

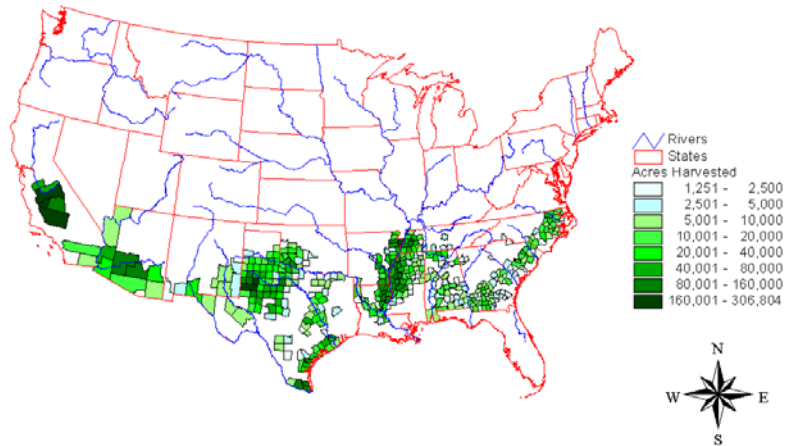
What have I learned from Working with Pur Data

- ❑ Databases are the key for Environmental Management
- ❑ Computer technology is still advancing at a dizzying pace
- ❑ Data by itself has limited value, and its value decreases with time

What have I done and How did I get to this point

- Agronomy & Range Science 1997-2001
- Gis with ArcInfo and ArcView
- Mapping United States Ag Production

Cotton Harvested by Counties



Basins EPA'S Watershed Modeling Program

- Basins is a Program and Database for Watershed Analysis
- Distributed By US EPA at no charge
- Program is Available on the Internet
- Data for Any Watershed in the US is available on the Internet for downloading at no cost
- Basins 3.0 - is the latest version (June 2001)

Introduced to Pur Data

- Data by year was available on CD-Rom
- First problem was with Outliners
- Calc Mean & Std and look for data $> 3 \times \text{Std}$
- Most Outliners easy to correct with analysis
- Outliners Easy to Remove with simple script
- Understanding Chemicals by Target Problem
- Understanding Chemicals by Potential Harm

How could the PUR data be used

- Generate Reports of Applications by Year
- By Counties, Crops, Chemicals
- Generate Maps of Applications
- Who would be interested in Reports or Maps
- How do Corporations generate Reports
- Reports are designed for managers

How could the PUR data be used

- Most Reports usually have 2 years of data
- To Provides a view of Present Status
- And a view of Direction
- At this time 1998-1999 Hard Disks ~ 1GB
- To have multiple years we needed ~ 5GB
- 20GB Hard Disks just became available

How could the PUR data be used

- To Generate Reports from Multi-year data
- ArcView provided “Avenue”, a programming language good for database management and automatic map generation
- Reports require formatting for easy reading
- Excel provides excellent macro generation capability using Visual Basic

```

'Script Name "Pur.Rpt_Cnty_ByChem"
'Main Program to generate data for a Cnty Report by Crop
'Requires Subprograms
'  "OpenVTab"
'  "Pur.Fun.GetSum"
'  "Table.UnselectAll" (a system program)
'  "Pur.Fun.RptByChemRemoveBlanks"
'  "Pur.Fun.RptByChemAddDeltaFlds"
'  "Pur.Fun.RptByChemAdjFields"
'To move data to Excel open Excel with Personal2.xls
and execute "RptBySiteMove"
'In Excel execute macros RptBySite1,2,3 in succession
*****()*****()*****()*****()*****()*****
'(1) Enter the Cnty_Code for the Cnty of Interest
    for each cnty in 01..01
        if (cnty < 10) then cntyStr="0"+cnty.AsString
        else cntyStr= cnty.AsString end
'(2) Enter the Year of Interest for this table
    year = 99
    yearStr=year.AsString
    delYr = 1
'*****()*****()*****()*****()*****()*****
'(3) Enter Path name for PUR data
    purDir = "E:\PurData90_99"
'(4) Enter the Directory for output table
    outDir = "E:\NewRpts"
'(5) Enter Directory for Temporary files (need for AcrePlant)
    tmpDir = "E:\Temp"
'(6) Enter the name of the Chemical File
    chemFile = "Chemical_ba3.dbf"
'(7) Enter the name of the Site File
    siteFile = "Crop.dbf"
'*****()*****()*****()*****()*****()*****
'Open The Chem Database file
chemVTab = av.Run("Pur.Fun.OpenVtab", {purDir, chemFile})
chemTable = Table.Make(chemVTab)
if (chemTable = nil) then
    MsgBox.Info("File "+chemFile+" NOT found", "OpenVTab")
    exit

```

```

Dim CntyName As String

Sub RptByChem()
' Macro recorded 10/21/2000 by Romeo Favreau
' Formata Rpt99-99_#ByChem.dbf, ## county code
    CntyName = Range("F1").Text
    Call RptByChem1
    Call RptByChem2
    Call RptByChem3
    Call RptByChem4
    Call RptByChem5
    Call RptByChem6
End Sub

Sub RptByChem1()
' Macro recorded 10/21/2000 by Romeo Favreau
' Macro1 Macro
'Insert row
    Columns("B:B").Select
    Selection.Insert Shift:=xlToRight
    Selection.ColumnWidth = 1.5
    Range("A1").Select

    Columns("C:C").ColumnWidth = 22
    Columns("D:D").ColumnWidth = 12
    Columns("E:E").ColumnWidth = 2
    Columns("F:F").ColumnWidth = 2
    Columns("G:G").ColumnWidth = 2
    Columns("H:H").ColumnWidth = 2
    Columns("I:I").ColumnWidth = 2
    Columns("J:J").ColumnWidth = 2
    Columns("K:K").ColumnWidth = 6
    Columns("L:L").ColumnWidth = 2
    Columns("M:M").ColumnWidth = 2
    Columns("N:N").ColumnWidth = 2
    Columns("O:O").ColumnWidth = 2
    Columns("P:P").ColumnWidth = 2
    Columns("Q:Q").ColumnWidth = 2
    Columns("R:R").ColumnWidth = 9
    Columns("S:S").ColumnWidth = 9
    Columns("T:T").ColumnWidth = 9
    Columns("U:U").ColumnWidth = 11
    Columns("V:V").ColumnWidth = 11
End Sub

Sub RptByChem2()
' Macro recorded 10/21/2000 by Romeo Favreau
'Insert Row
    Rows("3:3").Select

```

How could the PUR data be used

- Reports for the State – Overall View
- Reports for the Counties – Local View
- Reports by crops & fields – Crop View
- Reports by crops & grower – Grower View
- Reports to people who make decisions
- Ag Commissions & Growers
- Crop Boards – Extensions agents

Pesticide Application Data – Directory for Report Generation

Project [Gen_PurApp_CrFl_Fld_Crp.apr](#)

Script [Pur.GenAppFiles](#)

Builds the Application files (Summarized on [Use_no](#))

Builds the Crop-Field files

(Summarized on [Site_code+Grower_Id+Site_loc_I](#))

Builds the Field files (Summarized on [Grower_id+site_loc_I](#))

Builds the Crop files (Summarized on [Site_code](#))

Project [GenPurApp_Data.apr](#)

Script [Pur.CntyByCropYrForAppCrFl](#)

Builds a 1 year County report (by crops, all [chems](#), P65 [Chems](#))

Script [Pur.StateByCropYrForAppCrFl](#)

Builds a 1 year State report (by crops, all counties, all [Chems](#), P65)

Script [Pur.StateByCntyYrForAppCrFl](#)

Builds a 1 year State report (by [Cnty](#), all crops, all [Chems](#), P65 [chems](#))

Script [Pur.RptCntyByCropYrForAppCrFlCp](#)

Builds a 2 year County report (by crops, [fields.acre](#), [plant](#), lbs, P65)

Script [Pur.RptStateByCropYrForAppCrFl](#)

Builds a 2 year County report (by crops, [fields.acre](#), [plant](#), lbs, P65)

Script [Pur.RptStateByCntyYrForAppCrFl](#)

Builds a 2 year County report (by crops, [fields.acre](#), [plant](#), lbs, P65)

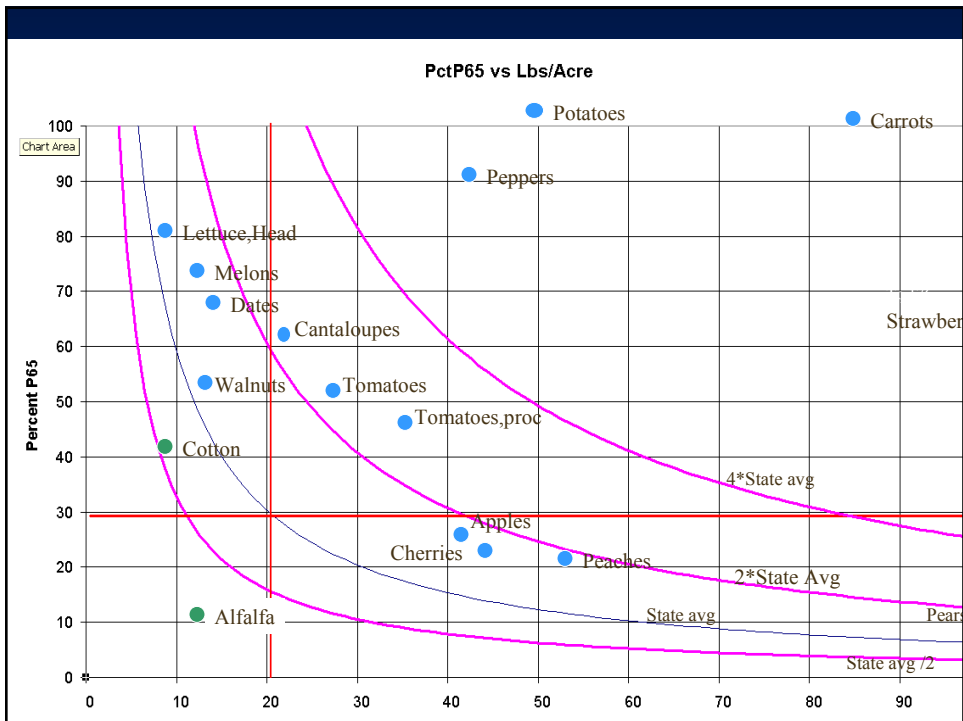
Script [Pur.Table_ByCntyCropYr_ByField](#)

Builds a Table of Fields in County growing Crop in Year

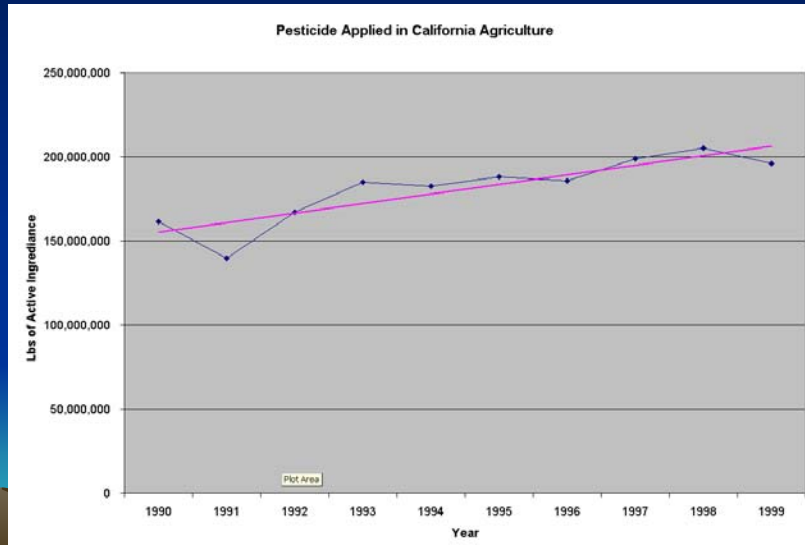
C5											
B	Q	R	S	T	U	V	W	X	Y	Z	AA
Rpt99-98StateBySite1.dbf											
Site_name	S98 Lbs Acre Pl	S99 Lbs Acre Pl	Del Lbs Acre Pl	S98 Lbs Chm Bad	S99 Lbs Chm Bad	Delta Chm Bad	S98- Pct Bad	S99- Pct Bad	Delta Pct Bad		
Total	21.70	21.20	(0.50)	52,846,783	57,544,005	4,697,222	25.78	29.34	3.56		
GRAPES, WINE	74.50	68.00	(6.50)	1,227,111	1,785,050	557,939	3.57	5.46	1.89		
GRAPES	77.60	66.30	(11.30)	1,441,343	1,359,907	(81,436)	4.04	4.52	0.48		
ALMOND	28.10	26.80	(1.30)	3,786,063	2,995,176	(790,887)	23.10	19.22	(3.88)		
TOMATOES, FOR PROCESSING/CA	36.90	35.90	(1.00)	3,778,152	5,300,863	1,522,711	31.97	40.53	8.56		
STRAWBERRY (ALL OR UNSPEC)	143.40	176.40	33.00	4,957,810	6,080,892	1,103,082	88.24	64.99	(1.25)		
ORANGE (ALL OR UNSPEC)	49.30	43.40	(5.90)	1,074,226	893,458	(180,768)	10.26	9.87	(0.39)		
COTTON, GENERAL	11.00	9.00	(2.00)	4,048,247	3,082,616	(965,631)	35.60	34.53	(1.07)		
CARROTS, GENERAL	71.60	84.50	12.90	6,818,531	7,862,975	1,044,444	93.79	94.14	0.35		
SUGARBEET, GENERAL	33.60	37.70	4.10	381,168	410,106	28,938	7.50	6.81	(0.69)		
RICE (ALL OR UNSPEC)	11.00	10.20	(0.80)	1,779,485	1,888,632	(90,853)	34.98	33.86	(1.10)		
ALFALFA (FORAGE - FODDER) (AL	4.10	4.10	0.00	1,739,959	1,599,024	(140,935)	42.39	38.52	(3.87)		
PEACH	64.50	52.60	(11.90)	607,632	679,204	71,572	11.88	16.46	4.58		
LEMON	72.20	70.30	(1.90)	239,651	252,378	12,727	5.90	6.68	0.78		
SOIL APPLICATION, PREPLANT-OU	34.40	45.20	10.80	2,078,385	2,891,081	812,696	84.26	88.52	4.26		
POTATO (WHITE, IRISH, RED, RUSS	37.20	49.50	12.30	1,895,957	2,650,332	754,375	93.50	96.41	2.91		
WALNUT (ENGLISH WALNUT, PERS	20.20	13.90	(6.30)	1,391,004	1,306,623	(84,381)	35.15	48.44	13.29		
PEAR	121.20	127.80	6.60	244,619	157,247	(87,372)	9.49	6.14	(3.35)		
NECTARINE	50.60	49.50	(1.10)	304,888	247,742	(56,924)	14.29	12.42	(1.87)		
PRUNE	26.80	21.70	(5.10)	341,434	415,687	74,253	12.87	21.21	8.34		
SWEET POTATO	133.10	253.00	119.90	1,036,752	1,878,053	841,301	99.48	99.66	0.18		
N-OUTDR CONTAINER/FLD GRWN F	45.40	50.50	5.10	1,238,619	1,325,818	87,199	78.99	76.85	(2.14)		
ETTUCE, HEAD (ALL OR UNSPEC)	7.80	9.20	1.40	1,071,132	1,189,871	118,739	71.28	72.31	1.03		
TOMATO	32.90	28.30	(4.60)	768,576	705,915	(62,661)	42.61	44.45	1.84		
PLUM (INCLUDES WILD PLUMS FO	47.90	43.40	(4.50)	176,828	138,811	(38,017)	9.85	8.86	(0.99)		
PEP E	46.70	41.30	(5.40)	336,416	300,040	(36,376)	30.46	10.78	(19.68)		

V5567											
A	B	C	D	L	M	N	O	P	Q	R	S
Rpt99-98StateByChem1.c											
Chem Code	Chemical Name	Use Type	Canc	Devel	Inhib C	Grnd C	Fimosa	Male	S98 Count	S99 Count	Delta Count
99999	Total								2,767,168	2,701,192	(65,976)
104	CAPTAN	Fungicide	C						15,389	11,124	(4,265)
877	CHLOROTHALONIL	Fungicide	C						23,339	17,042	(6,297)
449	MOLINATE	Herbicide		I					3,423	3,171	(252)
531	SIMAZINE	Herbicide			K				22,725	21,277	(1,448)
1626	ETHEPHON	Plant Growth		I					10,236	10,803	567
1933	THIOBENCARB	Herbicide		I					2,236	2,288	50
335	PHOSMET	Insecticide		I					9,364	8,210	(1,154)
383	METHOMYL	Insecticide		I					36,126	31,680	(4,446)
367	MALATHION	Insecticide		I					12,834	14,780	1,946
231	DIURON	Herbicide			K				18,285	16,985	(1,300)
211	MANCOZEB	Fungicide	C						19,798	13,543	(6,255)
198	DIAZINON	Insecticide		I					24,310	31,152	6,842
216	DIMETHOATE	Insecticide		I					21,761	35,229	13,468
264	EPTC	Herbicide		D					2,642	2,742	100
2081	IPRODIONE	Fungicide	C						33,888	25,290	(8,598)
2019	NORFLURAZON	Herbicide			K				6,376	6,511	135
105	CARBARYL	Insecticide		I					6,968	6,757	(211)
190	S,S,S-TRIBUTYL PHOS	Defoliant		I					3,847	3,019	(828)
1885	ACEPHATE	Insecticide		I					19,026	22,784	3,758
575	ALDICARB	Insecticide		I					5,007	3,633	(1,374)
418	NALED	Insecticide		I					4,887	5,059	172
70	BENSULIDE	Herbicide		I					2,854	5,696	2,842
590	PEBULATE	Herbicide		I					985	1,102	117
314	AZINPHOS METHYL	Insecticide		I					2,626	3,151	525
230	DISULFOTON	Insecticide		I					3,004	2,723	(281)
1697	METHAMIDOPHOS	Insecticide		I					3,685	2,343	(1,342)
106	CARBOFURAN	Insecticide		I					4,955	4,564	(391)
1640	CYANAZINE	Herbicide	D						2,159	1,596	(563)
1689	METHIDATHION	Insecticide		I					3,282	3,543	261

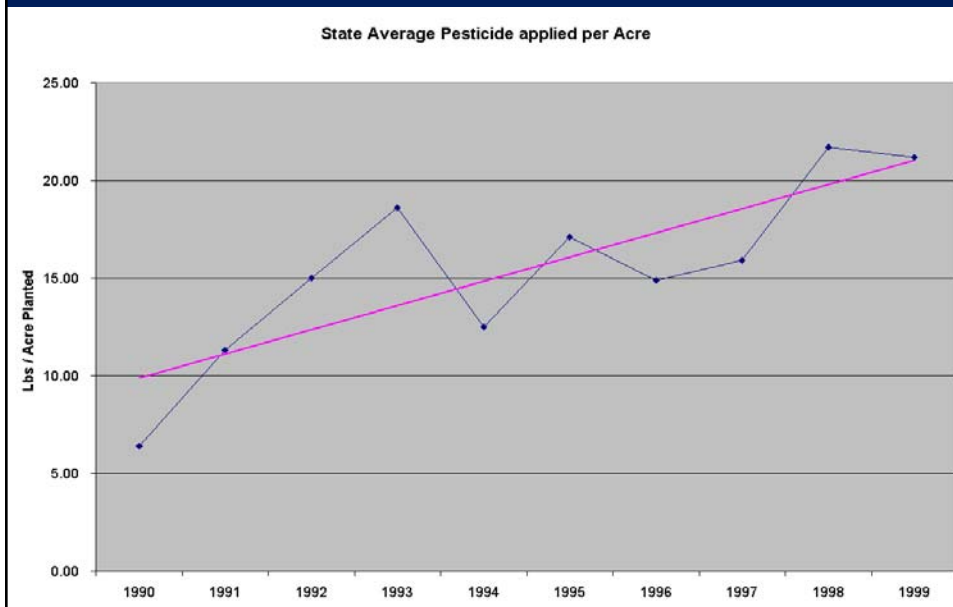
W567															
A	B	C	D	L	M	N	O	P	Q	R	S	T	U	V	W
Rpt99-98StateByChem1.dbf															
Chem Code	Chemical Name	Use Type	Cancer	Devel	Inhib C	GrndWat	Female	Male	S98 Count	S99 Count	Delta Count	S98 LbsChem	S99 LbsChem	Delta LbsChem	
99999	Total								2,767,168	2,701,192	(65,976)	205,003,625	196,137,043	(8,866,582)	
455	PARA-DICHLOROBENZEN	Insecticide	C						1	0	(1)	40	0	(40)	
465	PCP	Wood Preserv	C						3	0	(3)	18	0	(18)	
479	PHOSALONE	Insecticide		I					1	0	(1)	11	0	(11)	
560	SULFUR	Fungicide							186,411	165,185	(21,226)	78,891,518	70,713,072	(8,178,446)	
765	PETROLEUM OIL, UNCL	Insecticide							25,015	25,753	738	22,148,897	20,782,984	(1,365,713)	
401	MINERAL OIL	Insecticide							6,382	5,602	(780)	5,124,508	4,476,297	(648,211)	
136	CHLOROPICRIN	Fumigant							3,980	4,260	280	3,052,635	3,830,365	777,730	
151	COPPER HYDROXIDE	Fungicide							55,976	43,917	(12,059)	5,328,742	3,744,198	(1,584,544)	
1855	GLYPHOSATE, ISOPROP	Herbicide							110,388	107,087	(3,299)	3,281,331	3,062,615	(218,716)	
99	CALCIUM HYDROXIDE	pH Adjustment							3,010	2,677	(333)	2,871,619	2,706,226	(165,393)	
161	COPPER SULFATE (PEN	Insecticide							4,564	4,832	268	2,668,168	2,358,967	(309,201)	
536	SODIUM CHLORATE	Defoliant							6,078	5,386	(692)	2,442,658	2,208,968	(233,690)	
173	CRYOLITE	Insecticide							10,819	9,268	(1,351)	2,474,981	2,149,363	(325,618)	
597	TRIFLURALIN	Herbicide							15,857	18,027	2,170	1,192,194	1,324,718	132,524	
629	ZIRAM	Fungicide							9,049	8,126	(923)	1,552,639	1,146,110	(406,529)	
358	LIME-SULFUR	Insecticide							1,823	2,789	966	677,239	1,073,599	396,360	
1601	PARAQUAT DICHLORIDE	Herbicide							36,101	32,336	(3,765)	1,200,445	942,077	(258,368)	
503	PROPANIL	Herbicide							2,065	2,894	829	580,852	823,010	242,158	
162	COPPER SULFATE (BAS	Fungicide							5,214	4,420	(794)	849,922	731,456	(118,466)	
2273	SODIUM TETRATHIOCAR	Fungicide							544	827	83	893,038	891,857	(1,181)	
2270	UREA DIHYDROGEN SUL	Adjuvant							1,786	3,081	1,295	968,152	632,600	(335,552)	
1868	ORYZALIN	Herbicide							14,455	12,415	(2,040)	984,163	603,286	(380,877)	
763	PETROLEUM DISTILLAT	Insecticide							5,025	5,065	40	253,748	578,573	324,825	
346	DICOFOL	Insecticide							7,930	6,841	(1,089)	384,541	551,782	167,241	
748	ALKYLARYL POLY(OXYE	Adjuvant							47,000	39,461	(7,539)	539,333	513,947	(25,386)	
473	PETROLEUM HYDROCAR	Insecticide							10,576	9,981	(595)	540,570	502,494	(38,076)	

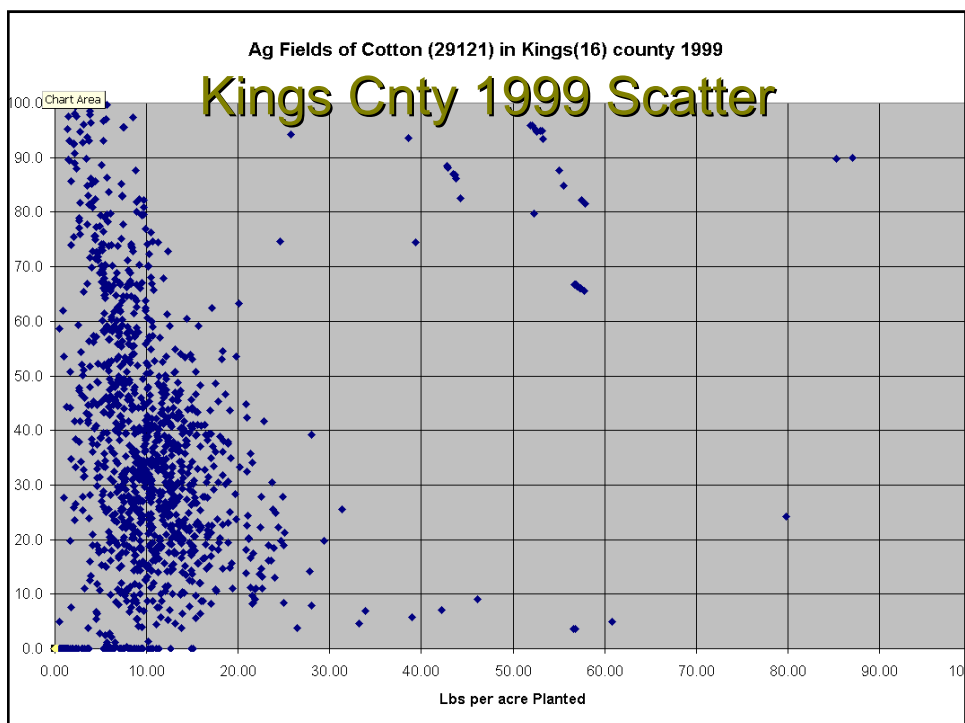
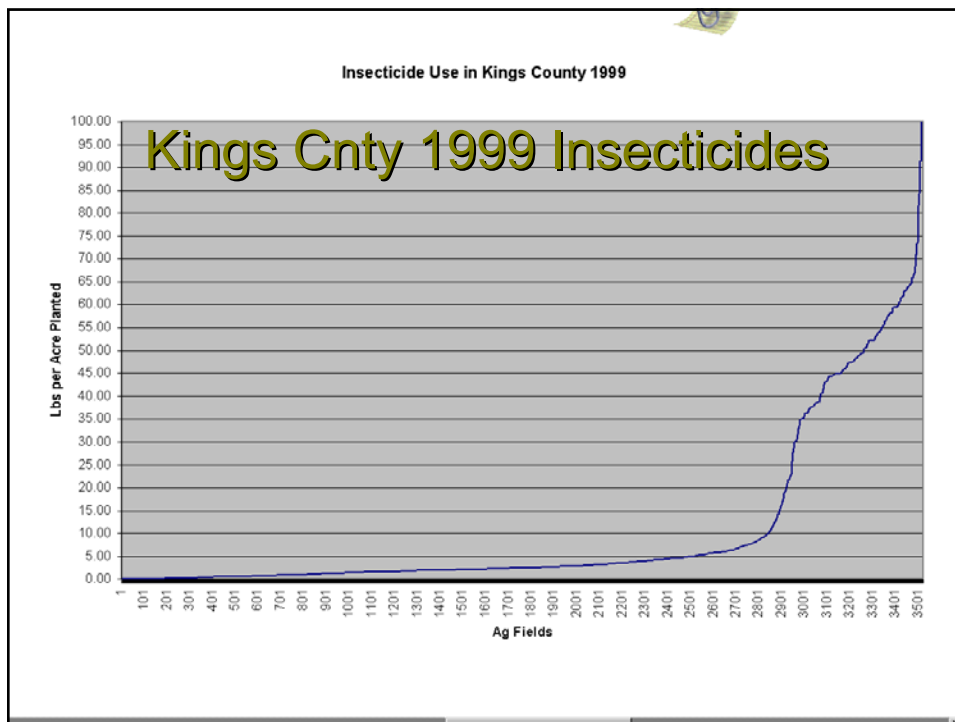


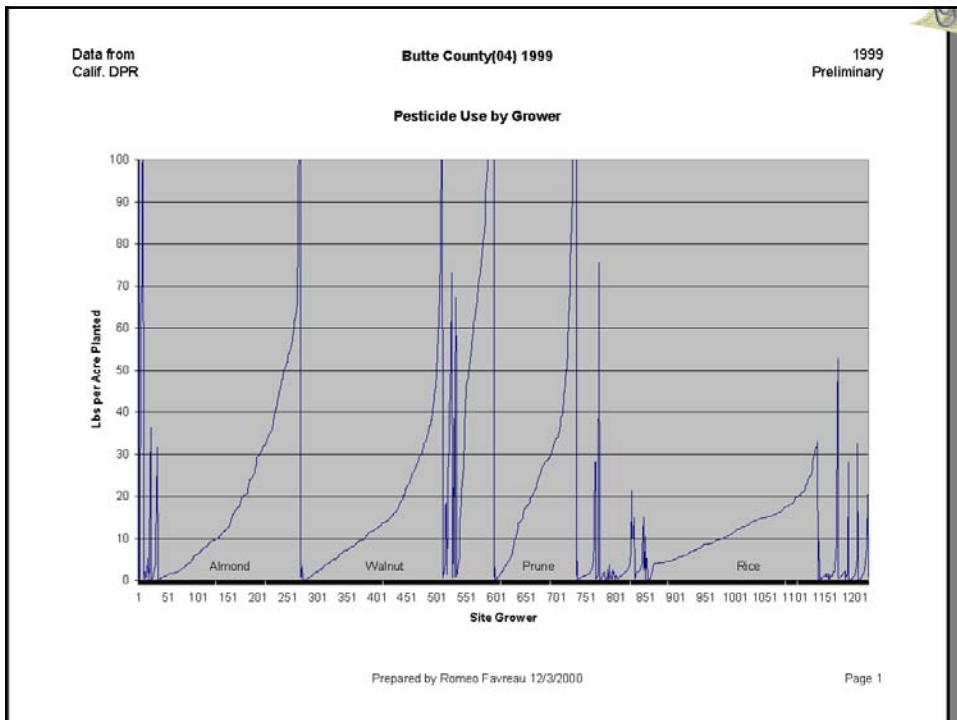
What does History tell Us ?



What does History tell Us

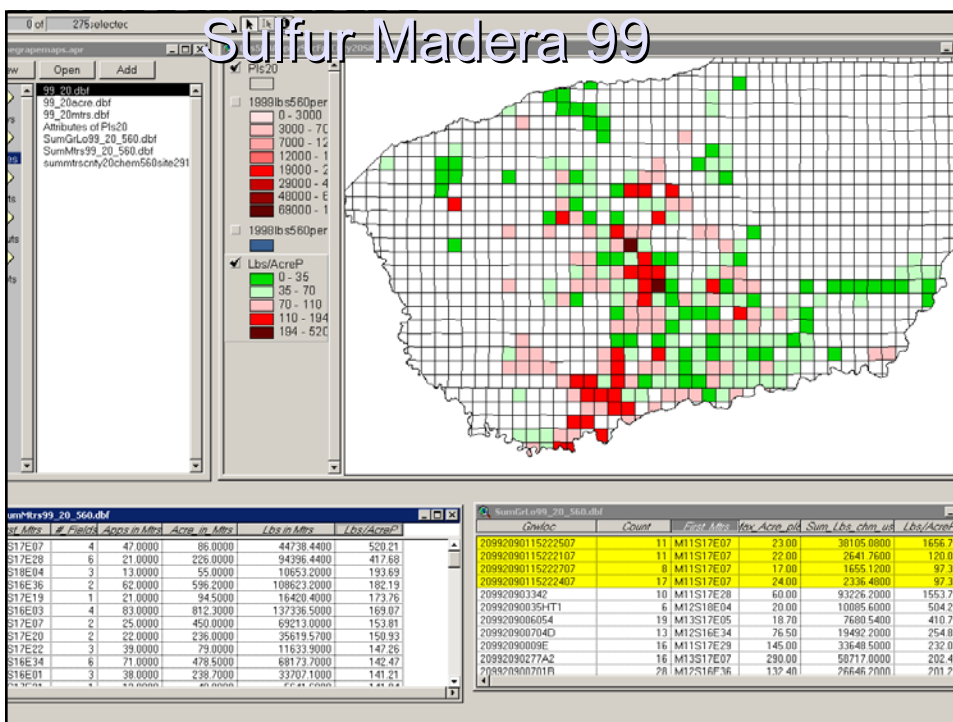
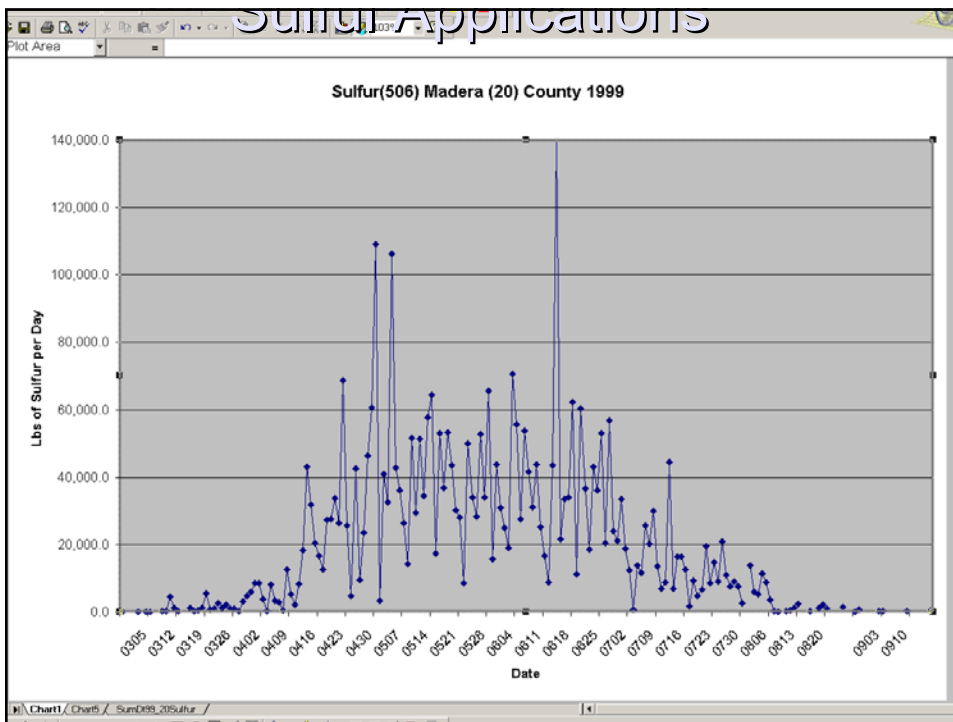






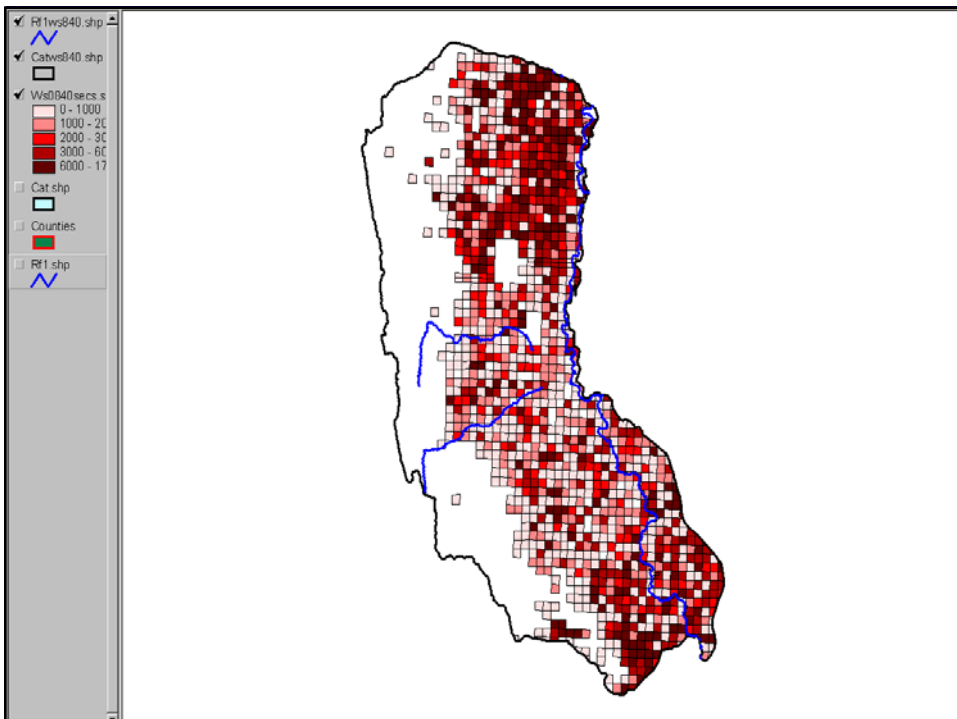
How could the PUR data be used

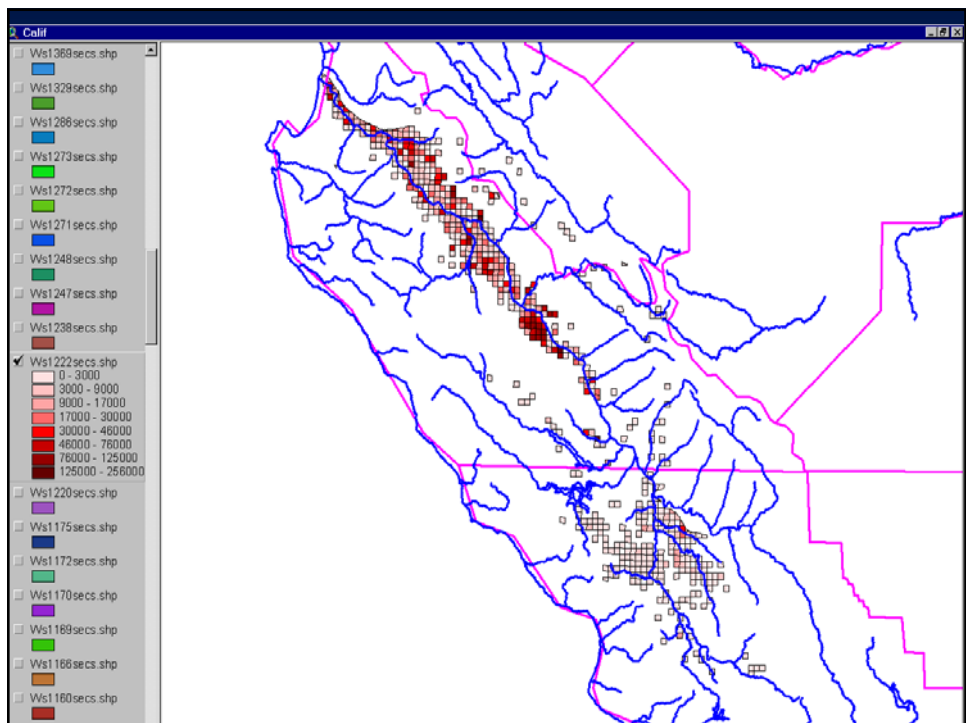
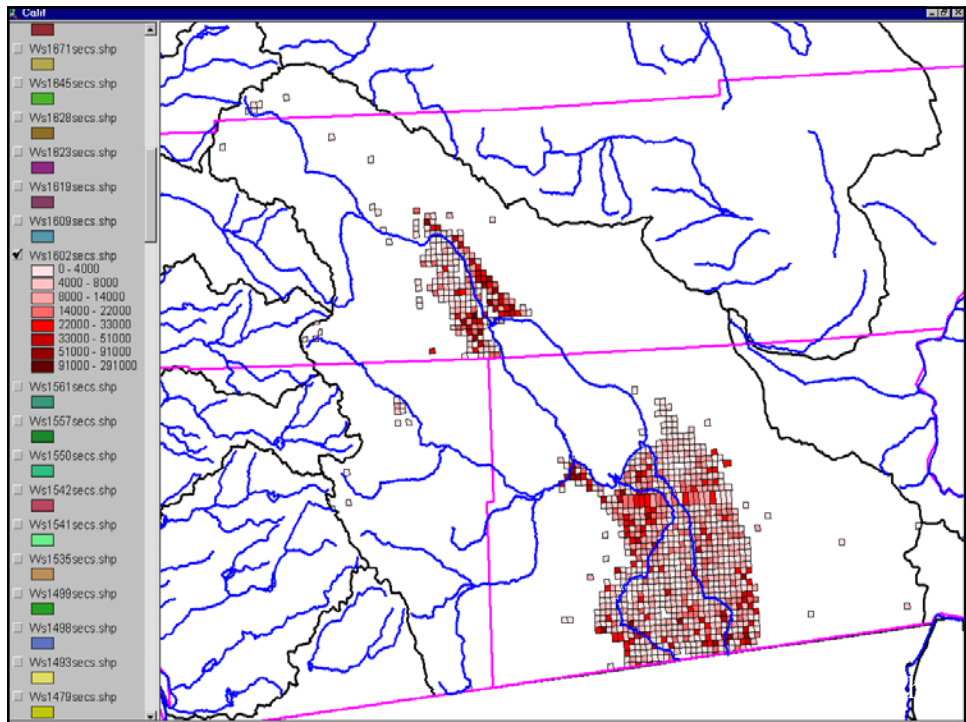
- Spatial Maps by Counties



How could the PUR data be used

- Spatial Maps by Watershed





Agricultural Production Data & Pesticide Use Data

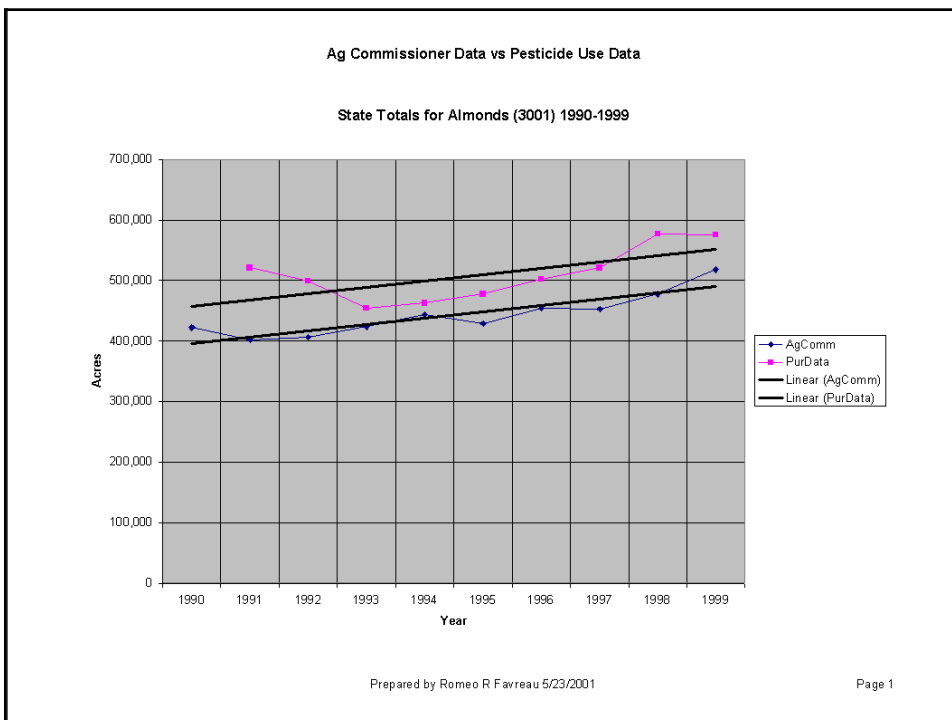
- Are both reported to the State by County
- But by Different Systems
- We present Crop Production vs Pesticide Use
- Planted Acres vs Harvested Acres
- Provides some measure of control

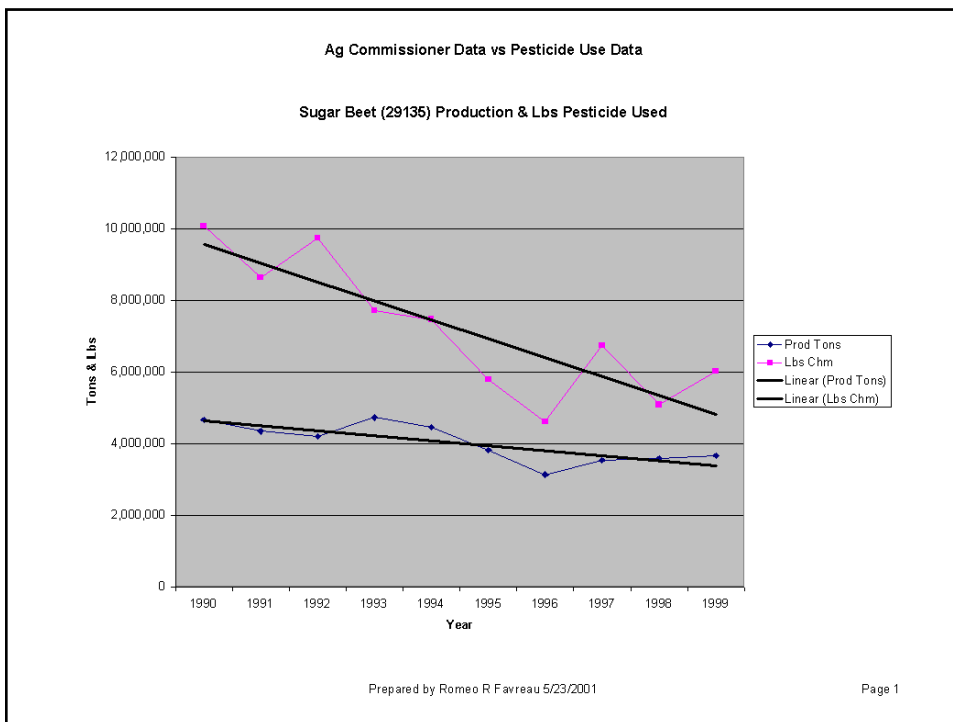
Agricultural Production Data

- Assembled by Dept of Food & Agriculture
- Obtained from County Ag Commissioner Annual Report
- Data includes Harvested Acres
- Also Production, Yield, and Value

Pesticide Use Data

- Assembled by Dept. Pesticide Regulation
- Data on Amount and Type of Pesticide used
- Data includes Planted Acres
- Data on Location and Crop and Acres Treated
- Reported to County Ag Commissioner
- From Pesticide Use Reports
- Submitted by Growers and C P(esticide) A's





Selecting Growers for Diazinon Outreach Program

Romeo R Favreau

Vision Statement

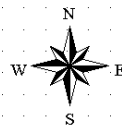
- We would like to identify Growers of Stone Fruit Orchards who have the greatest potential of reducing Diazinon runoff.

Goal and Objective

- Develop a list of Growers by county that have the highest potential of reducing Diazinon runoff
- Ask the county Ag Commissioners to convert grower_ids to one or more mailing lists
- Reduce the # of required Outreach courses

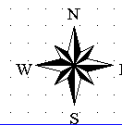
A map of California showing its county boundaries. The counties in the Sacramento Valley are highlighted in yellow. These counties are: Tehama, Butte, Glenn, Colusa, Yuba, Yolo, and Sutter. Other labeled counties include Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Sierra, Nevada, Placer, El Dorado, Sacramento, Solano, Napa, Lake, and Mendocino. A scale bar at the bottom indicates 100 miles.

Counties

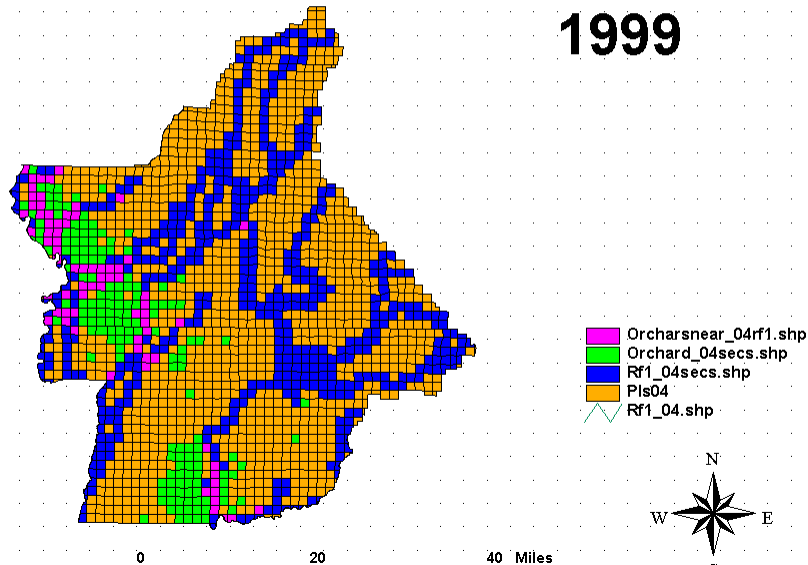


100 0 100 Miles

30 0 30 60 Miles



Butte Cnty Sections Near Rivers (Rf1) with Stone Fruit Orchards 1999



What have I learned from Working with Pur Data

- ☐ Databases are the key for Enviromental Management
- ☐ Computer technology is still advancing at a dizzying pace
- ☐ Data by itself has limited value, and its value decreases with time
- ☐ Real-time Analysis and Feedback to responsible managers should help attain goals