

January 2, 2003

Dear Wisconsin Apple Growers Association member:

We are excited to launch a new WAGA initiative to help us better understand how we grow apples in Wisconsin, how we might improve production as an industry and identify new marketing opportunities for our apples.

This first stage of this project requires that we better understand how we are managing our orchards. The information that you provide on the enclosed survey will help us set a base line to measure progress.

**PLEASE FILL OUT THE SURVEY AT YOUR EARLIEST CONVENIENCE and return it to Anna Maenner, WAGA, 211 Canal Road, Waterloo, WI 53594. The survey has a postage paid and addressed envelope to use when returning the completed survey.**

All information you provide will be kept confidential and will remain the property of the Wisconsin Apple Growers Association. The University of Wisconsin will assist us in analyzing and compiling your responses. We will share the survey results with you in an up-coming WAGA newsletter but information from individual farms will not be identified by farm in any reports.

Based on the experience of the Wisconsin Potato and Vegetable Growers Association, we are investigating various marketing strategies linked to the information you provide. Our exploratory team is Dave Flannery, Wendy Schaefer, Bill Stone, Anna Maenner, Dan Mahr, Patty McManus, Teryl Roper, Matt Stasiak, Sheri Butterfield and Michelle Miller. Ask them for the latest news or watch the WAGA newsletter for more information.

Thank you in advance for promptly filling out and returning the survey.

Anna Maenner  
WAGA Executive Director

# Wisconsin Apple Growers Association / University of Wisconsin Apple IPM Standards Baseline Practices Survey 2003

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**Farm name (confidential):**

**List your most important cultivars and acres of each:**

**# of Blocks and average acreage per block:**

**Please provide information that best represents your pest management strategies in the 2002 growing season.**

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## **Pest & Disease Scouting**

1. What type of scouting did you most commonly use this past growing season?

(check only one)

- Informal during routine orchard operations
- informal orchard edge/'windshield' observation
- check hot spots or problem areas occasionally
- structured scouting program
- don't scout (skip ahead to the next section – Information sources)

2. Who scouts the orchard most frequently?

(check only one)

- Professional independent consultant
- Manager / owner trained to scout
- Employee trained to scout
- manager/owner untrained
- orchard employee untrained
- Co-op /farm supply dealer representative

3. Whose scouting data did you primarily use to make management decisions?

(check only one)

- Professional independent consultant
- Manager / owner trained to scout
- Employee trained to scout
- manager/owner untrained
- orchard employee untrained
- Co-op /farm supply dealer representative

4. If additional scouting data were taken, who provided these data?

(check only one)

- Professional independent consultant
- Manager / owner trained to scout
- Employee trained to scout
- manager/owner untrained
- orchard employee untrained
- Co-op /farm supply dealer representative

5. How many scouting trips were made during each of the following stages of tree growth?

(enter number of trips on all that apply)

- dormant to silver tip
- green tip
- half-inch green
- tight cluster
- pink
- bloom
- petal fall
- first and second cover (7-10 after petal fall and 7-10 days later)
- third cover (10 days after second cover)
- remainder of the summer

6. What tools and techniques did you use to collect pest management information?

(check as many that apply)

- Pheromone/visual traps
- weather monitoring equipment
- infield formal pest counts that use research based sampling techniques
- infield informal observation
- hand lens
- other (please specify)

7. Why is your orchard scouted?

(check as many that apply)

- Determine if pest threshold met or exceeded
- reduce pesticide usage
- check effectiveness of pest control action taken earlier
- in response to pest report
- monitor spots where pests have been or are currently a problem
- other – please explain

8. Which of the following best represents how you kept track of the scouting information collected in this block?

(check only one)

- No scouting records were kept
- Written records were kept
- Written records were organized so we could track changes in pest pressure over time
- Records were kept electronically on a computer or handheld (palm pilot)
- We charted scouting data to an orchard map to help identify hot spots and identify general patterns of change

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### Information Sources

9. What weather data do you collect on your farm or use in making pest management decisions?

(check all that apply)

- Degree days
- rainfall
- temperature
- relative humidity
- daily maximum / minimum
- wind direction
- wind speed
- none
- other (please specify)

10. What local area weather data are used in making pest management decisions?

(check all that apply)

- Degree days
- Rainfall
- Temperature
- relative humidity
- wind direction
- wind speed
- none
- other (please specify)

11. Weather data are used to make pest management decisions for:

(check all that apply)

- weeds
- insects
- diseases
- harvest
- pollination
- thinning
- reduce drift
- none

12. Are models / computer programs used in making pest management decisions for:

(check all that apply)

- apple scab (Mills chart, software program)
- fireblight (MARYBLYT, etc.)
- summer diseases
- insects (plum curculio, codling moth, etc.)

13. What information opportunities do you or your employees participate in?

(check all that apply)

- National meetings
- WI state meetings
- WI regional meetings
- state meetings other than WI
- regional farmer networks
- informal visits to other orchards in the state
- other – please explain

14. Are you working with the University in on-farm research or demonstration?

(check only one)

- Yes, currently
- Yes, in the past
- No, but I would be interested
- No, I am not interested

15. What types of information sources do you use in making pest management decisions?

(check all that apply)

- Other growers

- UWEX pest bulletin
- area pest notification - call in
- area pest notification – email
- area pest notification - website
- private consultant
- governmental (UW Extension, Agricultural Research Stations, etc.)
- industry pest bulletin
- co-op / farm supply dealer representative
- other (please specify)

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## Orchard Management

16. How did you establish your most recently planted trees?

(choose only one)

- remove fall and replant following spring
- minimal rotation (i.e. let field sit fallow at least one growing season)
- two year or more intensive rotation (use of cover crops like wheat, canola, sorghum/sudan) to reduce pathogen populations

17. Did you use any virus-free certified nursery stock?

(choose only one)

- all
- some
- none

18. What percent of your orchard is planted in the following density categories

(indicate percentage next to the categories)

- Standard/seedling rootstock (< 125 trees/acre)
- semi-dwarf free standing (125-200 trees per acre)
- semi dwarf supported (200-350 trees per acre)
- full dwarf supported (>350 trees per acre)

19. What percent of your orchard(s) is pruned annually?

(check only one)

- At least half
- at least 75%
- 95% or better

20. Do you prune in the summer?

(check only one)

- All the orchard
- Some of the orchard
- None of the orchard

21. If you pruned, what are your management objectives in summer pruning?

(check all that apply)

- enhance light penetration
- manage tree size
- improve, optimize or increase spray penetration
- fire blight removal

22. How do you primarily manage crop load?

(check only one)

- Some pruning done with cropload management in mind
- rely mainly on hand thinning to reduce crop load
- rely mainly on chemical thinning to reduce crop load
- some combination of chemical and hand thinning is used

23. Which chemical thinner do you mostly use?

(check only one)

- None
- NAA (Fruitone-N, etc.)
- NAD (Amid-Thin)
- Carbaryl (Sevin)
- Beenzyladenine (Accel)

24. Do you use other plant growth regulators in the orchard? Please write in below.  
(See list on page 15-17)

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### **Storage**

25. What percent of your crop is stored for longer than one month after harvest?

26. What month is the last of your stored crop released from storage?

27. What type of storage facilities do you mostly use?

(check only one)

- adjustable temperature
- adjustable temperature and humidity
- controlled atmosphere (CO<sub>2</sub>/O<sub>2</sub> / N<sub>2</sub> control)

28. What measures are used to prevent/reduce post-harvest disease?

(check all that apply)

- Surface sterilization (i.e. chlorine dip in dump tank)
- post harvest fungicidal dip
- pre-harvest late season in field fungicide application
- biological post-harvest application
- defect sorting
- MCP
- None of the above
- Other (please specify)

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### General Pest Management Decisions

29. In general, what is your philosophy toward pest management?

(check only one)

- mainly chemical control based on calendar or plant stage
- mainly chemical control based on occasional scouting
- combination of chemical & non-chemical (cultural, mechanical, beneficial insects, etc.) based on scouting and monitoring
- mainly non-chemical control of pests

30. Are pesticide applications regularly eliminated when:

(check all that apply)

- critical control period is nearly over and cost of application may have exceeded benefit gained
- allowing natural control to develop
- damage not sufficient to justify cost of application (material + labor + equipment costs)
- scheduling / weather conflicts prevent application

31. Are you or any of your employees certified as a pesticide applicator?

(check only one)

- yes
- no

32. How often is your sprayer calibrated?

(check only one)

- never
- occasionally, but less than once per year
- annually
- regularly during season

33. When you use pesticides, how do you decide which pesticide to use?

(Rank in order of importance, with “1” indicating most important, 2 less frequent, etc.)

- Salesperson recommendation
- grower recommendation
- Cost
- Least toxic to applicator (ie: choose pesticides with caution signal word on label before choosing product with “warning” or “danger” signal words)
- Least toxic to beneficial insects
- Used product in the past
- Other (please specify)

34. Do you use reduced-rate applications? (ie: apply less than the rate recommended on the label?)

(check only one)

- Always
- Sometimes
- Rarely
- Never

35. Do you use any of the following partial application strategies?

(check all that apply)

- Spot treatment of problem trees in the orchard
- Perimeter row applications
- Alternate row middle applications

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### **Insect Management Decisions**

36. Which best describes your approach to application of insect controls?

(check only one)

- Calendar schedule
- seasonal/tree phenology based schedule
- monitor/scout for emergence or pest build up then treat

- monitor/scout for emergence or pest build up then treat based on threshold

37. Which of the following tools or techniques do you use in making insect management decisions?

(check all that apply)

- Pest history
- trapping (pheromones)
- degree-day predictive models
- scouting/monitoring

38. Have you used biological or non-insecticide controls for the following direct fruit pests?

(check all that apply)

- Codling moth (e.g. mating disruption, 'attract and kill', etc.)
- apple maggot (e.g. trap out, picking up drops)
- Oblique banded leafroller (e.g. Bt application)

39. Have you used biological, low-impact or non-insecticide controls been for the following indirect fruit pests?

(check all that apply)

- European red mite (e.g. delayed dormant oil applications)
- summer oil applications
- release of predatory mite or insects
- conservation of biological control (e.g. avoid using pesticides that disrupt mite predators)
- Spotted tentiform leafminer (e.g. avoid petal fall insecticide applications to enhance parasitic control)

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### **Disease Management Decisions**

40. Which of the following tools or techniques do you use in disease management?

(check all that apply)

- Cultural/mechanical - removal of drops, annual pruning for increased airflow removal or onsite destruction of prunings,
- cutting and destroying fireblight strikes.
- Chemical – fungicides, bactericides, nematicides, growth regulators (e.g. Apogee for fireblight control)

41. Which of the following describes your use of fungicides?

(check all that apply)

- Protectant fungicides applied season long,

- protectant fungicides applied during primary scab season
- both protectant and post infection fungicides applied during primary reduced fungicide applications after primary scab season

42. Do you make an effort to reduce over wintering scab inoculum?

(check all that apply)

- Rake, shred or mow leaves in late fall
- Liquid urea applications to speed decomposition

43. What percent of acreage is planted to scab resistant varieties? (list %)

44. How many fungicide applications do you make on average per year?

45. Which of the following do you use to manage fireblight infection?

(check all that apply)

- Monitor and prune out infections
- apply copper at dormant/¼ green
- resistant cultivars and/or rootstocks
- apply a bactericide (streptomycin) to reduce infection
- growth regulator (Apogee) application(s) to reduce shoot growth and spread of shoot blight

46. How do you most commonly use the bactericide (streptomycin) for fireblight control?

(check only one)

- None applied
- use forecasting program (e. g. MARYBLYT) to time applications
- applied only during bloom period
- applied during bloom and at other times during the season

47. Which of the following do you use to control summer diseases?

(check all that apply)

- Maintain open tree canopy to enhance air movement
- eliminate alternate host nearby (brambles in fence rows, etc.)
- calendar application of protectant fungicide (e.g. captan+Topsin M, etc.)
- fungicide applications made according to wetness model (hrs. wetness after petal fall)
- limited (1-3 sprays) fungicide applications timed when conditions are favorable for disease development

## Orchard Floor Management

48. How do you maintain your orchard floor?

(check all that apply)

- Completely bare orchard floor maintained with cultivation or herbicide sod middle with cultivated strip under trees
- sod middle with herbicide strip under trees
- sod middle with weed free strips mulched or composted under trees
- sod middle clippings directed under trees

49. Describe the typical ground cover in the drive middle of your orchard.

(check only one)

- none
- wild species that have been allowed to establish on their own
- sod planted and maintained with dwarf or similar grass species
- sod planted with other grass species

50. What type(s) of herbicides are used for orchard floor management?

(check only one)

- Contact (post-emergent)
- pre-emergent
- contact and pre-emergent
- none

51. Do you use any of the following practices?

(check all those that apply)

- Rotate herbicide chemistries to avoid resistance or to avoid build up of tolerant species and chemical build up
- effort is made to manage weeds seasonally or when competition is most detrimental.

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## Soil and Water Quality (Soil, Water, & Nutrient Management)

52. I take soil samples and analyze them:

(check only one)

- Before planting new orchards
- occasionally during the life of an orchard
- at least every one or two years
- only if I detect a problem
- never

53. I take foliar samples and analyze them:

(check only one)

- multiple times in a season
- Annually
- Occasionally
- Never

54. Do you make allowances for soil types and variety differences when sampling for soil and foliar analysis?

- Yes
- No

55. How do you usually determine fertilizer rates?

(check only one)

- Tree growth and fruit size only
- Tree growth and foliar analysis
- soil and foliar analysis recommendations
- soil and foliar analysis recommendation with variable rates for different blocks

56. Do you use any of the following practices to build soil organic matter, biological diversity, and enhance soil and water quality?

(check all that apply)

- Fresh manure is applied
- compost or composted manure is applied occasionally
- compost or composted manure is applied on a regular basis
- compost or composted manure is applied before planting a new orchard

57. Which type of irrigation system do you use?

(check only one)

- Overhead (or under tree sprinklers)
- trickle/drip
- none

58. How do you usually determine irrigation frequency?

(check only one)

- Use measurements from in-field monitoring (e.g. tensiometers, gauges)
- area or local data for rainfall or evaporation rates
- calendar/predetermined by operator/manager
- crop need without measurement

Is there anything else you think is important about your pest management philosophy or strategies you would like to add?

Is there anything you would like to tell us about this project?



**CHEMICALS REGISTERED FOR USE ON APPLES IN WISCONSIN**

**COMMON NAME**

**TRADE NAME**

**FUNGICIDES:**

streptomycin	Agri-Mycin 17 Ag
fosetyl-Al	Aliette 80 WDG
Ampelomyces quisqualis	AQ10
potassium bicarbonate	Armicarb 100
triadimefon	Bayleton 50 DF
benomyl	Benlate
dicloran	Botran 75 W
captan	Captan formulations
copper hydroxide	Champ formulations
copper sulfate	Copper Sulfate
mancozeb	Dithane M-45
ferbam	Ferbam Granuflo
trifloxystrobin	Flint
paraffinic oil	JMS Stylet Oil
copper hydroxide	Kocide 101
sulfur	Kumulus DF
maneb	Maneb formulations
mancozeb	Manzate 200
thiabendazole	Mertect 340-F
harpin protein	Messenger
sulfur	Microthiol Disperss
ocytetracycline	Mycoshield Ag Terramycin
myclobutanil	Nova 40 W
hydrogen dioxide	Oxidate
mancozeb	Pencozeb formulations
metiram	Polyram 80 DF
triflumizole	Procure 50 WS
mefenoxam	Ridomil formulations
fenarimol	Rubigan 1 EC
Bacillus subtilis	Serenade
kresoxim-methyl	Sovran
dodine	Syllit 65 W
thiram	Thiram Granuflo
thiophanate-methyl	Topsin-M 70 WP
cyprodinil	Vanguard WG
sulfur	Wettable Sulfur 90 WP
ziram	Ziram formulations

**COMMON NAME****TRADE NAME****INSECTICIDES:**

thiamethoxam	Actara 25WG
avermectin B1	Agri-Mek 0.15 EC
permethrin	Ambush formulations
clofentezine	Apollo SC
esfenvalerate	Asana XL
indoxacarb	Avaunt 30WG
azadirachtin	Aza-Direct
azinphos-methyl	Azinphos-Methyl 50
carbaryl	Carbaryl formulations
formetanate	Carzol 92 SP
benzoic acid	Confirm 2F
fenpropathrin	Danitol 2.4 EC
diazinon	Diazinon formulations
dimethoate	Dimethoate formulations
Bt var kurstaki	Dipel
azadirachtin	Ecozin
endosulfan	Endosulfan 50 WSB
pyriproxyfen	Esteem 35 WP
azinphos-methyl	Guthion formulations
phosmet	Imidan 70 WP
Benzoic acid	Intrepid 2F
Bt	Javelin WG
dicofol	Kelthane MF
methomyl	Lannate formulations
chlorpyrifos	Lorsban formulations
malathion	Malathion formulations
fatty acids	M-Pede
methoxychlor	Methoxychlor 2 EC
azadirachtin	Neemix formulations
permethrin	Pounce formulations
imidacloprid	Provado
pyridazinone	Pyramite 60 WP
hexythiazox	Savey 50 DF
carbaryl	Sevin formulations
spinosad	Spintor 2 SC
superior oil	Sunspray formulations
methidathion	Supracide 25 WP
kaolin	Surround WP
endosulfan	Thiodan formulations
fenbutatin-oxide	Vendex 50 WP
oxamyl	Vydate L

**COMMON NAME****TRADE NAME****HERBICIDES:**

dichlobenil	Casoron 4 G
napropamide	Devrinol 50 DF
norflurazon	Evital 5G
2,4-D	Formula 40
fluazifop-P	Fusilade DX
isoxaben	Gallery 75 DF
oxyfluorfen	Goal XL 2E
paraquat	Gramoxone Extra
diuron	Karmex 80 DF
pronamide	Kerb 50 WP
sethoxydim	Poast
simazine	Princep formulations
pendimethalin	Prowl 3.3 EC
glufosinate	Rely
glyphosate	Roundup formulations
clethodim	Select 2EC
terbacil	Sinbar 80 WP
isoxaben + oryzalin	Snapshot 80 OF
norflurazon	Solicam 80 DF
oryzalin	Surflan AS
sulfosate	Touchdown 6 F
2,4-D	Weedar 64

**PLANT GROWTH REGULATORS:**

GBA + GA	Accel
prohexadione	Apogee
NAD	Amid-Thin-W
ethephon	Ethrel
NAD	Fruitone N
NAD	K-Salt Fruit Fix formulations
gibberellic acid	Pro-Gibb
gibberellic acid	Pro-Vide
gibberellins	Promalin
AVG	ReTain
NAD	Tre-Hold
MCP	MCP

**NEMATOCIDES:**

fenamiphos	Nemacur formulations
dichloropropene	Telone II
dichloropropene & chloropicrin	Telone C-17
metam-sodium	Vapam
oxamyl	Vydate L