


# Drosophila suzukii in Swiss grape production – Data from a survey on risk management strategies in 2017

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# Evaluation of the damage caused by the spotted-wing fly (*Drosophila suzukii*) on grapes (Harvest 2017)

Dear Producers,

In 2015 and 2016, Agroscope in collaboration with the cantonal services sent a survey to producers concerning the spotted-wing fly. The survey provided important insights for research, extension services and agricultural practices. The survey is now repeated for the harvest 2017. Its objectives are to evaluate the losses caused by spotted-wing fly and the different measures taken in practice. If your grapes are not affected by the spotted-wing fly, please note that your participation in this survey is of great importance to have representative and conclusive results.

Below you will find questions about the following areas:

- Varieties of prunes and surfaces
- Assessment of damage
- Measures taken against the insect
- Operational information
- Operations Manager Information

The survey takes about 25 minutes.

Naturally, your information will be treated confidentially and all data will be anonymous.

To thank you for your participation, you will receive, if you wish, an individual evaluation of the results. In addition, we invite you to participate in the draw of 4 LANDI vouchers worth CHF 50 each.

We thank you in advance for your cooperation and we invite you to contact us for any additional information!

Esther Bravin (Agroscope), Ladina Knapp (ETH Zürich)

If you have any questions, please contact:

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The survey ends on 15.12.2017.

## Grape varieties

Q1. Which grape varieties do you have on your vineyard? Please only mention the varieties with a cultivated area over or equal to 100 square meters (1000 square feet/0.4 acres) \*.

- Amigne
- Petite arvine
- Pinot noir
- Cabernet sauvignon
- Cabernet dorsa
- Carminoir
- Chardonnay
- Chasselas
- Cornalin
- Diolinoir
- Divico
- Dornfelder
- Dunkelfelder
- Gamay
- Gamaret
- Garanoir
- Gewürztraminer
- Pinot gris
- Humagne rouge
- Humagne blanche
- Mara
- Merlot
- Müller-Thurgau
- Regent
- Sauvignon blanc
- Sylvaner
- Syrah/Shiraz
- Viognier
- Pinot blanc
- Zweigelt
- Other

Q2a. Please indicate the sort of vine training system per variety\*.

Varieties	Wired vine training (Guyot, Cordon, ...)	Gobelet	Pergola
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q2b. Please indicate the cultivated area per variety (only mention areas that are bigger or equal 100 square meters) \*.

Varieties	Surface

## Estimation of infestation

Q3. How important were the frost damage this year?

Varieties	No frost damage	Partial damage due to frost	Total loss due to frost
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q4 .Which percentage of the yield per variety was infested with acetic acid rot?

Varieties	No acetic rot	Up to 5% acetic acid rot	Between 5% and 12.5% acetic acid rot	Between 12.5% and 25% acetic acid rot	Between 25 % and 50% acetic acid rot	Between 50% and 75% acetic acid rot	Over 75% acetic acid rot
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q5a. How high (in percent) was the infestation by spotted-wing drosophila per grape variety in 2017?

Varieties	No infestation	Up to 5%	Between 5% and 12.5%	Between 12.5% and 25%	Between 25 % and 50%	Between 50% and 75%	Over 75%
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q5b. Did you abort the harvest?

Varieties	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

Q6. How did the infestation of the spotted-wing drosophila manifest?

- Attested egg deposition (oviposition)
- Attested larvae/pupae
- Puncture holes
- Dripping fruits
- Acetic acid smell
- I don't know

I did not notice

Other

Q7a. Did you sort the vines after the harvest normally?

Varieties	Harvest by machine	Harvest sorted normally	Harvest sorted due to the spotted-wing drosophila
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q7b. How much more time (in percent) did you need to sort the vines due to the spotted-wing drosophila?

Varieties	Additional time (in %)

Q8. Was the grape quality upon delivery in the year 2017 subject to complaints due to infestation with spotted-wing drosophila?

Varieties	Yes	Partially	No
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Measures against infestation

Q9. Which strategies against the spotted-wing drosophila did you choose for each vine variety? \*

Varieties	Preventive measures	Control of infestation	Installation of nets	Mass collection of flies with traps	Insecticides	Early harvest	None of these strategies used	Other
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q9other. Which other measures did you take per vine variety?

Varieties	Other measure

Q10. Which preventative measures did you take?

Pinching back of foliage

Yield regulation before color change

- No spreading of pomace near non-harvested parcels
- Mowing/mulching
- Early harvest
- Clean harvest of every fruit (no residual fruits)
- Harvest residue removed from the vineyard
- Harvest residue mulched
- Other

Q11. How did you control the infestation?

- Visual control
- Control of the oviposition with binoculars
- Control through specialist units
- Traps
- Salt-test, soap-/warm-water control
- Other

Q12. What's the concept of weather and insect net protection for your installation?

Varieties	Hail protection	Bird protection	Lateral insect nets	Netting of specific rows with insect nets	Netting of multiple rows with insect nets
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q13. What's the mesh size of your nets?

- Insect net (<1.2mm)
- Close-meshed bird net (3.5mm-8mm)
- Hail net (3mm-9mm)
- Wide-meshed bird net (3cm-5cm)
- For bigger mesh sizes, please indicate the mesh size below

Q14. Use of insecticides: Which substances did you use against the spotted-wing drosophila and how often per year? Please indicate the number of treatments in the field on the right hand side.

Insecticides	Number of treatments per year
<input type="checkbox"/> Kaolin (e.g. Surround)	
<input type="checkbox"/> Spinosad (e.g. Audienz*)	
<input type="checkbox"/> Acetamiprid (e.g. Gazelle SG*)	
<input type="checkbox"/> Pyrethrine e.g. Parexan N* or Pyrethrum*)	
<input type="checkbox"/> Other :	

*\*or other commercial products with a similar active substance.*

Q15. How satisfied are you with your chosen strategies per variety? (1=very unsatisfied, 5=very satisfied)

Varieties	1 (very unsatisfied)	2	3	4	5 (very satisfied)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q16. If you weren't satisfied, what would you do differently in the future?

Q17. How will you minimize the infestation with spotted-wing drosophila in the future?

- Clearing of susceptible varieties
- Insecticides
- Nets
- Traps
- Kaolin
- Slaked lime
- Pinching back of foliage
- No measures necessary
- Other

Q18. Where do you get your expertise about the spotted-wing drosophila?

- Leaflets and information from Agroscope
- Leaflets and information from the cantonal specialist units
- Cantonal orcharding meetings
- Specialist articles/journals
- Plant protection news for fruit and vine cultivation
- AGRIDEA
- Internet
- Other producers
- Private sector (buyers, suppliers)
- Consulting from plant protection firms
- Others (e.g. special symposiums)

Q19a. Are there any of the following elements in a 100m radius around your installations?

- Edge of the forest

- Hedges
- Waters
- Cultivated high-trunk fruit trees
- Uncultivated high-trunk fruit trees
- Compost heap
- Fruit- or berry production
- House garden
- Building
- Host plants (e.g. elder shrubs, blackberries, wild cherries)
- Flower strips for pollinators and other beneficial insects
- Fallows
- Seams on arable land
- Native, suited single trees and alleys
- Others

Q19b. How do the elements from above influence the infestation with spotted-wing drosophila in your opinion?

	No influence	More infestation	Less infestation	I don't know
Edge of the forest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hedges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Waters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cultivated high-trunk fruits trees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Uncultivated high-trunk fruit trees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compost heap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit or berry production	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
House garden	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Host plants (E.g. elder shrubs,blackberries,wild cherries)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flower strips for pollinators and other beneficial insects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fallows	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Seams on arable land	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Native, suited single trees and alleys	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q20. Do you have special findings regarding the spotted-wing drosophila?



## Information about the farm

Q21.To link your infestation with the weather data from your region, please fill in your post code below\*.

Q22. How high is your expected yield loss caused by the spotted-wing drosophila for the next harvest?

0%	1-5%	6-10%	11-15%	16-20%	21-25%	26-30%	>30%
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q23.How much additional cost (in percent) do you expect in the coming year for the different measures you will take against the spotted-wing drosophila?

0%	1-5%	6-10%	11-15%	16-20%	21-25%	26-30%	>30%
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q24. What's the focus of your farm? (You can only chose one focus of production.)

- Viticulture
- Orcharding and viticulture
- Stone fruit production (cherries/plums/apricots)
- Pome production (apples/pears)
- Pome and stone fruit production
- Mixed Farm; viticulture and livestock farming
- Others

Q24b.Please specify:

- Stone fruit production (cherries/plums/apricots)
- Pome production (apples/pears)

Q25. Do you manage your farm organically?

- Yes
- No

Q26.How many units of standard manpower does your farm have?

Q27. What's your total farmland in 100's of square meters?

Q28.Which share of your farmland are you leasing?

- 0-25%
- 26-50%
- 51-75%
- 76-100%

Q29.How are you marketing your vines (in percent)?

Sale as grapes :

Sale as wine :

Q29a. Grape marketing: How exactly? Please indicate the share of the total marketing in percent.

Sale	Percentage
Sales to winemakers	
Sales to cooperatives	
Sales to commerce	

Q29b. Wine marketing: How exactly? Please indicate the share of the total marketing in percent.

Sale	Percentage
Direct marketing	
Sales to commerce	
Sales to major distributors	
Sales to gastronomy	

Q30. Do you have a hail insurance?

Yes

No

Q31a. Which hail insurance do you have? (Please only select one answer.)

I got the hail insurance "standard" (Swiss Hail)

I got the hail insurance "enhanced" (Swiss Hail)

I got the hail insurance "standard" (Swiss Hail) with the complementary frost insurance

I got the hail insurance "enhanced" (Swiss Hail) with the complementary frost insurance

Q32. Which of the following strategies are you employing on your farm?

Agriculture-related diversification (e.g. agrotourism)

Working off-farm (e.g. consulting, tourism)

Creation of financial reserves (saving for bad times)

Off-farm investments (e.g. other companies, real estate)

Processing and direct marketing

Forestry work

Other strategies

## Information about the farm manager

Q33. Which percentage of your earnings are from farming?

- 0-25%    26-50%    51-75 %    76-100 %

Q34. How much is the viticulture contributing to your earnings (in percent)?

- 0-25%    26-50%    51-75 %    76-100 %

Q35. Your sex

- Female  
 Male

Q36. In which year are you born?

Q37. Do you have a successor to your farm?

- Yes  
 No

Q38. Are you willing to take risks or do you try to mitigate risks in the areas mentioned below? \*

*Please indicate on the scale below. The value of 0 stands for "not willing to take a risk at all" and the value 10 for "very willing to take a risk". With the values in between you can grade your assessment.*

Production	not willing	0	1	2	3	4	5	6	7	8	9	10	very willing
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Market and prices	not willing	0	1	2	3	4	5	6	7	8	9	10	very willing
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
External financing	not willing	0	1	2	3	4	5	6	7	8	9	10	very willing
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Agriculture in general	very willing	0	1	2	3	4	5	6	7	8	9	10	very willing
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

## Concluding questions

Q39. Would you like to receive the results of the survey? We'll send you an individual evaluation. If you're interested in this, please submit your E-Mail address below\*<sup>1</sup>.

- Yes  
 No

<sup>1</sup> \*Mandatory questions

Q40. Would you like to participate in the lottery of 4 LANDI vouchers valued at CHF 50 each? If yes, please submit your E-Mail address below\*.

Yes

No

Q41. If yes, please let us know your E-Mail address:.....

Q42. Do you have any comments?

Thank you for your participation. We will treat your personal data as strictly confidential. If you have any questions or comments, please contact:

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If you left us your e-mail address and asked for an individual feedback, we will send you an individual feedback. If you are the lucky winner of the draw, we will notify you of course.

You can now close the Internet browser.