate crops, plant disease-resistant varieties, starve planting time and spacing to discourage certain pests and diseases.



Mechanical Control

Protect pastures with physical barriers, cultivate soil to disrupt weed seedlings and break pest cycles, eliminate weeds used by pests.



Biological Control

Import natural enemies of pests, like ladybugs and lacewings, choose habitat for beneficials.



Chemical Control

Use the IPM toolbox, select chemicals that conserve beneficials, cultivate species that attract beneficials, and use natural enemies to control pests. **READ THE LABEL.**



IPM OUTCOMES

- ✓ PROTECT HUMAN AND ANIMAL HEALTH
- ✓ DELAY RESISTANCE
- ✓ REDUCE PRODUCTION COSTS
- ✓ IMPROVE INCOMES
- ✓ PREVENT, RESPOND TO INTRODUCED INVASIVE PESTS
- ✓ PROTECT POLLINATORS
- ✓ IMPROVE WATER/AIR QUALITY
- ✓ PROVIDE FOOD SAFETY
- ✓ MAINTAIN FIRE SAFETY
- ✓ MAINTAIN BUILDING CONDITION
- ✓ PROTECT AESTHETICS
- ✓ REDUCE WORKER RISK
- ✓ PREVENT TOLERANCE EXCEEDANCES
- ✓ IMPROVE SOIL HEALTH
- ✓ PROTECT, IMPROVE PLANT HEALTH
- ✓ IMPROVE NUTRIENT UTILIZATION
- ✓ PROTECT AGAINST PUBLIC HEALTH PESTS
- ✓ IMPROVE CLIMATE CHANGE RESILIENCE
- ✓ RESTORE DEGRADED NATURAL RESOURCES

WHAT ELSE???? There's lots more.

**IPM actor/sector
Mission
Budget/Pest Mgt \$\$
(Attendees)
Outputs
Outcomes**

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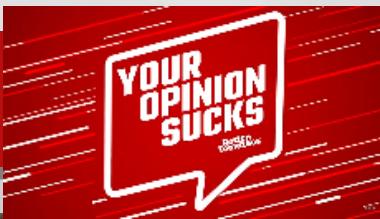
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RATING



Over the next few days, WEIGH IN ON:

- What do we need more of?**
- Less of?**
- How do we get there?**
- How badly does my opinion suck and why?**



FOOD/FIBER CORPS

*Profitably serve customers including those with goals for
pesticide-free, organic, health and environment*
1\$ trillion/\$57 billion
(2)

- Long-standing IPM programs, supply chain and/or internal

- Campbell Soup

- Nestle, Gerber

- Potato Sustainability Alliance

- Many others

- Pollinator protection

- Walmart



Sysco Sustainable Ag/IPM Program

- Processed fruit and vege supply chain since 2004

- Expansion to fresh supply chain in 2022

- Comprehensive IPM, ICM; water, energy conservation plans required

- Addresses field and processing plant/packing sheds

- Regular audits, output/outcomes reporting

- **Outcomes:** Less risk to workers, eaters, environment

- Minority of companies engaged

- Walmart retreat on facility IPM program that greatly reduced pesticide use



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COUNTIES, MUNICIPALITIES, SCHOOL DISTRICTS

Serve communities

\$?/\$?
(4)

● Pioneering, effective IPM Plans

- Boulder CO
- Carrboro NC
- Dubuque Public Schools
- Milwaukee Public Schools
- NYC
- Salt Lake City Public Schools
- Santa Clara County, Ventura County CA
- *Many others*



City/County of San Francisco



- **Technical Advisory Committee**
- **Least Risk Pesticide Product Ratings**
- ***Pest Prevention by Design***



Outcomes:



- **Less risk to workers, residents, environment**
- **Spillover benefits to other communities**

● **Minority of communities have engaged**

● **Third-party transition funding limited to cover startup costs**

● **Third-party expertise limited**

● **State-wide programs scarce**



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DEPT. OF DEFENSE

Provide military forces needed to deter war, protect nation
\$715 billion/\$? billion
(0)

- Multiple contributions to broad public benefit, nationally and internationally, by DOD expert researchers, educators, implementers and DOD-developed technology



Long-standing IPM program



Comprehensive department-wide planning, coordination of execution



Standing expert board oversight



Annual convening, evaluation, adaptive management



Outcomes:



Set, achieved pesticide use reduction goal



Reduced pest and pesticide risk

- IPM low priority, suffers cuts during tight budgets
- Discontinued commitment to IPM STAR participation for schools, childcares



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US EPA

Protects human health and environment
\$11 billion/\$1.5 billion
(1)

- **Historic grant making at national/regional levels**

- **Historical outcomes:**

- Fewer pest and pesticide risks in more schools
- Cadre of competent implementers



Response to 1996 Food Quality Protection Act



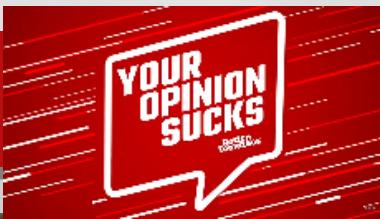
- Updated roles under FIFRA and FFDCA
- Registration/tolerance review
- Conventional Reduced Risk Pesticide Program
- Biopesticide regulatory relief



Outcomes: Less risk to workers, eaters, environment

- Current very limited grant making
- Failure to provide ongoing support for successes
- Failed resistance management
- Bug bombs for bed bugs? Get real!
- Variable EPA regional office investment in IPM
- EPA IPM Center
- \$1 million budget for webinars?

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USDA NRCS

Conservation on private farm, ranch, forest land

\$5 billion/\$1.5 million EQIP plus \$?

(1)

HISTORICAL ENVIRONMENTAL QUALITY INCENTIVES PROGRAM FINANCIAL SUPPORT

-  Weather stations
-  Mating disruption
-  Crop consultants

Win-PST

-  Screening tool to evaluate pesticide risk

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Conservation Innovation Grant Program



Funded Pesticide Risk Tool



Required match leverages funding



Conservation Effects Assessment Program (CEAP)



Estimates <10% of US cropland under high-level IPM

* Bureaucratic bungling kills grower support for IPM, loses grower, technical service provider participation,

* NRCS EQIP investment in IPM plunges from a meager 4% to a pitiful less than 1% of its annual \$1.8 billion budget for EQIP

* Very sparse internal IPM expertise, weak IPM leadership

* Win-PST execution poor, limited use



USDA NIFA

Agricultural research, education, and extension to solve societal challenges

\$2.2 billion/\$20 million core IPM plus \$??

[2]

 **HISTORICAL, CURRENT SPECIAL PROGRAMS**

- CAR, RAMP, PMAP
- RIPM, EIPMDSS, Extension
- Specialty Crops Research Initiative
 - \$75 million
- Organic Research & Education Initiative
 - \$28 million
- Emergency Citrus Research & Extension
 - \$24 million



Identifying, supporting regional priorities



Building regional capacity



Building regional & leveraged funding

- ✳ Retreated from leadership role after scathing 2001 General Accountability Office report, left leadership vacuum that remains unfilled
- ✳ Decline in core IPM budget
- ✳ Limited funding for ongoing infrastructure

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USDA Risk Management Agency <i>Research to develop and transfer solutions to priority agricultural problems</i>	\$9.7 billion/\$? (0)
USDA Forest Service <i>Sustainable, productive use of public forest lands, resilience of public & private lands</i>	\$9.1 billion/\$? (1)
USDA Ag Research Service <i>Research to develop and transfer solutions to priority agricultural problems</i>	\$1.9 billion/\$236 million (5)
USDA Animal and Plant Health inspection service <i>...protect ag from animal and plant health threats...</i>	\$1.8 billion/\$1.8 billion (0)
USDA Ag Marketing Service <i>Facilitate the competitive and efficient marketing of agricultural products</i>	\$1.7 billion/\$? (0)
USDA National Ag Statistics Service <i>Timely, accurate, and useful statistics in service to U.S. ag</i>	\$194 million/\$? (0)
USDA Economic Research Service <i>Inform decision making by anticipating emerging issues and economic research</i>	\$92 million/\$? (0)

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US Fish & Wildlife Service

Conserve, protect, and enhance, fish, wildlife, plants, habitats

\$3.6 billion/? (2)

National Park Service

Preserve natural and cultural resources and values of the national park system

\$3.1 billion/? (4)

US Geological Survey

Provide science on landscape, natural resources and natural hazards/threats

\$1.6 billion/? (1)

Bureau of Land Management

Sustain the health, diversity, and productivity of public lands

\$1.6 billion/? (4)

Bureau of Reclamation

Manages, develops, and protects water and related resources

\$1.6 billion/? (1)

US General Services Administration

Deliver value and savings in real estate, acquisition, technology, mission-support services across government

\$1.5 billion/\$? (0)



LAND GRANTS

*Teach, conduct research, serve communities
\$16.2 billion research budget/??
(199 plus 8 from other universities)*

● Enormous network of experts and massive library of outputs accessible to millions



Peer-reviewed research
Extension



Outcomes:

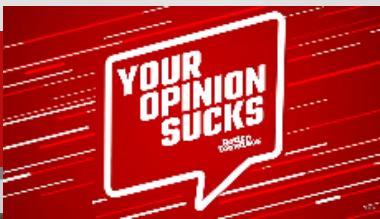


More informed decisions/actions

More efficient, widespread technology transfer

- ＊ High overhead, admin expenses, bureaucratic burden
- ＊ Declining public investment in research/extension
- ＊ Silos by discipline, geography
- ＊ Disincentives to collaborate across institutions, duplication of effort
- ＊ Highly variable effectiveness in research/extension roles within/among states

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PEST MGT PRODUCT MFGS

Earn profit, protect crops, homes, facilities from pests
\$15 billion
(24)

- Support for IPM R&D, education
- IPM Symposium series
- Increasing share of LGU research budgets



Response to 1996 Food Quality Protection Act



Major investments in low-risk biologicals

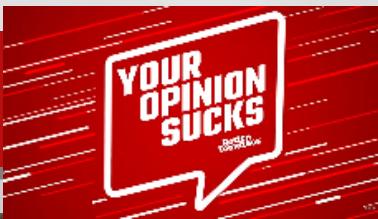
Hundreds of new reduced-risk options



Outcomes: Less risk to workers, eaters, environment

- Failed resistance management
- Foot-dragging on eliminating high risks
- Buying political action to defeat science-based policy decisions

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NGOs

Serve public good
?/?
(20)



- **Outcomes:** Greater access to/use of reduce risk pesticide options

● Certifications requiring IPM/knowledge CEUs

- Certified Crop Advisor, National Alliance of Independent Crop Advisor programs
- Entomological Society of America BCE/ACE/IPM certification programs

- **Outcomes:** Improved knowledge, capacity



Credible certifications verifying high-level IPM

-  National Organic Program
-  Rainforest Alliance
-  Red Tomato Eco Apple
-  SCS Certified Sustainably Grown
-  Equitable Food Initiative
-  IPM Institute IPM STAR, Green Shield Certified, Sustainability Standard



Outcomes: Less risk to workers, eaters, environment

- * Really hard to generate sustained funding for ongoing efforts
- * Environmental Working Group Dirty Dozen disinformation campaign
- * Organic = No Pesticides disinformation
- * National Pest Management Association GreenPro greenwashing
- * APLU capture/kill of National IPM Coordinating Committee

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PRACTITIONERS

Earn a living, protect human health and environment
\$?/\$?
(11)

- Green Shield Certified PMPs, for example
 -  **Envirosafe:** Provides high-level IPM to >80 school districts in Michigan
 -  **PESTEC:** Provides high-level IPM to City/County San Francisco
-  ~ 17,000 certified organic farm owners in US
-  **Independent Crop Consultants**, e.g., Glades Crop Care
-  **Many, many more!**

- * Face daunting adoption/transition/IPM system failure risks
- * Depend on declining LGU research/extension investments for unbiased science
- * So many competing priorities! Weather, labor, marketing, sales...
- * *See multiple pubs on constraints to IPM, organic adoption*



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IPM COMMUNITY

That's all of us, together! What's our mission?

?/?
(300)

IPM Symposium

 Sustained grassroots effort since 2003

 **Outcomes:**

 **Improved capacity, efficiency,
effectiveness, network**

 **Shared lessons learned, replicated
successes**

 **Elevated visibility of leaders, innovations**

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- * No overarching strategic plan,
- * No coordinated pursuit of high-level goals/objectives
- * No one organizational home, org structure, leadership
- * No advocacy/outreach/trade organization
- * **Outcomes:**
 - * Historic barriers to adoption persist
 - * Low priority for investment
 - * Loss of resources, opportunities
 - * Low public awareness/support
 - * No standing infrastructure/expertise in org management, advocacy, marketing, crisis management
 - * Much lower than potential participation in IPM Symposium, less impact, fewer positive outcomes

WHAT ARE WE GOING TO DO ABOUT ALL THAT?

YOU TELL ME WHAT YOU THINK!



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A FEW FINAL OPINIONS

**It's long past time to re-invigorate IPM and boost outcomes!
We need a standing, diverse, professional IPM leadership body**

**Our goal should be 1200 attendees at the next Symposium
We need more professional support to accomplish that**

Go ahead, tell me my opinion sucks!

TO BE CONTINUED WITH YOUR INVOLVEMENT/INPUT

SEND YOUR TWEETS, TEXTS, SUGGESTIONS, DIATRIBES, TOMATOES TO:

www.ipminstitute.org/youropinionsucks



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