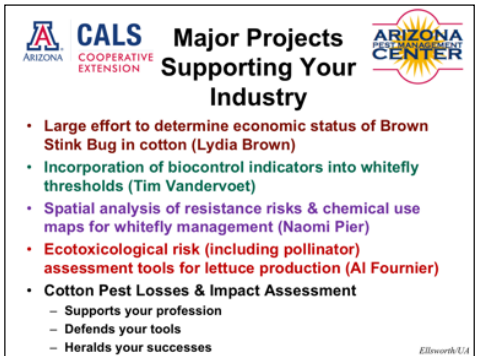
Sessions held in Yuma December 3, 2015; MAC December 9, 2015; Parker December 10, 2015.

Arizona and California PCA CEUs made available for all sessions.

Let's start by reminding today's attendees that our entire effort is guided by your priorities. All of the current efforts in the cotton IPM lab are the direct result of input either directly from you as stakeholders to our programs or indirectly from the data and information provided by you and your industry to our Cotton Pest Losses and Impact Assessment program.

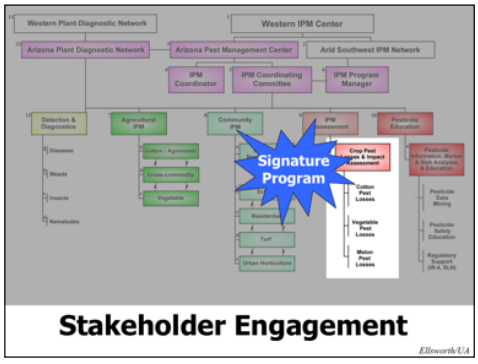


Your early concerns about emerging pest status of Brown Stink Bug are being researched by graduate student, Lydia Brown. Tim Vandervoet, PhD student, is completing development of tools to be used directly by PCAs to measure indicators of biocontrol in cotton for the purposes of better managing whiteflies. Naomi Pier, MS student, is addressing a perennial priority of resistance management across commodities with tools only possible here in AZ and CA. This innovative approach includes more tools placed directly into PCAs hands for assessing localized, spatial risks for whitefly resistance development. Finally, Al Fournier leads an effort to measure eco-toxicological risks in the lettuce industry as a means for showing incredible advances and stewardship of your industry over time. Each project researches and develops tools to place into your hands so that you can do your job better.

This presentation is made to groups to orient them to the CPL workshop process and survey instrument. An initial portion takes about 45 minutes; break for lunch (or breakfast); then continues on for about 1 hr or less.

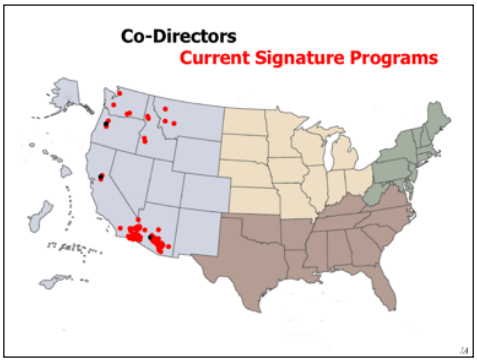
This is followed by participants filling out the surveys, asking questions as they go along (ca. 1.5–2 h).

The end of the workshop is dedicated to general discussion about pest conditions during the past year; unusual pest problems that they have heard (but not reported) about; yields & management challenges; product performance complaints; new products; max. no. sprays applied to any one field; and prevalence of completely untreated acreage. Also, feedback on survey/workshop improvements are sought. Open discussion is had on stakeholder priorities.



The Cotton Pest Losses are part of a larger structure, The Arizona Pest Management Center, which organizes all pest management programs at the University of Arizona. Through collaborations with CA personnel, we extend this format to the low deserts of CA as well. CPL is part of Crop Pest Losses & Impact Assessment Program where Melon Pest Losses (on hiatus) and Vegetable Pest Losses (currently for Lettuce) are conducted by John Palumbo and others. Al Fournier is IPM Program Manager and assists with the day to day activities of the APMC.

Stakeholder engagement & their help in measurement of IPM is key to all our success...



The Crop Pest Losses & Impact Assessment Program pioneered at the UA is a funded Signature Program of the Western IPM Center.

Jim Farrar, former Director of the Western IPM Center, developed these maps illustrating stakeholders connected to the Center via their Signature Programs.

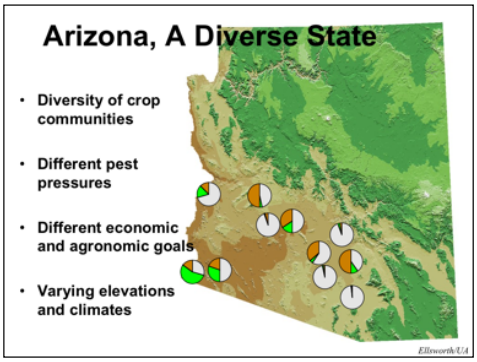
All of the connections shown in Arizona and Southern California come about from your direct participation in this Signature Program!

We look forward to extending this model program to other geographies and cropping systems so that others can develop these valuable data and gain greater perspective and understanding of their respective industries and IPM practiced there.

Our goal…

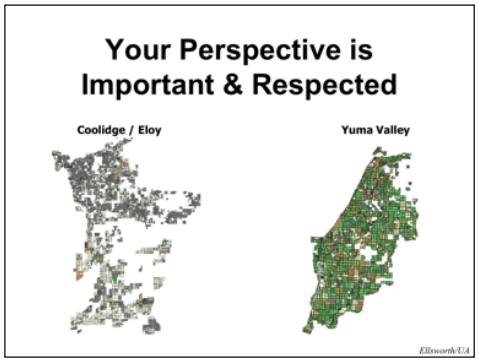
The cotton part of CPLIAWG process has a historical linkage and roots in a cotton survey that was started in the late 1970s. So in this way, we are also a part of a larger Beltwide process. The NCC used to provide just $250 per year in support to each state coordinator to "sponsor" the effort.

The current process, survey, and live workshops conducted today are unique to AZ and southern CA. Other states have their own methods for deriving their estimates. In AZ, we make great use of these data and related information. We find the face-to-face workshops preferential to mail-in or other processes. It is our client's opportunity to ground everything we do and information we provide to others in "real world" data. This IS important.



Each session is designed to solicit feedback from a portion of the state that needs to be represented in our loss estimates. We are such a diverse state that good cross-sectional representation is required to accurately generate these estimates.

As coordinator to this process, I have to assemble the patchwork of responses with appropriate weighting to reflect a statewide average.



Central Arizona tends to be a simpler system of cotton and other field crops with only isolated areas of melon and vegetable production. Land use changes in the form of urbanization are changing pressures and patterns of pest management throughout the area.

Yuma Valley on the other hand is intensively cropped all year long with a dominant mix of vegetables with melons and cotton.

So What?

- In combination with the Pesticide Use Database (derived from 1080 data):
- Section 18 Emergency Exemptions for:
  - Knack
  - Applaud (Courier)
- Defense of acephate & Vydate C-LV, rates above 0.5 lbs ai
- Defense of endosulfan (2002, 2006-7, 2008–2010)
  - Rates above 0.75 lbs ai
  - Aerial application
  - Open boll restriction (24c)

R.I.P.

Ellsworth/UA

Why is this data important (1)?

We have been very successful in using this data for the benefit of our cotton clientele. Section 18s have made use of these data to make economic and other justifications for these exemption requests. I have been involved in the defense of Orthene (acephate) and decade-long defense of endosulfan in re-registration efforts at EPA. The use patterns inferred from CPL data as well as from the APMC's Pesticide Use Database help support information and data call-ins by EPA. In this example, these data had been crucial to convincing EPA that we needed rates in excess of 0.75 lbs ai / A, and aerial application.

There are many more examples of how these data have supported tools and practices of our growers.

We actively comment…

- To USDA, US-EPA, and more, with your help & these kinds of data, supporting your industry as well as new & continuing usages of:
- Buprofezin (Courier)
- Dicrotophos (Bidrin)
- Malathion
- Sulfoxaflor (Transform / Closer / Sequoia)
- & Worker Protection Standards changes

Ellsworth/UA

Why is this data important (2)?

We actively, even pro-actively, comment to our federal partners in official communications that define and explain specific use patterns, their benefits, and why they are important to our stakeholders.

Your tools are being litigated!

- Cancellation of all unconditional registrations of sulfoxaflor
- Cancellation of all unconditional registrations of Enlist Duo
- MP3's? Huh?
- Real-world data trumps conjecture and models every time!

Ellsworth/UA

Why is this data important (3)?

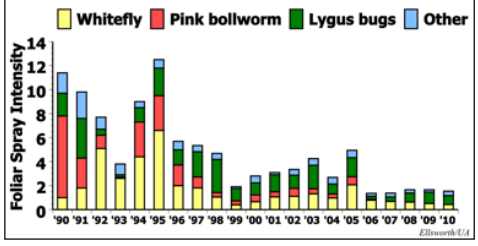
A recent and disturbing trend in pest control is the penchant of others for using the courts to litigate federal policies including EPA decisions on registrations. While the court system is important in matters of justice, it is not well positioned to render decisions based in sound scientific reasoning.

In these and other "popular" efforts, many people play fast and loose with information and purported facts.

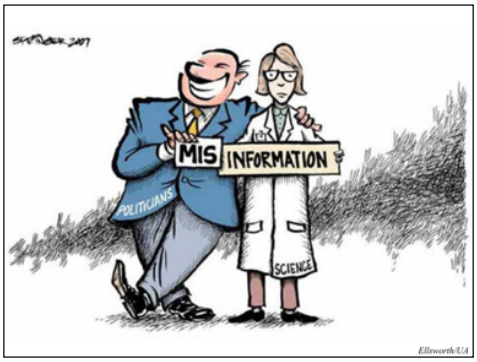
Data from scientifically managed processes like done today produce real-world data that we all need to overcome the din of bad information and incorrect data or inferences. Without "real" data, we are only left to conjecture; the results in public policy can be disasterous.

Trends are important…

- to researchers, regulatory authorities, policy makers, and your industry

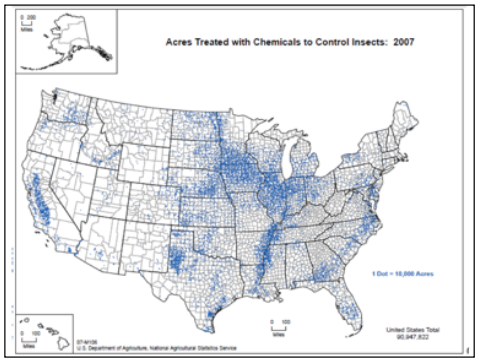


This is the average foliar spray intensity (~ no. of sprays) reported by you over the last 21 years for cotton. These trends are valuable to your industry as well as many other groups that help to set policy or make other decisions surrounding agriculture.



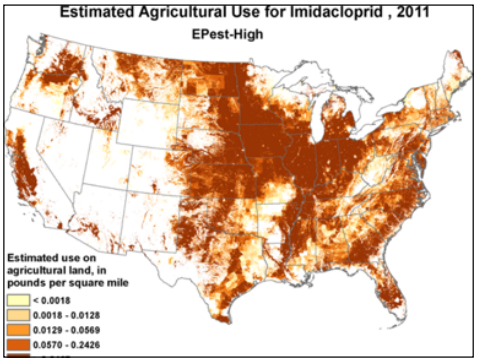
It should already be apparent in your daily lives that misinformation spreads twice as fast as good information. So we work harder to develop these data today so that we counter these disturbing trends that have been made worse by the explosion of the internet.

We pride ourselves in development of this scientifically-defensible approach to data development and curation. Not all systems are as careful or as directly rooted to the primary users of pesticides. Each step removed from you risks a distortion in the data and a distorted view of the world.



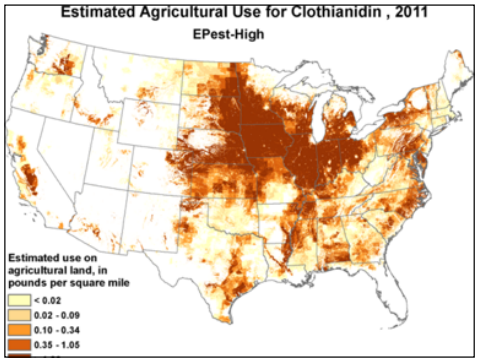
Here is just one example of how a different survey system can lead to some rather confusing and disturbing results.

National Ag Stats Service periodically develops data that describes your industry in various ways. This map shows insecticide use patterns nationally. Given that there exist only two systematic pesticide use reporting systems in the entire country (AZ and CA), one wonders how they derive these estimate. But on thing is for sure: these are "estimates".

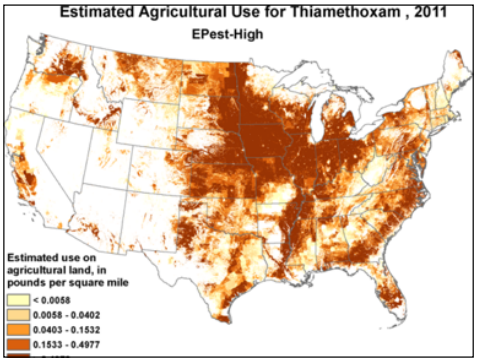


NASS also estimated imidacloprid, a neonicotinoid, use in the U.S. with this heat map. On a national level, it certainly draws attention to the upper midwest. However, as we delve into the detail of this as it relates to our own experience, or better yet our own data, here in AZ, we have to wonder where are these numbers coming from.

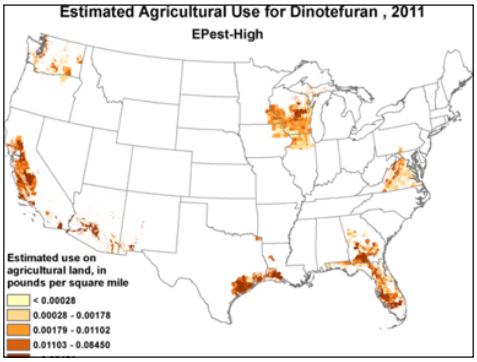
We have no data that would suggest an intensity of use of imidacloprid in central Arizona. This does not appear to be even close to an accurate description of agricultural use of imidacloprid in Arizona.



Likewise, the trends for clothianidin are inexplicable. There is virtually no foliar usage of clothianidin in AZ crops. That only leaves seed treatments and the usage there is scant for this active ingredient in AZ.



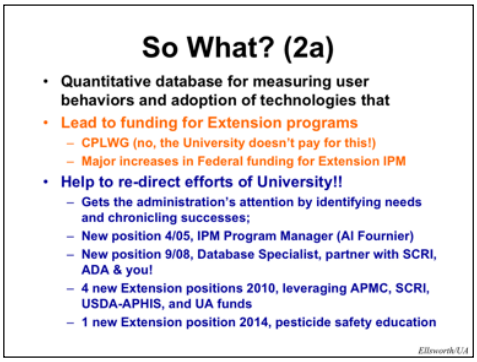
Similar questions about thiamethoxam usage, which should be reflected as very minor in central AZ.



The other neonicotinoid use patterns were dominated by the midwest and perhaps de-emphasize any trends in AZ. Different story for dinotefuran. While it is an important chemical in produce in the Yuma area along the river, there is almost no way to rationalize the intensity of use depicted for central AZ, which is dominated by cotton, alfalfa, and small grains, all crops that make no use of this active ingredient.

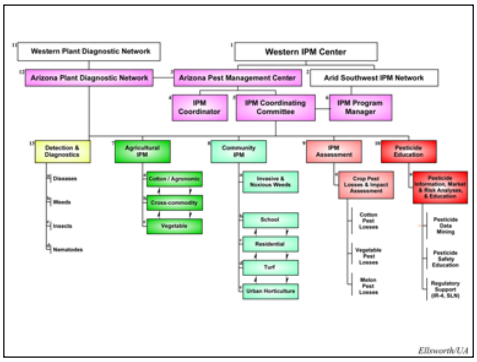
Without a process such that we undertake today, there would be little basis (beyond local and/or expert opinion) to refute and rebut the depicted trends.

Your input is important!

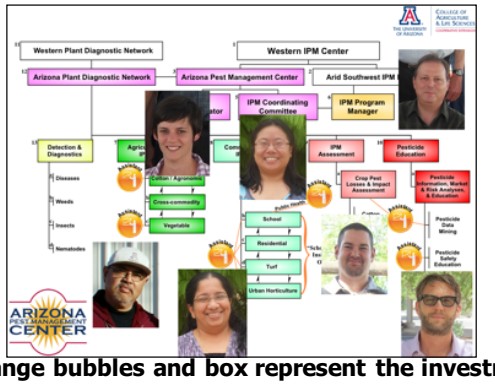


Why is this data important (4)?

All of the advances and progress shown here owe in part to our measurement and understanding of your industry through the CPLIAWG process.



Here is our overall current-day structure. As mentioned, we are stretched to our limits with existing personnel and programs. As part of our strategic process of developing our federal E-IPM grant, some years ago we decided that new personnel resources were needed to synergize our efforts and increase our effectiveness.



The orange bubbles and box represent the investments we have strategically made with our Extention IPM federal institutional grant. Specifically, we fund ~50% of each of these orange human resources. The teams that make use of these resources then have to generate the other 50% of the funding needed for each position. And since these people can assist teams in securing new funding, this has generally not been a problem. We also provide small operational budgets to each funded individual and their teams. Each team has a varying number of Agents and Specialists involved. The numbers are deceptive though, because most of us contribute to multiple teams. Our leverage of these invested moneys typically run from 5:1 to 20:1.

People and granting agencies value what we do and how we measure what we do.

2014-2015

So What? (2b)

- Quantitative database for measuring user behaviors and adoption of technologies that
- Lead to funding for applied research projects
  - SCRI Block grants to support 1080 data entry & analyses
  - SCRI Block grants supporting Vegetable IPM research & outreach
  - WIPMC grant to develop natural enemy – based thresholds for whiteflies
  - USDA-ARDP grant to develop new cross-commodity resistance management tools for PCAs to use in managing chemical controls for whiteflies

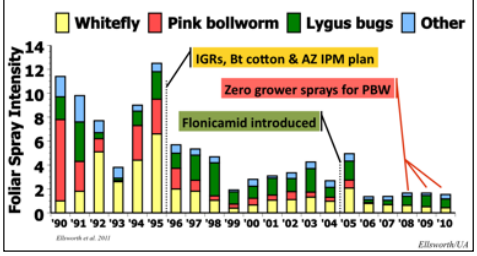
Ellsworth/UA

Why is this data important (5)?

With this clear understanding of user behaviors and technology adoption, we can apply for and secure extramural funding used to address your priorities.

We have been very successful.

Economic & Environmental Gains

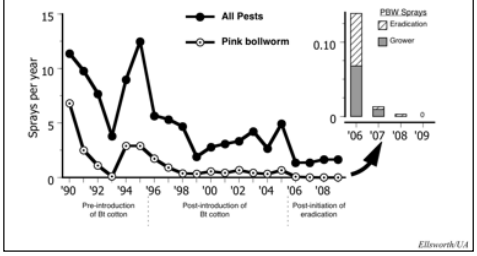


Why is this data important (6)?

It allows us to tell a story, an important one that chronicles the tremendous successes of this industry over time. This is just an example from a few years ago – these are your data as generated through this program.

E.g., A watershed of change occurred in 1996 with the introduction of very safe and selective Insect Growth Regulators for whitefly control, and transgenic Bt cotton, along with an IPM plan for whitefly management. Progress continues…

PBW Eradication



We are able to carefully parse the data and generate scientific information that is published widely as this was, demonstrating the progress of PBW eradication in Arizona cotton.

So What? (3)

- Helps translate your practices into economic terms for your customers and
- Shows tangibly the impact of the consultant on crop production
- Demonstrates in economic terms how valuable new pest control technologies are
- Helps educate growers about the importance of insect and weed pests and pest management to their production

Ellsworth/UA

Why is this data important (7)?

Additionally and more personally, these data should help you translate your practices into economic terms with your customer (grower). It should help open and inform this dialog and improve grower understanding of insect (and other) pest losses and their management.

NCC's Beltwide Cotton Insect Losses Survey

- Survey in existence since 1979
- Each beltwide state with one coordinator (PCE)
- Annual survey of PCAs, industry & University personnel, and growers
- Unique insights into intent of sprays made
- Cotton split into Bt and non-Bt in 1999

Ellsworth/UA

NCC survey has been in existence from 1979, but the quality of the data has greatly improved in AZ in the last 18 years and ever since we have gone to a live workshop format. PCE is AZ coordinator; Pete Goodell is CA coordinator.

Very important! Unlike any other data, even 1080 data, this is a unique insight into the INTENT of the sprays made. That is, we can split out each spray according to pest target along the lines of what YOU intended to do with that spray. One person spraying Orthene might be trying to do one thing, while another might be doing something entirely different. This is valuable data.

Let the Computer Help

- E-survey provides on-going calculations that might shape your perspective, especially about %losses & no. of sprays*

*Weeds survey greatly streamlined; Still improving

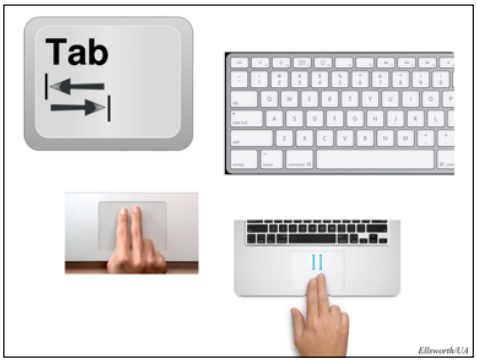
Since we have gone to a computer input, the quality of your data has improved! That's because the computer will help in intermediate calculations and give you instant feedback. This gives you a chance to re-consider and revise your entries to better reflect your intentions.

Trackpad Basics

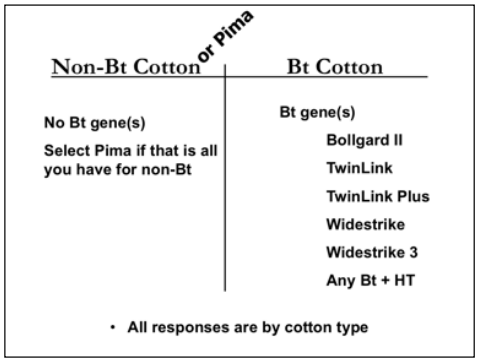
- Tab will move you sequentially from response field to response field
  - Shift-Tab will go backwards, if needed
- Point (one finger) & press (click) on trackpad to go somewhere else on the page
- Two fingers moving up and down will scroll your window in and out of view.

Ellsworth/UA

These are several things to bear in mind in using these particular laptops.

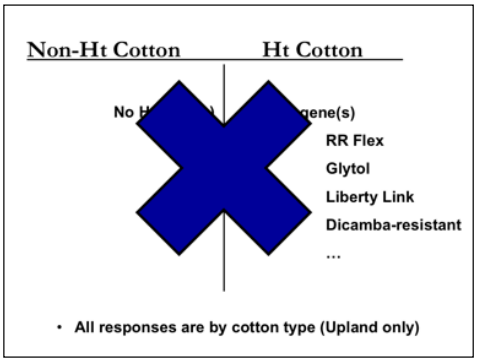


Show demo here.



Right now, Bt cotton in the marketplace is represented by Bollgard, BollgardII and Widestrike varieties. In the future, we may have to add other technologies to this list (e.g., Twinlink Plus and Widestrike 3; Bollgard 3; each making use of the VIPM protein). Remember herbicide resistant trait stacked varieties are counted as "Bt" as well.

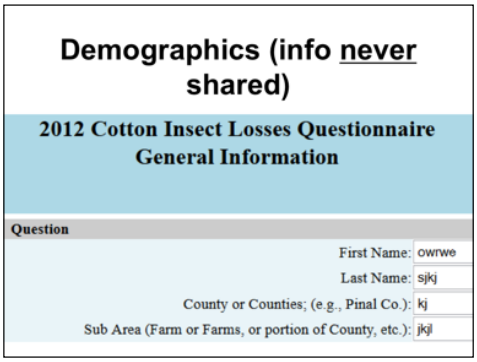
Also, survey is specific to upland cotton beltwide, but we DO collect Pima specific data for AZ. So if you watch both types of cotton, please fill out the survey accordingly.



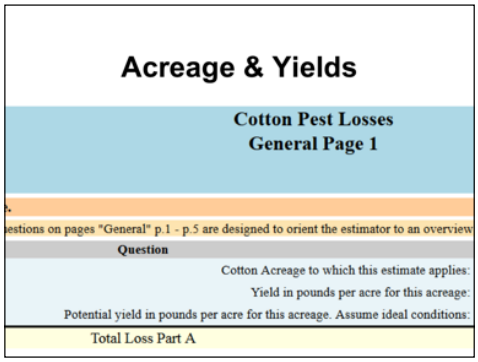
Because of the pervasive use of herbicide resistant technology, we've elected to simplify the survey and forgo individual estimates by trait technology for weed control.

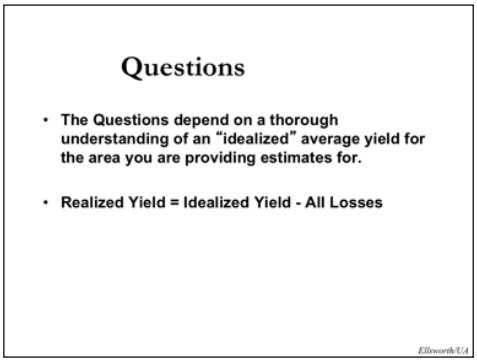
Totally optional but helpful to me in organizing the data. Your name and data, individually will NEVER be shared with anyone!

Please note, you will receive a gift for your completion of today's survey exercise. Your time is valuable and your information even more so. We cannot pay you, but we can compensate your travel to and from this meeting site and provide you a gift as a token of our appreciation.



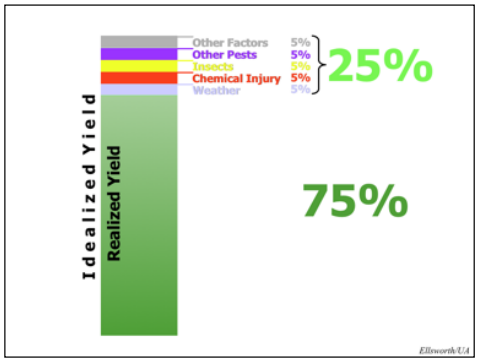
Let's proceed to examine the survey before anyone starts. This allows us to get everyone on an equal footing in understanding the sometimes peculiar vocabulary used throughout. Please ask questions as we go forward and review the entire survey.





Before passing out the survey, we will walk through the questions to help get everyone on the same page as far as terminology and expectations. It is very important that everyone have the same interpretation of key terms throughout. Please pay attention and ask any questions as we go along.

This idea of "idealized yield" will be important to framing your understanding and responses to insect loss questions.



A completely fictitious illustration of how to think about idealized yield relative to your actual "realized" yields.

2. Reporting Area

- County or Counties; e.g., Pinal Co.

Ellsworth/UA

2a. Subarea

- Farm or farms, or portion of County, etc.; West Pinal Co. or Stanfield or farm name
- This information is not shared with anyone.

Ellsworth/UA

Some additional identifier for an area. This helps me insure that we have good cross-section of the state. You should know that I do not calculate a simple average of responses. If I did, the data would be skewed by the acreage represented. Sometimes an area is over-represented and other times areas are under-represented. I make adjustments to accommodate these differences. A subarea helps me identify where in the state estimates are coming from.

3. Date submitted (dd/mm/yy)

- 12/3 or 12/3/14

AUGUST 2012

		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Ellsworth/UA

4. Cotton Acreage to which this estimate applies

- Number of acres of Non-Bt cotton OR Pima cotton (let us know if you have both types, non-Bt upland and Pima cotton
- Number of acres of Bt cotton, including those that are stacked (e.g., BG/RR)

Ellsworth/UA

Anything that contains a Bt gene including stacks.

5. Yield in pounds per acre for this acreage

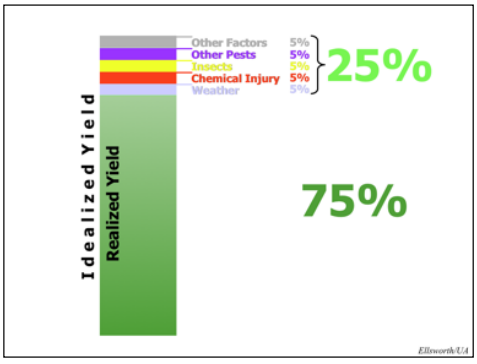
- Your best estimate of what you expect the acreage you check yielded.

6. Potential yield in pounds per acre for this acreage

- Assume ideal conditions!! "*This estimate represents what the land is capable of realistically producing.*"
- This means what should this acreage have yielded without any stressors given the constraints of the location, year, and general production practices. (Still an average).
- Assume no losses to insects, weeds, other pests, other stresses (heat, water, weather), or even poor management practices.

Ellsworth/UA

Please read slide carefully; this is key to setting the upper limit of what could have been produced had NO stressors occurred this past year.



Our fictional example once again.

% Losses on Your Acreage

Question
Percent reduction in yield by Weather: % reduction:
Percent reduction in yield by Chemical injury: % reduction:
Percent reduction in yield by All insects combined: % reduction:
Percent reduction in yield to All WEEDS combined: % reduction:
Percent reduction in yield to all DISEASES combined: % reduction:
Percent reduction in yield by Other pests: % reduction:
Percent reduction in yield by Other factors: % reduction:

Nematodes added here!

Ellsworth/UA

This section has been restructured in recent years and includes some new pest groupings. Pay particular attention to this fact as well as to the summary numbers that the computer calcluates for you. This allows you to think in terms of lbs of cotton or percentages, as you wish.

Helpful Calculations!

Non-Bt Cotton	Lbs Per Acre
5 %	135.00 Lbs/Acre
0.9 %	24.30 Lbs/Acre
10 %	270.00 Lbs/Acre
2 %	54.00 Lbs/Acre
0 %	0.00 Lbs/Acre
5 %	135.00 Lbs/Acre
3 %	81.00 Lbs/Acre
25.90 %	699.30 Lbs/Acre

Conversions

Totals

Ellsworth/UA

The computer provides calculations based on your inputted yield information, permitting you to think about yield losses as % or lbs/A.

7. Percent reduction in yield by Weather:

- This could include the "normal" sort of things like rain, hail, and wind, but also don't forget about cold injury to stands or heat stress mid-summer.

Ellsworth/UA

Remember that the total difference in pounds from what your growers made this year versus what they could have made is the total loss. This question is what percentage of the IDEAL yield was lost to weather.

8. Percent reduction in yield by Chemical injury:

- Chemical injury can be from any source, but herbicides may be the most common loss here.
- This may be due to direct application or through drift problems.

Ellsworth/UA

Typically a low number, but some loss to misapplication, drift or poorly timed herbicides, etc.

9. Percent reduction in yield by All INSECTS combined:

- Start with a number here and now, and then consider revising AS YOU COMPLETE the survey.

- Remember,

$$\text{Ideal yield} = \text{yield} + \%\text{loss}_{\text{otherpests}} + \%\text{loss}_{\text{weather}} + \%\text{loss}_{\text{injury}} + \%\text{loss}_{\text{mgt}} + \%\text{loss}_{\text{insects}} + \%\text{loss}_{\text{weeds}}$$

Ellsworth/UA

Loss to insects combined. In theory, the formula for adding up all losses with what was actually yielded should give your Ideal Yield.

9b. Percent reduction in yield by All WEEDS combined:

- Remember,

Ideal yield = yield + $\%loss_{otherpests}$ + $\%loss_{weather}$ + $\%loss_{injury}$ + $\%loss_{mgt}$ + $\%loss_{insects}$ + $\%loss_{weeds}$

Loss to weeds combined. In theory, the formula for adding up all losses with the what was actually yielded should give your Ideal Yield.

This is simply to remind everyone that every crop input may not be related directly to a yield outcome. There are pest situations that occur but result in no yield loss, and there are pesticide inputs that are sometimes deemed necessary but for which there is no yield benefit.

In this example, this level of damage by pale-striped flea beetle is easily tolerated under normal production circumstances. No sprays are needed and no yield loss will occur. However, at higher elevations, under very short production season conditions, or most of all under unusual water stress, stand loss might be possible. These are judgments that the professional PCA has to make.

10. Percent reduction in yield by Other pests:

- Insert your list of other pests at the bottom of the page in the margin.
- For example, vertebrates, birds, etc.

Ellsworth/UA

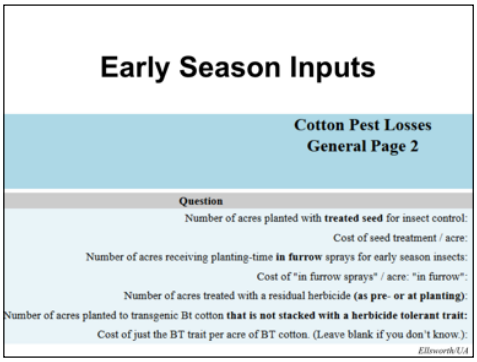
Specifically, "insect" losses are arthropod losses and includes mites. Now that we specifically ask about weeds, nematodes and plant diseases, there is little left to enumerate here other than vertebrates or perhaps some other pest not captured by the questions already asked.

11. Percent reduction in yield by Other factors:

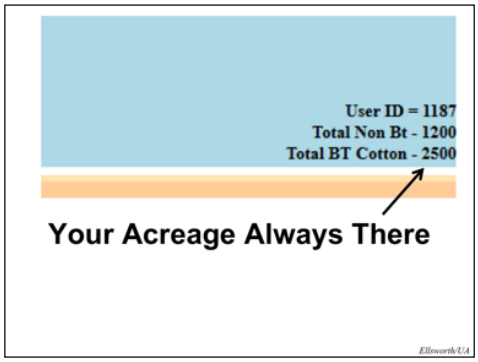
- Insert your list of other factors at the bottom of the page in the margin.
- A common source of loss may be the management choices / practices made by the grower.

Ellsworth/UA

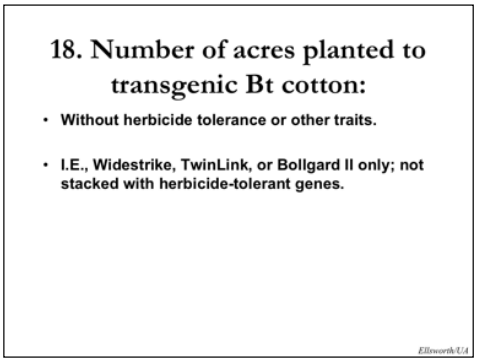
Some growers due to operational or other problems just might not be able to grow the crop as well as they could have. Late water, inappropriate fertility program, etc… are all sources of "loss". I.e., management losses can be common.



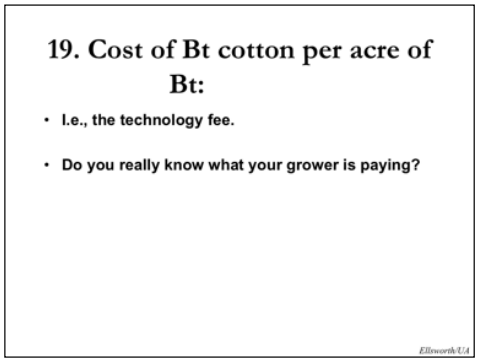
In-fuirrow sprays are not common, but please keep these practices separate from seed treatments for insect control.



Each screen will remind you at the top how many acres you are reporting on.



This is NOT a repeated question. Here, we want to know the number of acres that ONLY have a Bt gene. So exclude varieties that are stacked with herbicide or other trait genes.



If you really don't know or have a clue or idea what your grower pays, don't fill in. BUT, if you do have some idea and some level of confidence, please fill out. REMEMBER (and this is difficult), we are interested ONLY in the cost of the insect-control portion or the Bt portion of a stack if a stack is used.

Technology providers do not typically break out the cost of the Bt traits and the herbicide resistant traits in stacked varieties.

Technologies Planted

*Technologies ===>	Bollgard II	BGII/Flex	BGII/LL	BGII/Glytol	Widestrike	W/Fl
Acres planted to:						

*LL=LibertyLin

W/Flex	TL/HT	BGII/LL/Glytol	Flex only	LL only	Glytol/LL	Organic	Non-transgenic*

ertyLink; W=Widestrike; TL=TwinLink; Should total 100% of your acreage; Non-transgenic=conventional cotton.

Ellsworth/UA

We have attempted to capture each combination of transgenic technology.

Insecticide Application

- Foliar insecticides only
- % of acres sprayed by ground (up to 100%)
- % of acres sprayed by air (up to 100%)

Ellsworth/UA

Questions about applications and their costs are specific to the delivery of insecticides. Do not consider PGRs, defoliants, or herbicides in these questions.

Cotton Pest Losses
General Page 4 - Applicati

round should not exceed more than 100% each (but whe
nly.

Question
Percent acres (for this estimate) treated by air in 2012:
Cost per acre for aerial applications:
Average number of treatments by air:
Percent acres (for this estimate) treated by ground in 2012:
Cost per acre for ground applications:
Average number of treatments by ground:
Total Number of Sprays

-th/UA

20. Percent acres treated by air:

- Up to 100%
- Insecticides only

1 flight across all fields would be 100%, foliar insecticides with or without other things!

21. Cost per acre for aerial applications:

Ellsworth/UA

22. Average number of treatments by air:

- Your estimate of the number of sprays per acre for your acreage (flights across the field).
- Insecticides only.

Ellsworth/UA

23. Percent acres treated by ground:

- Up to 100%
- Insecticides only

Ellsworth/UA

1 pass with a ground rig over all acreage = 100%

24. Cost per acre for ground applications:

- It's never free! Even if a grower self-applies, there must be some cost associated with the application.

Self-applied should consider time and labor, and diesel, etc. If a grower sprays their own insecticides, the cost should not be considered 0.

25. Average number of treatments by ground:

- Your estimate of the number of sprays per acre for your acreage (trips across the field).
- Insecticides only.

Ellsworth/UA

25 (prt 2). % of foliar applications reported to ADA on form L-1080:

A) For Foliar cotton insectides/miticides

B) For cotton herbicides

C) For fungicides

D) For nematicides

Ellsworth/UA

Reporting practices differ for various reasons. Give us an estimate of the approximant % of pesticide uses that you know are reported to the State.

Insect Management Fees

- Estimate the cost of insect management fees paid by farmers to advisory personnel: crop consultants, fieldmen and/or advisors.
- Again, it's rarely free! If acres are under a full service agreement, some portion of the growers insecticide costs should be for checking costs.

Ellsworth/UA

26. Number of acres for which there was an insect monitor, consultant, or crop advisor:

- Please observe the requested units at all times (acreage or %). Some questions vary.

Ellsworth/UA

IMPORTANT Note. On the computer survey, please observe the requested units at all times (acreage or %). Some questions vary, and the computer often calculates the alternative for you.

27. Number of field visits per week:

- If it is not the same every week for each field, then report a fraction. I.e., 1 or 2 visits might be reported as 1.3, 1.5, or whatever is most appropriate.

Ellsworth/UA

28. Estimated cost per acre for arthropod crop advisory by scouted acre:

If you provide other services that are bundled with your fees (water mgt, fertility, defoliation, etc.), please estimate just the insect (arthropod) management related fees.

16 & 16b. Number of acres receiving 'at planting' (16, seed treatment & 16b, in-furrow spray) treatment for early season thrips:

- This question has been changed to isolate seed treatments from in-furrow sprays. Respond to each accordingly.

Ellsworth/UA

For seed treatments, we are interested only in non-standard, premium seed treatments. All seed, typically, has small amounts of insecticide for control of storage insects, for example.

Limit your response to premium seed treatments.

17 & 17b. Cost of 'at planting' treatments/acre:

- 'seed treatment'(17) & 'in furrow'(17b) entered separately where indicated.

Ellsworth/UA

17c. Number of acres treated with residual herbicide (pre- or at planting).

Ellsworth/UA

This should be your estimate for your growers, regardless of whether there were 1080s written or not.

Seed Technologies Planted by Your Growers

- Note: Change to question this year
- Bt's should total to your Bt acreage

Bollgard II	BGII Flex	BGII LL	BGII Glyrsl	Widestrike	W Flex	Twinlink	TL Glyrsl	Flex only	Glyrsl only	LL only	Non-transgenic*	Organic

*LL-Liberty Link; W-Widestrike; TL-TwinLink; Should total 100% of your acreage; Non-transgenic-conventional cotton

Ellsworth/UA

Orientation to Insect Questions

- Answering the insect questions depends on an understanding of terminology used in this survey…

…But first, let's try an example.

Ellsworth/UA

An Unbiased Example:

- I check 10,000 acres in S. Texas:

Question		(a) Number of ac infested by this pest:		(b) Number of ac treated for this p	
	Type of Cotton	*Non-Bt*	*Bt*	*Non-Bt*	*Bt*
29	Boll weevil	4000	6000	400	1200
the computer calculates %:		*100%*	*100%*	*10%*	*20%*

You must fill these cells out even if just 0%

Ellsworth/UA

Answering the insect questions depends on an understanding of terminology used in this survey…

To help with this, let's examine a fictitious example:

I'm a PCA from S. Texas who checked 10,000 acres of cotton this past season, 4000 of which is non-Bt and 6000 is Bt cotton. For each insect pest, there are a series of questions across the top of the page (a-e). In this example, I know that boll weevils are present on all the acreage I check. All acres are therefore considered "infested". However, I only had to treat 400 of my non-Bt and 1200 of my Bt acreages. The question requests ACRES. However, if you think better in percentages, the computer also calculates percentages as you go. So adjust your numbers to get the % you are seeking if you better think in those terms.

Understanding Acreages

- Planted acreage: from question #4
- Infested acreage (a): acres on which the pest is present; some insects are ubiquitous, like thrips, and likely are present in some numbers everywhere; others are quite unusual like cutworms.
- Treated acreage (b): those acres which were sprayed for the pest of interest.

Note that losses are reported over all infested acres whether they have been treated or not

Ellsworth/UA

Acreages appear in different places in this survey.

Planted acreage is self-explanatory; and treated acreage should also be fairly clear.

Infested acreage (a) is less clear for people. In short, it is the acreage on which the pest is present, and has nothing to do with whether they were ever there at treatable levels or caused damage; just where they were present. Thrips are present everywhere, therefore, your response should indicate that all acreage (or 100%) was infested. Some pests may never appear on your acreage (e.g., no acres infested or 0%). Either way, it is *very important* that you respond on "Infested Acres" (a) for all pests in this survey! Please leave none of these blank!

Similarly, you must fill out "% reduction in yield" (e) for all pests; do not leave 'e' blank for any pest! Your estimate here is over all acres that are infested with the pest (NOT all acres planted). I.e., You cannot have lost yield on acreage where the pest is not present.

Example (2)

- 1440 (3 bales) and 1540 (3.2 bales) ideal yield

(c) No. of insecticide applications required to control this pest:		(d) Cost of one application per acre (include application cost):		(e) Percent reduction in yield due to this pest:	
Non-Bt	*Bt*	*Non-Bt*	*Bt*	*Non-Bt*	*Bt*
1.4	1.7	$12.50	$12.50	3.5%	3.2%
Different area or season length		*This figure includes application cost*		*Equivalent to 50 lbs lost*	

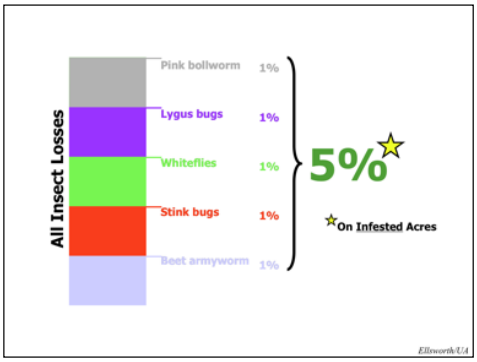
Ellsworth/UA

Back to our example in S. Texas where I have estimated that my non-Bt acreage had a 3-bale yield potential and my Bt acreage had a 3.2 bale yield potential.

Question 'c' tells us how many sprays were made against boll weevils on the acreage I check. These averages might be the same or different between Non-Bt and Bt cotton based on the areas where they were grown, production goals, insecticides used on each, etc. But be sure to read the examples of "fractional" sprays later on.

Question 'd' tells us how much ONE spray costs for this pest including application costs.

Question 'e' must be filled out for every pest on the survey; it tells us the % lost in yield due to this pest. This is your best guess estimate. In my case, I assumed I lost 50 lbs of lint per acre to Boll Weevil regardless of crop type. This roughly calculates to 3.5% (50/1440) and 3.2% (50/1540).



Throughout these questions we are looking at the insect portions of loss. In our fictitional example, we estimated 5% lost to all insects. But remember, these losses are estimated only for those acres that were infested. You can't have loss if the insects are not present on uninfested acres.

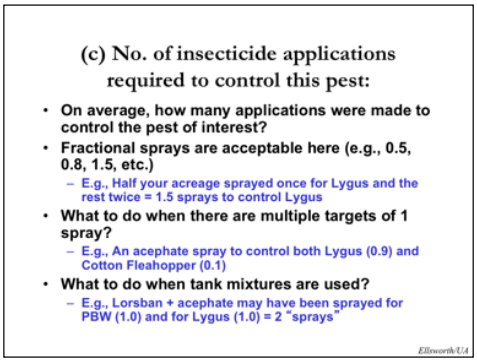
The computer will tally your responses at all times. So you can check to see if they match up with your perception of losses on your acreages overall.

Part 'e' should reflect the loss incurred over part 'a'

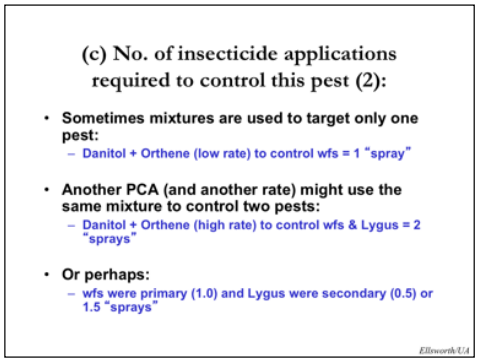
- That is loss is estimated over all infested acres, not just the treated acreage.
- How much was lost to this pest where it occurred, regardless of whether there were sprays or not?

Ellsworth/UA

Let me emphasize here. Loss is estimated over the infested acres 'a', not over all acreage (unless it is all infested), and not just over the treated acreage. Giving your best estimate, how much yield (%) was lost to this pest over the infested acreage?

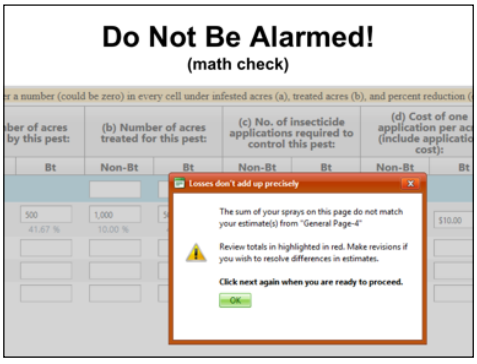


Part 'c', on its surface, seems straightforward; however, there are things you should consider. What is important to the survey is that you indicate what you intended with each of your control measures. One PCA may be targeting one pest while another might be targeting 2 or more pests with the same spray, even the same chemical. Mixtures or tank-mixes of more than one insecticide introduce even more complexity. The examples here are for guidance only. They might reflect my personal INTENT when I was spraying my acreage; your intent will be different. Keep in mind that this survey measures foliar spray "intensity" not just the number of flights or passes over a field. So when we use mixtures that target multiple pests, your responses should reflect this increased intensity. One flight over a field of Lorsban + acephate, for example, reflects my desire to control two different pests, each with one of these compounds (in this case, Lorsban against PBW and acephate against Lygus). As such, it is no different than flying twice over the field or 2 sprays, 1 against PBW and 1 against Lygus. But there are even other possibilities...(see next slide)



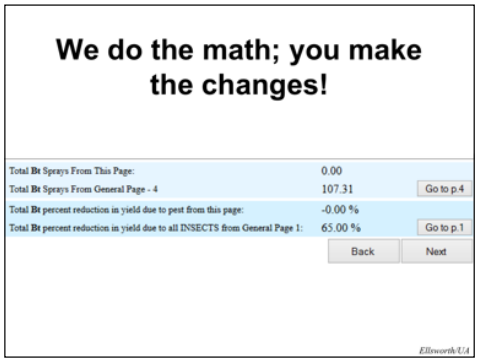
When mixtures target only one pest because they are needed together in order to accomplish control (e.g., because of synergism), that spray should be counted as 1 "spray". On the other hand, altering rates might change your INTENT for that same mixture. So the same mixture when sprayed once might count as 1 or 2 sprays or even as something in between, again based on your INTENT.

Please consider these nuances while you fill out the "(c) number of applications required to control this pest".



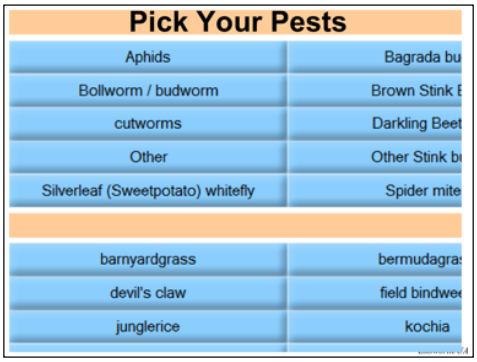
Once you've completed this page and seek to goto the next, the computer may provide a "nag" screen if your losses or sprays from this page do not match exactly with those previously reported in the general questions. Do not be alarmed. The goal here is not to get the numbers to match to the very last decimal point. The goal is to be sure that you didn't make some gross error that causes your estimates to be far out of line with previously reported information. This gives you a chance to revise your estimates here on this page and/or to return to previously reported information and make adjustments there.

Once you are satisfied that you have made a good faith attempt at making these estimates, even if they don't match exactly, you can proceed to the next page of the survey despite the nag screen.



In this fictional example, the sprays and losses information are way off from each other, indicating that one or both sets of estimates need adjustment here on this page and/or on previous pages.

The buttons permit you to jump back easily. No information is lost. So you can make changes and then quickly get back here, if need be.



Click on all the pests that were present.

Insect Species List Changes

- **Stink Bugs!**
- **Need to get specific**

Brown Stink Bug				
Bagrada bug				
Other Stink bugs				

Ellsworth/UA

Bear in mind that some categories are new and provided to better understand your specific pest challenges.

Pick Your Top 5 Weeds ONLY (then rank them)

- **Rank your top 5 for the year**
- **Give all information for these 5 spp.**

Provide responses for both Ht and non-Ht cottons	top 5 weeds in 2012					(a) Number of acres infested by this pest:		(b) Number of acres treated for this pest:	
	1	*2*	*3*	*4*	*5*	*Non-Ht*	~~*Ht*~~	*Non-Ht*	~~*Ht*~~
purple nutsedge	⊗	○	○	○	○				
yellow nutsedge	○	○	○	○	⊗				
barnyardgrass	○	○	○	⊗	○				
bermudagrass	○	⊗	○	○	○				
brome	○	○	⊗	○	○				

Ellsworth/UA

We no longer poll for information by herbicide technology. But please rank your top 5 weeds and provide all requested information.

Respond by Weed Grouping

- **By cotton technology**

Provide responses for each Ht technology, where appropriate	(a) Number of acres infested by this pest:			(b) Number of acres treated for this pest:		
	~~*Non*~~	~~*RR Flex*~~	~~*LL*~~	~~*Non*~~	~~*RR Flex*~~	~~*LL*~~
Grasses						
Broad leaves						
Nutsedges						

Ellsworth/UA

Weed Mgt. Questions & Products

- Give % acres for each question

Herbicide Practices*

3c1–4. On what percentage (%) of acres did your growers use:

... a preplant/preemergence herbicide?

Ellsworth/UA

Weed Mgt. Questions & Products

- Provide your "preferred" products for different herbicide practices by technology

Preferred Products (Select From Pop-up)

Non	RR Flex	LL

Ellsworth/UA

Palmer Amaranth Questions

- Page dedicated to this weed species
- Your responses are important!

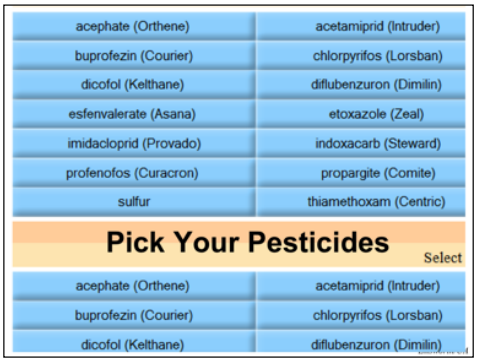
Palmer Amaranth is a special case. So we wish to gather information specific to this species. A.k.a. pigweed or careless weed.

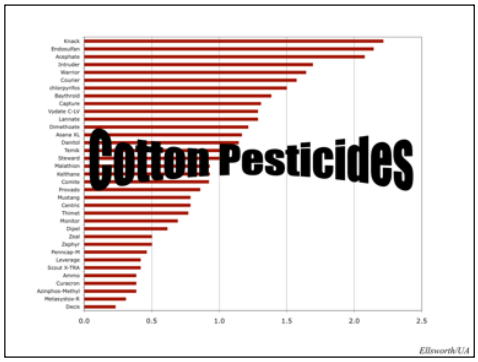
Weed Terminology

- "Early-post" = cotyledon – about 4th, 5th or 6th leaf cotton.
  - Grower goes over the top because cotton is too small to post-direct
- "Mid-post" = from 6 – 15 inch tall cotton.
  - Growers go over the top or post-direct and tank mix chemicals for weed control; Between "Early-Post" and "Layby"
- "Layby" = from 15 – 18 inches tall up to 24 – 30 inches.
  - last time for a preemergence herbicide and/or when residual herbicides at higher rates are used

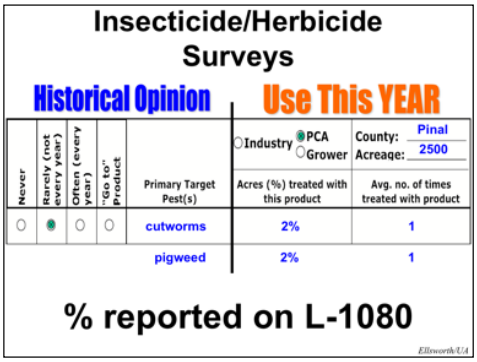
Ellsworth/UA

Some have asked for general definitions of these timings. These were provided by Dr. Bill McCloskey.

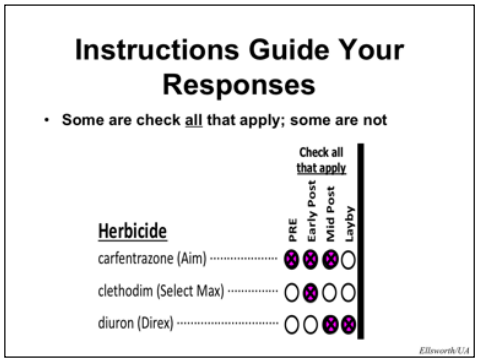


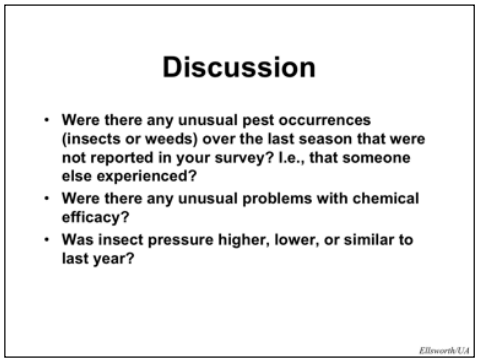


There are two major parts to this survey. The cotton losses survey, which you have not completed, and the chemical use survey which follows. Your reported practices here are important for us to understand the value of pesticides to your pest management system.

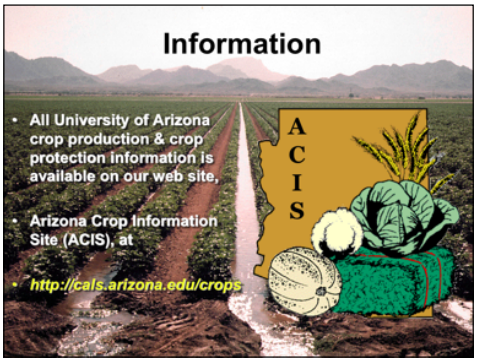


We are interested in your historical use of these pesticides over the last several years. The exact number of years is not important. What is important is capturing your opinions even for pesticides not necessarily in use this past year.





These are follow-up discussion questions to address as a group after everyone is done entering their data into the surveys.



Final feedback on session.

What was your worst (highest no. of sprays) field this year? What were the average no. of sprays made in general? What % of acreage never got sprayed this year? Any odd pest problems that you heard about (but did not report in your losses)? Something I should make sure we capture in the losses? Any product complaints this year? Things working well, not as well, or better than in the past? Any way we can improve this process? Please encourage your peers who are not here to send their surveys in right away and plan on attending in the future! We thank you very much for your help this year!