

# Integrated Pest Management for Nova Scotia Grapes- Baseline Survey

This is a collaborative research project between the Hillier lab at Acadia University and GGANS/WANS to investigate potential insect threats for regional grape growers. The objective of this proposal is to develop methods for monitoring and surveying insect and mite pests within Nova Scotia vineyards. Data collecting in this initial study will enable development of an integrated pest management (IPM) strategy for the Grape Growing Association of Nova Scotia (GGANS). In order to accomplish this, key pest species distributions and regional life histories will be defined for Nova Scotia. Furthermore, the effects of variable cultural techniques between vineyards, climate and microhabitat will be used to develop economic thresholds for management and control strategies. This survey will serve as a "baseline" for current management practices for Nova Scotia Grapes. Results will be analyzed and distributed amongst the membership of GGANS/WANS. Generalized trends (i.e. percent of growers which answer a question with a particular answer) will be present in published results to benefit all members. Individual/specific grower information provided in this survey will not be published without written consent. This survey should not take more than 15 minutes of your time. You will also find a document with images of the different diseases and insects mentioned in the survey. Your participation in this survey and study are greatly appreciated!

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1. Name

2. Phone #

3. Do you have internet access?

- Yes
- No

4. Email

5. Mailing Address

6. Do you currently use weather data to forecast disease or pest treatments for your grapes?

- Yes
- No

7. How do you currently determine the need for treatments:

- crop developmental stage
- time of year
- own experience
- degree day models
- Other:

8. Do you use 'thresholds' to determine spray timing for weeds, insects or disease? threshold:  
minimum density

- Yes
- No

9. Is your vineyard adjacent to other agricultural developments? i.e. orchards

- Yes
- No

10. Is your vineyard adjacent to forested areas?

- Yes
- No

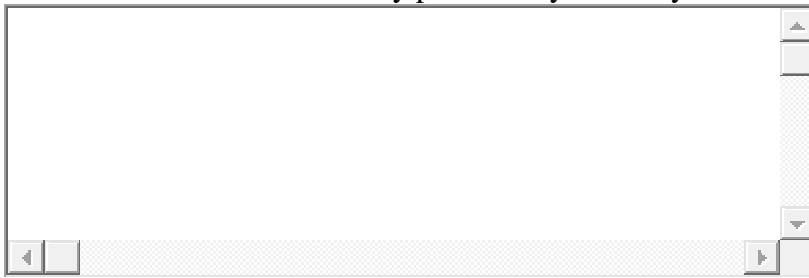
11. If 'Yes' to 9 or 10, please describe site and direction relative to your vineyard



12. What is the age range of your vines?



13. What varieties are currently present in your vineyard?



14. Are you growing any vines that are non-hybrid?

- Yes
- No

15. Current acreage?

16. Average annual harvest? tonnage or tons/acre

17. Are you a FULL TIME or PART TIME operation?

- FULL TIME
- PART TIME

18. Do you irrigate?

- Yes
- No

19. If yes on 18, what method do you use?



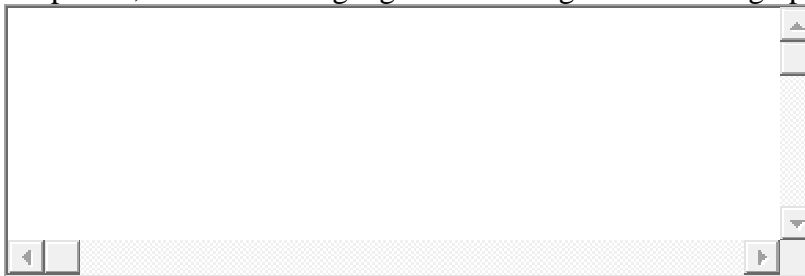
## Current Concerns

1. What is the number one factor which limits yield?

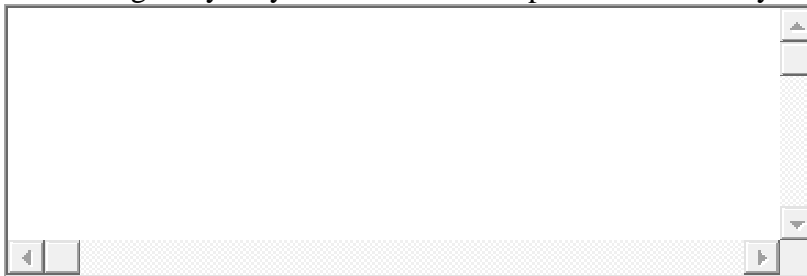
2. What is the number two factor which limits yield?

3. In your opinion, what is the single greatest 'biological' threat to grape development in Nova Scotia?

Scotia?



4. How regularly do you scout for insect pest or disease in your field?



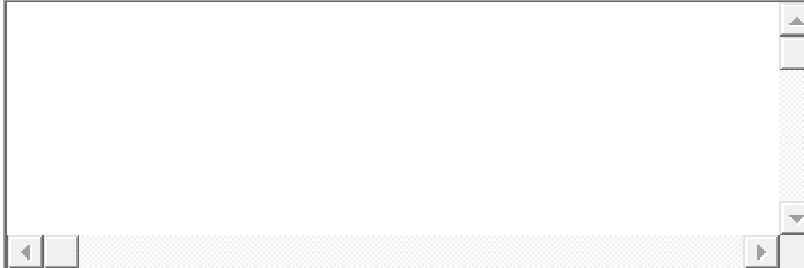
5. Have you observed insect pest associated with your grapes?

- Yes
- No

6. If so, where? you can check more than one

- On developing plants (i.e propagation)
- Attacking early buds
- Defoliating (i.e. eating leaves)
- Attacking root or stem
- Damaging fruit in field
- Contaminating production bins (post harvest
- Other:

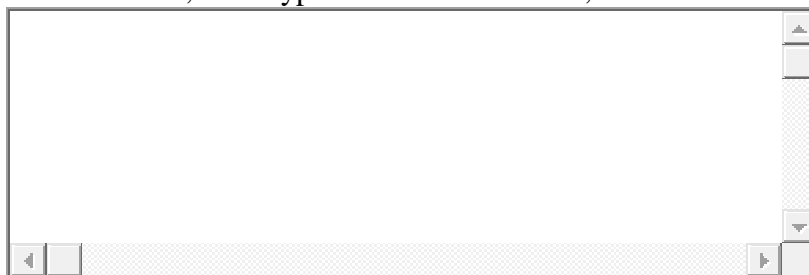
7. If 'Yes' to 5, were these pests professionally identified, and what were they? if not, please offer

a description 

8. Was the issue significant enough to require control measure?

- Yes
- No

9. If 'Yes' to 8, what type of control was used, and was it successful?



10. Are you familiar with pheromone trapping as a strategy for monitoring insect pests?

- Yes
- No

11. Did you ever use pheromone traps in the past?

- Yes
- No

12. If 'Yes' to 11, to monitor what?



13. Are you familiar with biological control strategies (i.e. introducing predators and parasitoid insects to control pest species)?

- Yes
- No

14. What insect management strategies do you currently employ: you can check more than one

- Field monitoring (scouting)
- Weed control
- Minimal pesticide application
- Economic threshold
- Biological control
- Traps
- Other:

15. Please rank the following issues within your vineyard using the following index WEEDS

Severe problem	Moderate problem	Minor problem	Present but not problematic	Not present or unsure if present
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	Severe problem	Moderate problem	Minor problem	Present but not problematic	Not present or unsure if present
Perennial broadleaf	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perennial grasses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Annual broadleaf	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Annual grasses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grapevine suckers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other weeds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. If 'Other weeds' in 15, please specify or describe. WEEDS

17. Please rank the following issues within your vineyard using the following index: DISEASES

	Severe problem	Moderate problem	Minor problem	Present but no problematic	Not present or unsure if present
Powdery Mildew	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grape Leafroll Virus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nematode-related	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Crown Gall	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Downey Mildew	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Phomopsis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Black Rot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anthrachnose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Severe problem	Moderate problem	Minor problem	Present but no problematic	Not present or unsure if present
Botrytis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eutypa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other Diseases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. if 'Other Diseases' in 17, please specify or describe DISEASES

19. Please rank the following issues within your vineyard using the following index: ANIMALS

	Severe problem	Moderate problem	Minor problem	Present but not problematic	Not present or unsure if present
Vertebrate pests (Deer, bird, etc...)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Slugs and snails	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cutworms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leaf rollers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



20. If 'Others' at 19, please specify or describe ANIMALS



21. Insects & other Arthropods: Please check the appropriate box for insect pest. "Seen it" means you have observed this pest regionally, or within NS, "Heard of it" means you recognize this as a pest in other grape areas, but have not found it within your own vineyard, and "Never heard of it" means this insect is unfamiliar to you. Refer to the document for images of insects.

	Seen it	Heard of it	Never heard of it
Grape Berry Moth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fruittree Leafroller	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Obliquebanded Leafroller	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pandemis Moth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Redbanded Leafroller	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Variegated Leafroller	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eyespotted Budmoth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grape Phylloxera	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Branch and Twig Borer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cutworms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grape Bud Beetle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grape Leafroller	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grape Leafhopper	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Orange Tortix Moth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spider Mite	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Erineum Mite	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Seen it	Heard of it	Never heard of it
European Red Mite	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grapevine Scale	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thrips	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Armyworms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blackvine Weevil	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
June Beetle (i.e. White Grubs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asian Lady Beetle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7 spotted Lady Beetle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Please rank the following sources of information for grape management decisions as:

	important	moderately important	somewhat important	not important at all
Experience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Extension (i.e. federal or provincial)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fellow Growers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
University Researchers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chemical Firm Representatives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
WANS or GGANS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Private Consultants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Industry Journals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet (broadly)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Past Work Associates	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vineyard Technical Staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. In this last section, please list any pesticides (herbicides, insecticides or fungicides) regularly used in your vineyard. If possible, please include the number of treatments required peryear, and

amount used.



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