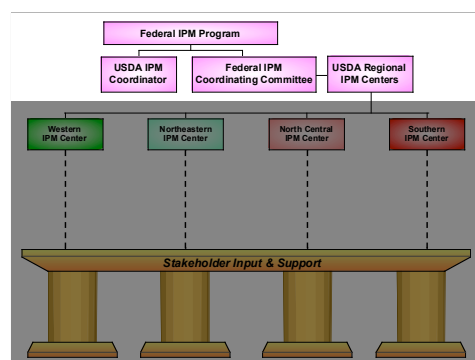


The concept for the Arizona Pest Management Center was conceived by John Palumbo, Paul Baker, and myself in response to various changes in the federal climate, new opportunities that resulted, and a need to develop transparency with respect to our federal 3(d) obligation in IPM.

The concept was proposed to the Executive Council, the last time we met with this group, four years ago. Our first formal funding through the Western IPM Center was approved shortly thereafter. Our IPM Coordinating Committee was first convened later that year and plans were undertaken for recruitment of an IPM Program Manager. Al has been with us two years now & we thought it a good time to take stock and present our progress and some new ideas to the Executive Council today.

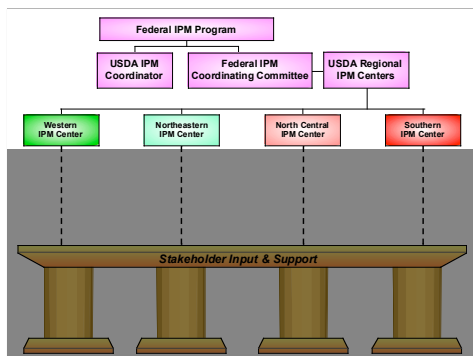
1



The APMC is part of and closely parallels the organization that occurs at the federal level. The federal IPM program is guided by a Coordinating Committee and a single IPM Coordinator, Dr. Mike Fitzner, both of which are informed by regional IPM centers directors.

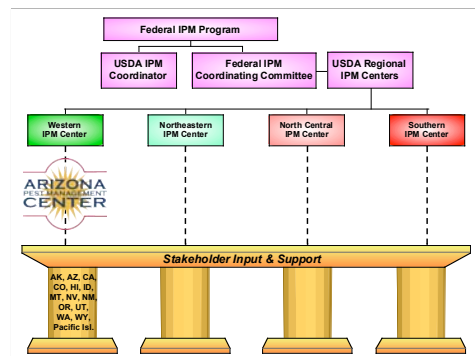
Handouts: PPT notes (this document) & APMC conceptual and organizational summary.

2



These four regional centers represent the IPM interests of their member states and territories.

3



In theory, this decentralized system provides a ready conduit from stakeholders to the federal IPM program.

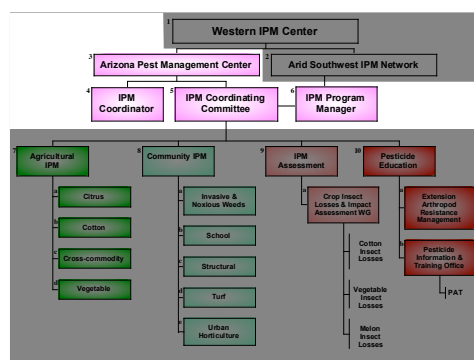
In our specific case, the Western IPM Center is, in part, informed by Arizona's interests through the Arizona Pest Management Center. This is what connects clients & scientists to the federal system and gets our needs and priorities to those agencies who are seeking to fund IPM in the regions.

4



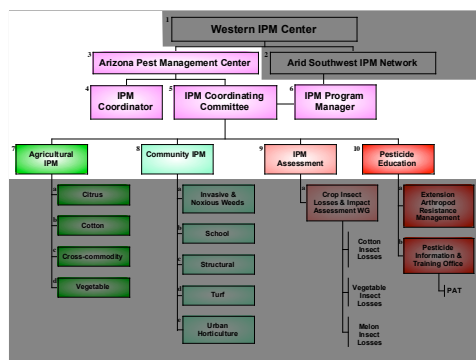
Our IPM Coordinating Committee is an interdisciplinary group of scientists and stakeholders who represent agricultural, natural, and urban communities. Members come from campus, county, and agricultural center environments.

5



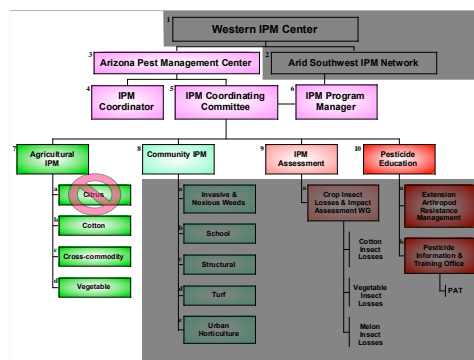
Along with the State IPM Coordinator (Peter Ellsworth) and IPM Program Manager (Al Fournier), the IPM Coordinating Committee oversees our federal obligation in IPM as well as helps represent our many and diverse IPM programs that make up the Arizona Pest Management Center.

6



All programs are aligned along focal areas: Agricultural IPM, Community IPM, IPM Assessment (a critical and burgeoning area of program development crucial in competing for extramural resources and in developing relevant programs), and Pesticide Education.

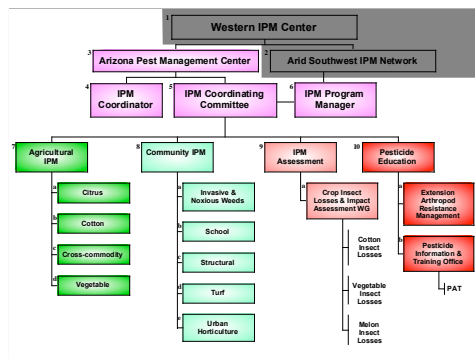
7



Within each focal area there are several program working groups or teams. Our coverage is good but spreads our very limited human resources among many programs. Each faculty member contributes to more than one team, often times 4 or 5 different groups!

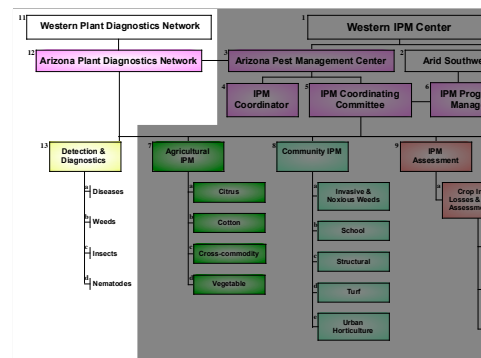
Some groups are so fragile that the addition or loss of one member destabilizes the entire effort. E.g., the citrus IPM effort is in question now that David Kerns has left the UA and the position ostensibly lost.

8



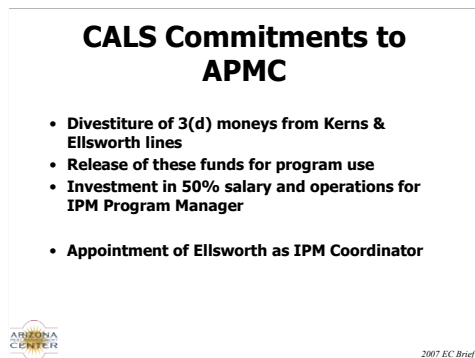
Make no mistake, some of these boxes are filled by just one or two individuals at times.

9



Parallel convergence has occurred with the federalizing of a plant diagnostics network. This group, headed up by Barry Pryor in Arizona, organizes our diagnostic resources around different pest groups. Again, very few people cover the array of activities symbolized by this org chart.

10



Four years ago, CALS made certain commitments to the concept we proposed then. First, it was agreed that the 3(d) moneys vested in the Ellsworth and Kerns lines needed to be replaced by state funds. This, in turn, was to have released these funds for programmatic use in IPM. We sought a College commitment (50%) towards a full-time new faculty line, IPM Program Manager. Instead, the College offered this support from the newly freed 3(d) funds.

Later Ellsworth was appointed IPM Coordinator after the first IPM CC meeting was held.

11



Our commitment to the College was to seize on an opportunity for extramural funding of the APMC (and the other 50% of the IPM Program Manager faculty line) due to federal reorganization of IPM resources. We also committed to re-organizing resources around the structure shown, focusing our limited resources on programs with achievable goals. Our commitment extends to developing the best and most relevant IPM programs possible.

All this was done in an environment of transparency and with the goal of making Arizona's IPM programs as competitive as possible.

12

Honoring Our Commitment

- Re-organize fiscal & human resources
- Improve Federal reporting and communication
- Enhance visibility
- Create partnerships (provide leadership)
- Evaluate (needs and outcomes)




2007 EC Brief

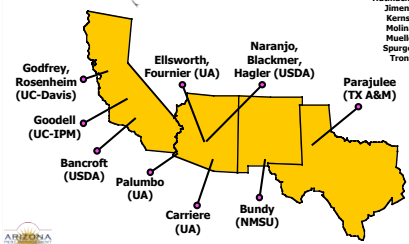
Our commitments are many and continue to evolve under the direction of the IPM CC. However, in order to be better positioned to compete for federal and other extramural resources, we have placed emphasis on these five areas:

Re-organization,
Communication,
Enhancement,
Partnerships,
Evaluation.


Handouts: IPM "Delivers" 4-fold & EC Brief.



RAMP Team



Collaborators
Corbett (Corbett Learning)
Dutillieu (McGill)
Huttmacher (UC-Davis)
Jimenez (UC-CE)
Kerns (TX A&M)
Molina (UC-CE)
Mueller (UC-CE)
Spurgeon (USDA)
Tronstad (UA)



2007 EC Brief

This is the project team for the \$2.5M grant rec'd from USDA-CSREES Risk Avoidance & Mitigation Program. Ellsworth is lead PI and UA the lead institution for this 4-year 4-state project. There are 13 PIs cooperating and a number of public and private cooperators. The APMC enabled this major grant effort. The goal is to develop a comprehensive research and outreach approach that will allow us to develop areawide suppression of Lygus bugs through improved field practices and landscape manipulation. This requires a gamut of fundamental and applied investigations into the movement potential and control of Lygus in at least 10 crops.



USDA-CSREES, Risk Avoidance & Mitigation Program (RAMP)


\$2,500,000 over 4 years
Developing and implementing field and landscape level reduced-risk management strategies for Lygus in Western cropping systems

The project team. Missing PIs: Larry Godfrey (UC-Davis); David Kerns (Texas A&M); Jay Rosenheim (UC-Davis); Scott Bundy (NMSU).

This picture is from the 2nd International Lygus Symposium held at Asilomar Conference Center, Pacific Grove, CA, 15-19 April 2007, and sponsored in part by the APMC and the USDA-RAMP grant.

APMC Foundation Awards

			Term	Award	IDC
Arid Southwest IPM Network	Western IPM Center (UC-Davis)	Ellsworth, Fournier, Palumbo, Baker	5 yrs	100,000	20,000
Crop Insect Losses Working Group	Western IPM Center (UC-Davis)	Ellsworth, Fournier, Palumbo	5 yrs	50,000	10,000
				150,000	30,000



Because the IPM Program Manager position is only 50% funded through local, 3(d) funds, we had to establish lines of support through the Western IPM Center in Davis, CA, for the remainder. These two grants and their associated activities form the core foundation of support for this position and the APMC. We have been very successful in nurturing these lines and securing consistent, on-going support; however, these grants are often year to year or at best for 2 year terms. This makes us vulnerable.

Stakeholder Engagement

			Term	Award	IDC
Cotton Pest Management Strategic Plan	Western IPM Center (UC-Davis)	Ellsworth, Fournier, Palumbo, Baker	1 yr	12,000	2,400
National School IPM PMSP	Western IPM Center (UC-Davis)	Gouge, Fournier, Green	1 yr	10,000	2,000
Western School IPM Working Group	Western IPM Center (UC-Davis)	Gouge, Snyder, Fournier et al.	1 yr	10,000	2,000
				32,000	6,400



2007 EC Brief

A broad consistent theme across all IPM funding, indeed most of Extension and now Research funding federally, is stakeholder engagement for purposes of priority setting (program identification) and evaluation (impact assessment). Without this effort, many of our programs would fail to compete extramurally. We envision continued, year-to-year, support for these activities, such as Pest Management Strategic Planning and regional working groups.

17

APMC Enabled Projects

			Term	Award	IDC
Reduced-Risk IPM for Melon Aphid	USDA Pest Management Alternatives	Palumbo, Jones, Teegenstrom	3 yrs	178,700	35,740
Measuring Adoption of IPM	USDA Regional IPM Competitive Grant	Ellsworth, Carriere, Fournier, Palumbo	2 yrs	60,000	0
Areawide Lygus management	USDA Risk Avoidance and Mitigation Program	Ellsworth, Palumbo, Carriere, Fournier, et al.	4 yrs	2,500,000	504,351*
Whitefly Resistance Management	NRI	Carriere, Tabashnik, Dennehy, Ellsworth et al.	3 yrs	359,000	175,910
Total Competitive				3,279,700	752,401

* \$248,513 to partner institutions

2007 EC Brief

Probably the most exciting development to have come from the APMC re-org has been the enhanced competitiveness of our efforts. These projects were all in some way enabled or synergized by the APMC. Most notable of course is the very large, multi-institutional RAMP grant that we lead. But our efforts have activated efforts that span the continuum of pure outreach to pure research in IPM.

18

APMC Supported Projects

			Term	Award	IDC
Nematodes for Urban Pest Control	USDA Regional IPM Competitive Grant	Stock & Gouge	2 yrs	60,000	12,000
Cotton Pesticide Data 2004	Western IPM Center (UC-Davis)	Baker	1 yr	5,000	1,000
Enhancing Agricultural Productivity Through Educational Partnerships	Technology Research Initiative Fund	Brown et al.	1 yr	125,360	0
				190,360	13,000

2007 EC Brief

In addition to those efforts directly enabled by Center involvement, we also have a number of efforts that have borne fruit as a result, in part, of support from the APMC.

As they say, a high tide floats all boats. It is our goal to produce visibility for our programs such that all benefit, even if only indirectly.

19

IPM 3(d) Funds

FF Year	Grants Awarded		Fournier Commitment		Total Expended	3(d) Allocation
	Qty.	Amount	Salary*	Operations		
2005	7	39,400	16,038	15,000**	70,438	100,408
2006	8	50,000	37,724	0	87,724	100,408
2007	9	46,000	38,593	5,000	89,593	100,408

*\$4,103 in salary savings generated.
** ca. \$15,000 in start-up, plus \$5K from FF04.

2007 EC Brief

The IPM CC decided to formalize a mini-grant program with the residual 3(d) funding. In the last 3 years, we have awarded 24 IPM projects over \$135K. Each award is typically quite small, but serves to initiate new efforts in IPM leveraging other resources, or provides capstone moneys to existing efforts. Most of the balance of the 3(d) moneys goes towards AI's salary and operations.

20

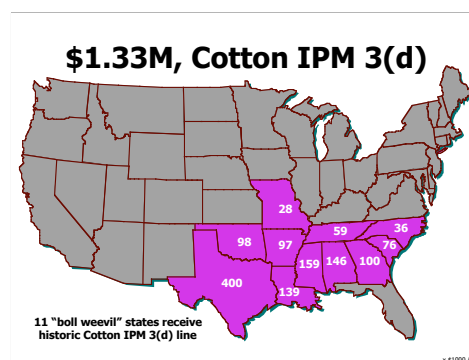
APMC Summary		
IPM Effort	Amount	IDC
APMC Foundation Awards	150,000	30,000
Stakeholder Engagement	32,000	6,400
APMC Enabled Projects	3,097,700	716,001
APMC Supported Projects	190,360	13,000
Total Competitive	3,470,060	765,401
Extension Support	27,500	
Total IPM Effort	3,497,560	



2007 EC Brief

Over this period, and only accounting for those grants for which we have the most information, we can see a rather impressive return on the College's investment in the APMC. Our programs have been exceptionally successful in capturing highly competitive and highly prized federal grant dollars. But we can do even better, with increased investment in the APMC.

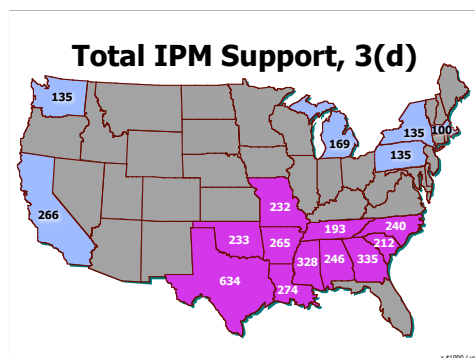
21



As a matter of perspective, we thought it would be instructive to examine support structures for IPM nation-wide. AI and I conducted a very brief survey of IPM Coordinators from across the country and did some additional research.

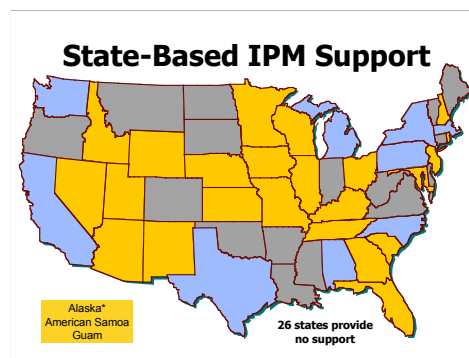
Because of a historical quirk whereby boll weevil was NOT present in AZ at the time the formula was constructed, we do not receive any "Cotton IPM" 3(d) funds as do these 11 cotton states. Over one million is distributed each year.

22



Looking at the total 3(d) IPM support to these and a sampling of other states, we start to see a pattern emerge with respect to funding. It will become apparent in a moment why we've selected these other states (in blue) to examine. But just looking at total 3(d) IPM support, even Massachusetts with a land mass smaller than Maricopa County receives as much as Arizona (\$100K).

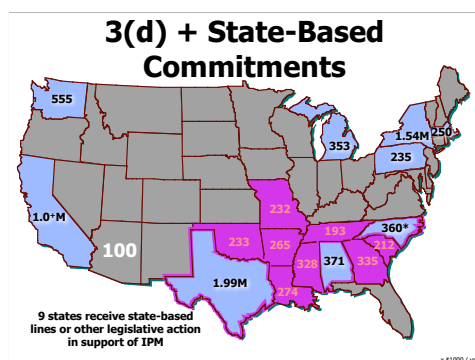
23



In our survey, we asked if there were any state-based initiatives or lines of support that were provided to their IPM programs beyond some nominally leveraged faculty support. Of the 35 responses, only 9 cited significant state-based investments in their IPM programs. Based on my own knowledge, of the 17 that did not respond, I believe it likely that none of these receive support either (26 states in orange reported no state investment).

Note the pattern of states (blue) that do receive state-based commitments. They tend to be our largest agricultural or academic centers for IPM in the country.

24



The states in blue receive significant state-based commitments to their IPM programs. This map shows the total 3(d) plus state investment in IPM by state.

Now, even Massachusetts receives 2.5 times the investment in IPM than does Arizona! And most states have a 3.5 to 20-fold investment over our own here in Arizona.

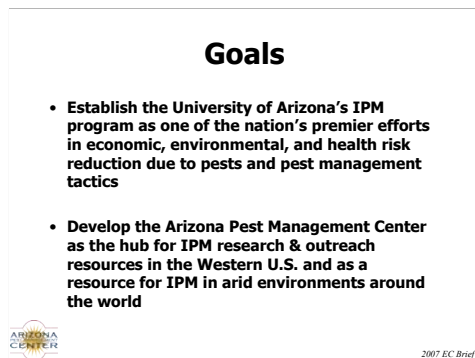
These 9 states do tend to represent some of our best institutions academically and best IPM programs nationwide. Cornell, Texas A&M, UC system, Michigan State, North Carolina State, Auburn, Washington State and Penn State have made major leveraging investments in IPM.

25



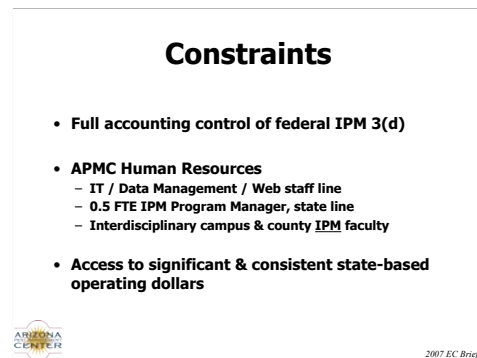
So how have they done this? The vehicles for investment are diverse. Some start as state initiatives earmarked for IPM and often later turn into base funding (e.g., TX). Project GREEN (MSU) capitalizes on a very politically active segment of there clientele interested in the Green / Landscape industry. Some are parlayed from very specifically targeted program dollars, as with fire ant management in the south or urban efforts in NY. Some reflect broad partnerships with the state and their agencies. And a few have been successful at developing funding streams dedicated to IPM (e.g., TX) or that support agriculture broadly (e.g., NC).

26



After 4 years, what are our goals today for the APMC and UA's IPM programs?

27



The constraints we have in reaching our goals are easy to define, though not necessarily easy to overcome.

We need full accounting control over the IPM 3(d) funds. Placing control at MAC will provide us the access needed to effectively report to our Federal partners.


We also have significant human resource needs. A state of this size and complexity and burgeoning population will need to have more feet on the ground to bring the best we have to offer to citizens (& students) of this state.

Lastly, we need significant and consistent state-based operating dollars.

28

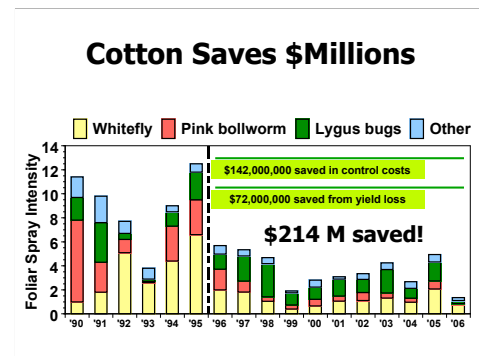
IPM, An Interdisciplinary Environmental Science

- Sustainability
- Agricultural change
 - Biofuels
 - “New” crops
 - Novel crops
 - Food safety
- Urban growth
 - Green industry
 - Consumer interest in agricultural inputs and outputs
 - More people, more pest problems (e.g., invasives)



“But we’re already doing such a good job!” you say. True, but our effort is still overall very small and not nearly upsized to the point where we can deal with a wave of change that is already upon us. IPM is an agricultural science, but also an interdisciplinary environmental science that will take us into the future where issues of sustainability are all around us every day! Where major agricultural change is likely, and where urban pressures will only intensify consumer interest in the source, and quality of their food as well as the safety of their children and environment. Demand for IPM (unlike traditional agricultural programs) is only going to increase.

29

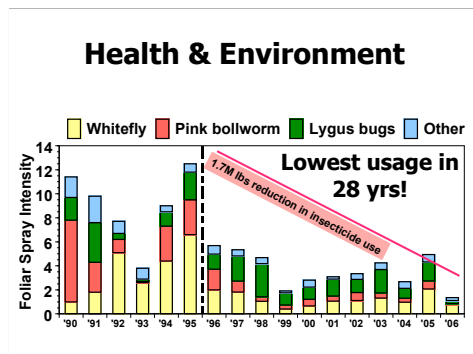


What we have done so far is significant and often held up by this College and others around the country as a model for successful transformation of an entire industry.

Cumulatively, we have saved cotton growers over \$214M over the last 11 years in control costs and yield.

Statewide average cotton foliar insecticide spray intensity by year and insect pest (Ellsworth & Fournier, 2007).

30



And, we have lowered the environmental burden of broadly toxic insecticides from a 28-year high in 1995 to a 28-year low in 2006, reducing usage by 1.7 million pounds.

But we can achieve more! The benefits to this state, our citizens, students and College will be immeasurable.

31

Getting from Here to There



- Decision Package
 - Other legislative action
- IPM Endowment
 - Chair
 - Broad programmatic support
- ADA / ADEQ / UA Partnership
 - Feed & fertilizer mill tax
 - Pesticide sales and/or user fees
 - Line item legislative support for IPM

So how do we get from here to there, and successfully remove the remaining constraints in advancing our goals in IPM research, education, and outreach?

Only last week, after 40 years, the bald eagle, once threatened in part by the widely-used insecticide, DDT, was removed from the Endangered Species list. This progress did not occur overnight.

To advance our goals, the model is clear. A greater state investment is needed. A decision package, active endowment for IPM and significant state agency partnership will be needed.

Photo by Tim Knight ©
<http://homepage.mac.com/wildlifeweb/>.

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