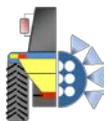


DOSAVIÑA – New APP for a more sustainable use of PPP in vineyard

Emilio Gil & Jordi Llop

Universitat Politècnica de Catalunya
Department of Agri Food Engineering and Biotechnology

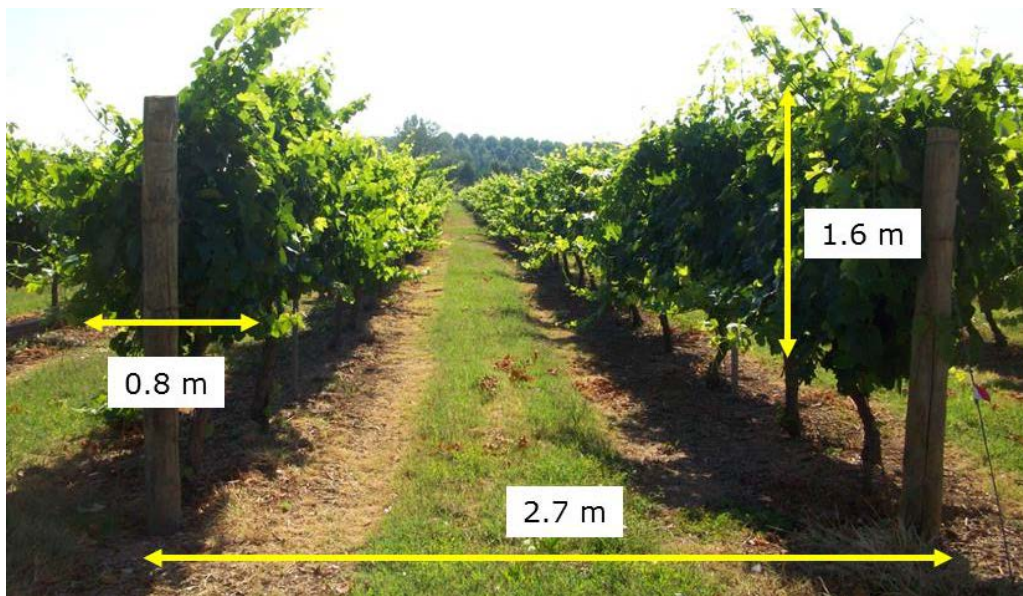


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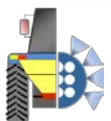
The problem...



CULTIVO	ENFERMEDAD
Cebolla	Mildiu
Lechuga	Mildiu
Pepino	Mildiu
Patata	Alternariosis y Mildiu
Tabaco	Moho azul
Tomate	Alternariosis, Mildiu y Septoriosis
Viña	Mildiu

TIPO DE APLICACIÓN	DOSIS RECOMENDADA
Aplicar en pulverización foliar normal, mojando uniformemente la parte aérea del cultivo	200-300 g por 100 l de agua. Max. 2,5 kg/ha

Dose expression unclear !!!



Do we need the same amount of PPP & water (l/Ha?)



No

Is sprayer's type affecting efficiency?



Yes



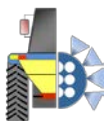
Does working parameters affecting the spraying quality?

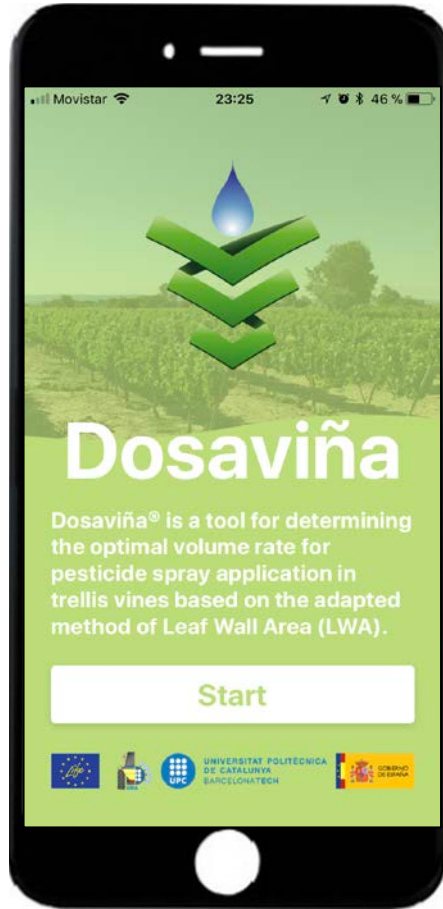


Yes



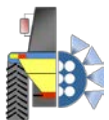
Ex. 1 Ha



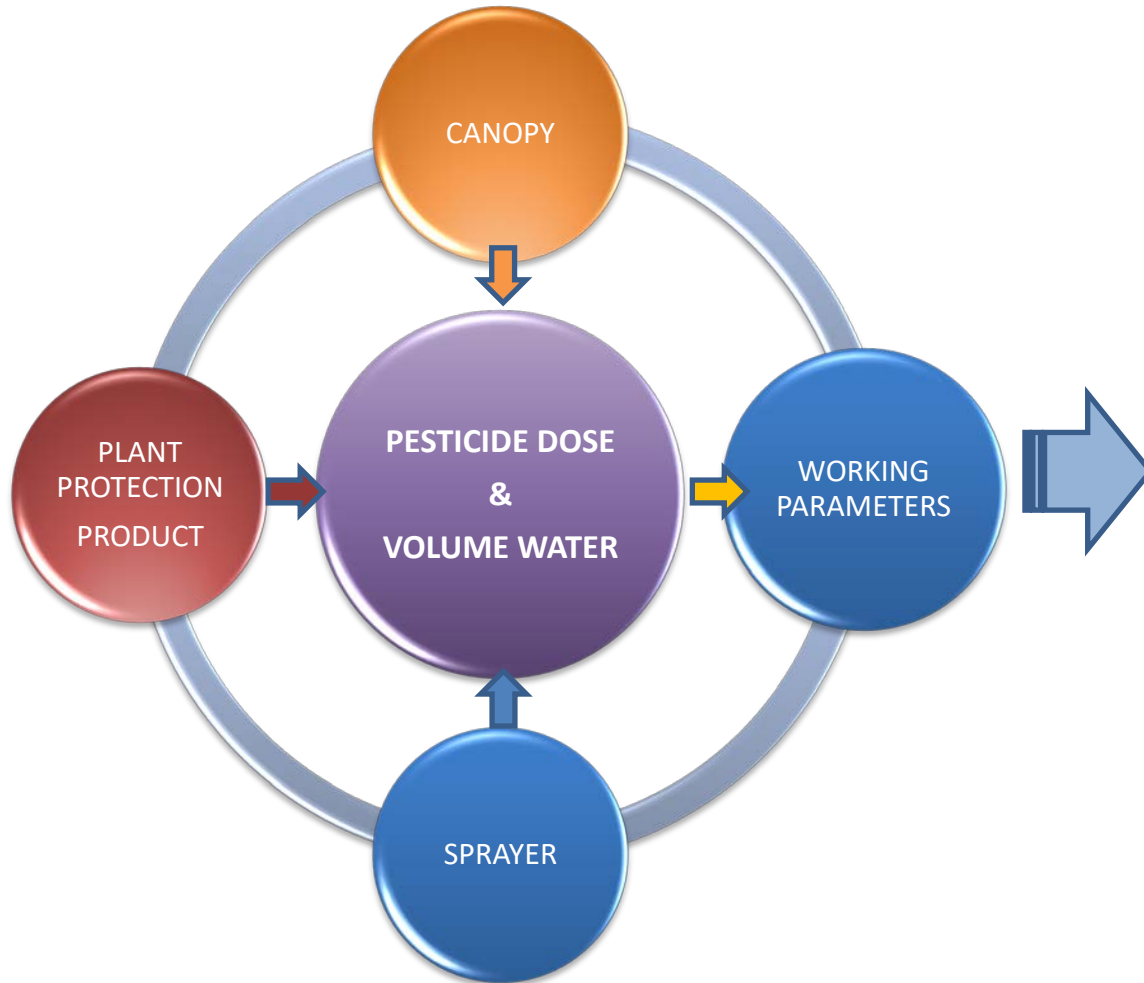


Dosaviña® is a tool (APP and webste) for determining the optimal volume rate for pesticide spray application in trellis vines based on the adapted method of Leaf Wall Area (LWA).

Dosaviña® allows to determine the suitable parameters for a correct spray application (forward speed, working pressure, type and number of nozzles). **Dosaviña®** can also be used for the calibration and adjustment of equipment in other tree/bush crops. **Dosaviña®** has been developed by the Agricultural Mechanization Unit of the Polytechnic University of Catalonia



Determination of optimal pesticide dose and volume rate (considering canopy, sprayer & pesticide)



Practical recommendations (nozzles, pressure, fwd. speed...)

Dosavina 15/8/18 10:44

Date: 15/08/2018
Name: _____

Characteristics of the vegetation:

a) Distance between rows: 10.8 ft
b) Canopy height: 3 ft
c) Canopy width: 3.3 ft
Canopy density: Dense

Characteristics of the treatment:

Fwd. Speed: 3 mph Volume: 22 gal/acre
Pressure: 223.4 psi Working width: 9 ft

Selected nozzles: 4 nozzles

Code/Colour	Type	Flow rate	Nº nozzle	Drop size
ISO 015	Low drift nozzle	0 gal/min	4	G

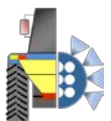
Dosage of pesticide:

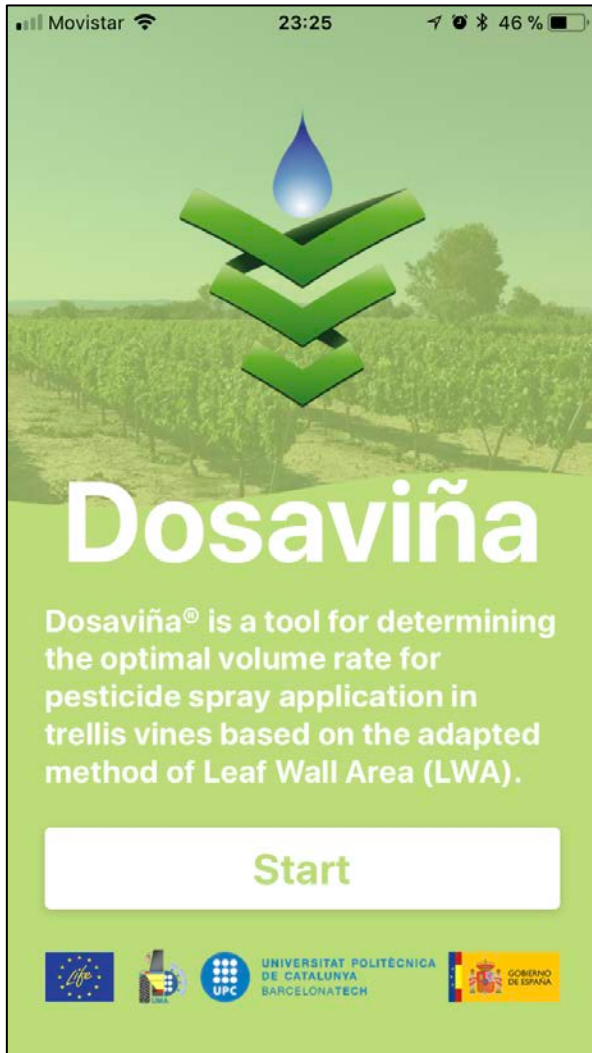
Pesticide: _____
Pesticide dose: 2 oz-lb/acre
Maximum pesticide dose: 3 oz-lb/acre
Amount of pesticide per tank: 11.4 oz-lb / tank

Logos: European Union, UPC, Universitat Politècnica de Catalunya, Barçelonatech, Gobierno de España, Ministerio de Agricultura, Pesca y Alimentación.

<https://dosavina.upc.edu/> Página 1 de 1

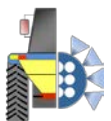
<https://dosavina.upc.edu>



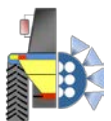
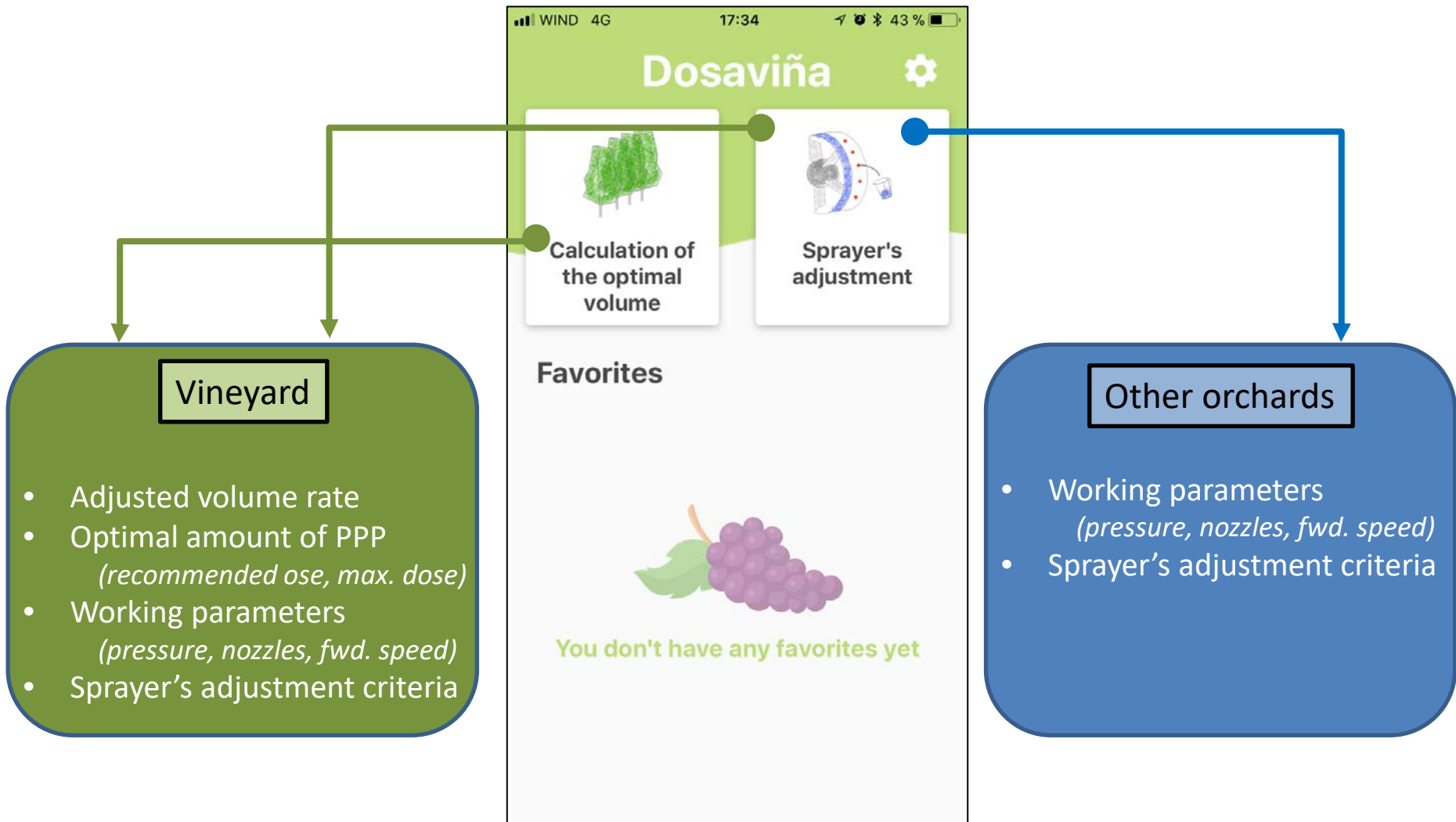


Technical characteristics

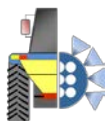
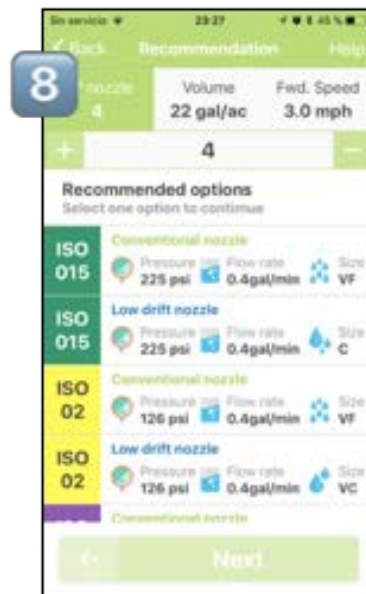
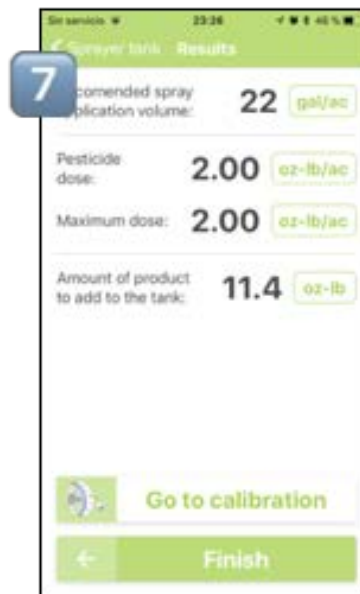
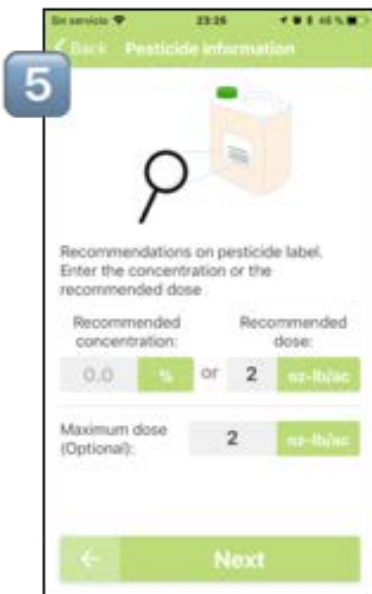
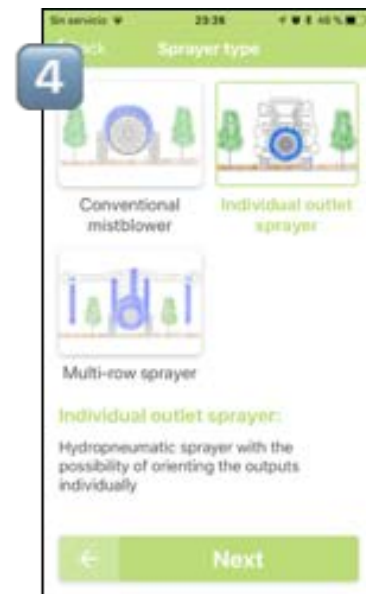
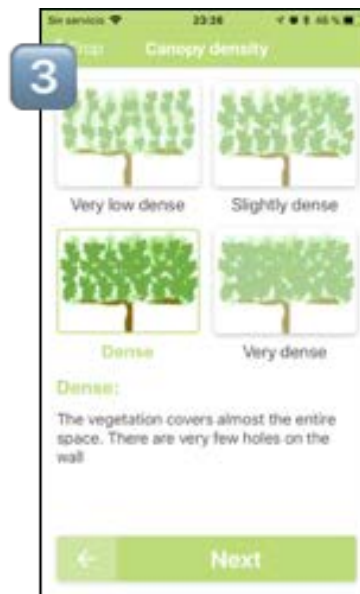
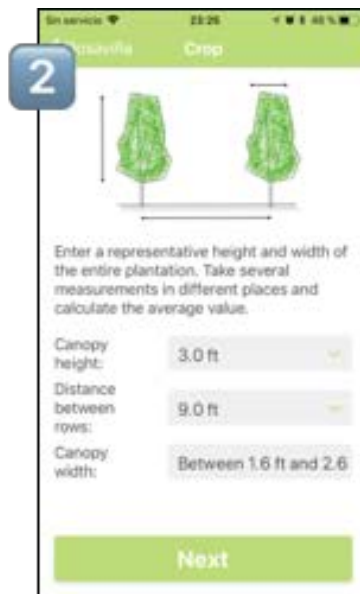
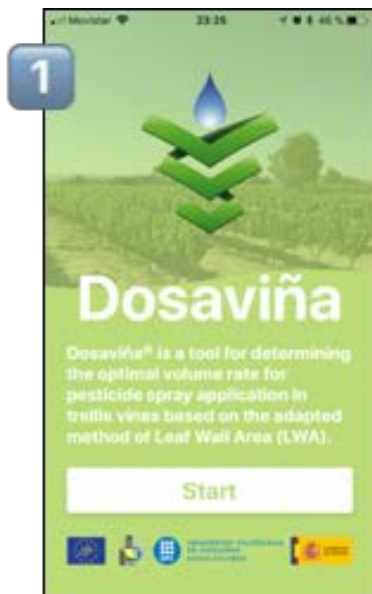
- ☐ Six languages
Spanish, English, Italian, French, Greek and Catalan
- ☐ Two unit systems
SI and US-imperial
- ☐ Free download
- ☐ Available for IOS and ANDROID
- ☐ Automatic country identification
- ☐ Data base of Official Producer Regions (Spain)
- ☐ Country data base
- ☐ Based on ISO colour code nozzles
- ☐ Print and save practical recommendations
- ☐ Also available website (www.dosavina.upc.edu)



Two main utilities: Calculation of the Optimal Volume Rate & Sprayer's adjustment



8 steps for a complete adjusted sprayer



Dosaviña

Dosaviña® is a tool for determining the optimal volume rate for pesticide spray application in trellis vines based on the adapted method of Leaf Wall Area (LWA).

Start

Settings

Canopy

Enter a representative height and width of the entire plantation. Take several measurements in different places and calculate the average value.

Canopy height: 3.0 ft

Distance between rows: 9.0 ft

Canopy width: Between 1.6 ft and 2.6

Next

Canopy

Sprayer

Conventional mistblower

Individual outlet sprayer

Multi-row sprayer

Next

Sprayer

Pesticide

Recommendations on pesticide label. Enter the concentration or the recommended dose

Recommended concentration: 0.0 % or Recommended dose: 2 oz-lb/ac

Maximum dose (Optional): 2 oz-lb/ac

Next

Pesticide

Recommendations

- Amount of pesticide
- Spray volume

Results

Recommended spray application volume: 22 gal/ac

Pesticide dose: 2.00 oz-lb/ac

Maximum dose: 2.00 oz-lb/ac

Amount of product to add to the tank: 11.4 oz-lb

Go to calibration

Finish

Recommendation

Nº nozzle	Volume	Fwd. Speed
4	22 gal/ac	3.0 mph

Recommended options
Select one option to continue

ISO	Nozzle	Pressure	Flow rate	Size
015	Conventional nozzle	225 psi	0.4gal/min	VF
015	Low drift nozzle	225 psi	0.4gal/min	C
02	Conventional nozzle	126 psi	0.4gal/min	VF
02	Low drift nozzle	126 psi	0.4gal/min	VC

Next

Recommendations

- Nº of nozzles
- Droplet size
- Working pressure
- Fwd. speed



Uniform target
Uniform nozzle size

Results Calibration

Forward speed: 5 km/h Spray application volume: 274 l/ha

Calculation of the working width

Sprayer type: Individual outlet sprayer

Distance between rows: 2.7 m

Number of rows: 1 rows

Working width: 2.7 m

Go to recommendation

Go to manual selection

Heterogeneous target
Nozzle size combination

Recommendation Help

N° nozzle: 6 Volume: 274 l/ha Fwd. Speed: 5.0 km/h

+ 6 -

Recommended options
Select one option to continue

ISO	Nozzle	Pressure	Flow rate	Size
ISO 01	Conventional nozzle	19.9 bar	1.0l/min	VF
ISO 01	Low drift nozzle	19.9 bar	1.0l/min	M
ISO 015	Conventional nozzle	8.8 bar	1.0l/min	VF
ISO 015	Low drift nozzle	8.8 bar	1.0l/min	C
ISO 02	Conventional nozzle			

Next

Manual introduction Help

Volume: 274 l/ha Fwd. Speed: 5.0 km/h

+ 274 -

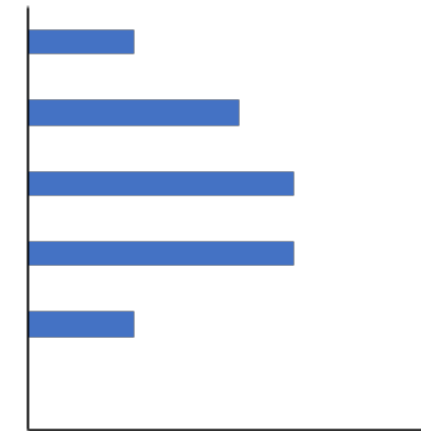
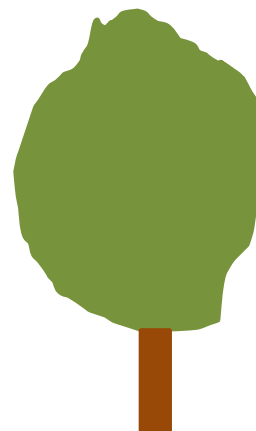
Selected nozzles
Add the nozzles that you are going to use

ISO	Nozzle	Flow rate	Size
ISO 015	Conventional nozzle	0.8l/min	VF
ISO 025	Conventional nozzle	1.3l/min	F
ISO 02	Conventional nozzle	1.0l/min	VF

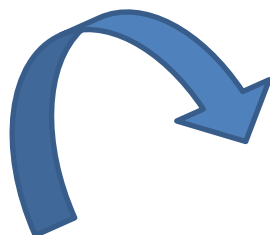
N° nozzle: 6 Pressure: 5 Total flow rate: 6.17 l/min

Set working pressure

Next



Complete report with all the data in pdf that can be saved as favourite and/or send it by e-mail



Dosaviña
15/8/18 10:44

Dosaviña

Date: 15/08/2018
Name: _____

Characteristics of the vegetation:

a) Distance between rows: 10.8 ft

b) Canopy height: 3 ft

c) Canopy width: 3.3 ft

Canopy density: Dense

Characteristics of the treatment:

Fwd. Speed: 3 mph

Pressure: 223.4 psi

Volume: 22 gal/acre

Working width: 9 ft

Selected nozzles: **4 nozzles**

Code/Colour	Type	Flow rate	Nº nozzle	Drop size
ISO 015	Low drift nozzle	0 gal/min	4	G

Dosage of pesticide:

Pesticide: _____

Pesticide dose: 2 oz-lb/acre

Maximum pesticide dose: 3 oz-lb/acre

Amount of pesticide per tank: 11.4 oz-lb / tank

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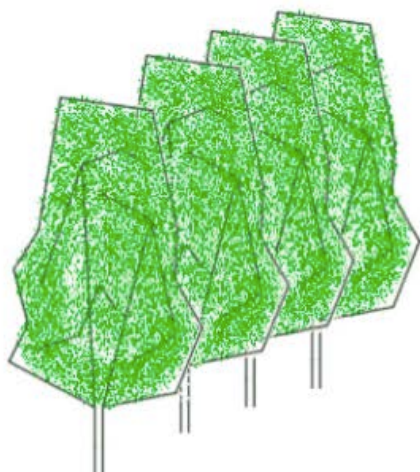
GOBIERNO DE ESPAÑA
MINISTERIO DE AGRICULTURA Y PESCA,
ALIMENTACIÓN Y MEDIO AMBIENTE

<https://dosaviña.upc.edu/#>
Página 1 de 1





Results (1)



Recomended spray
application volume:

291

L/ha

Pesticide dose:

0.29

L/ha

Amount of pesticide to add
to the tank:

0.6

L or kg

Maximum dose (Optional):

1.00

L/ha



Dosaviña®

Recommended spray
application volume:

291

L/ha

Amount of pesticide to
add to the tank:

0.6

L or kg

Fwd. Speed:

5.0

km/h

Working pressure:

10.6

bar

Maximum dose
(Optional):

1.00

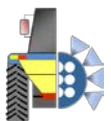
L/ha

Selected nozzles:

6 nozzles

Code/Colour	Type	Flow rate	Nº nozzle	Drop size
ISO 015	Low drift nozzle	1 L/min	6	 G

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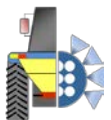


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Scientific publications about Dosaviña

- Campos, J., Llop, J., Gallart, M., García- Ruíz, F., Gras, A., Salcedo, R., Gil, E. 2018. Development of canopy vigor maps using UAV for site-specific management during vineyard spraying process. Precision Agriculture (in press).
- Gil, E., Llorens, J., Landers, A., Llop, J., Giralt, L. 2011. Field validation of DOSAVIÑA, a decision support system to determine the optimal volume rate for pesticide application in vineyards. European Journal of Agronomy, 35(1): 33-46; doi:10.1016/j.eja.2011.03.005
- Landers, A. 2017. A Retrospective Study on Application Technology in the Vineyards of New York. <https://grapesandwine.cals.cornell.edu/sites/grapesandwine.cals.cornell.edu/files/shared/images/Landers%20Research%20Focus%202017-4.pdf>
- Hawk, J. and Landers, A. 2009. Sustainable Spray Technologies for Vineyards. in the NORTHEAST. <http://db.nyfvi.org/documents/1354.pdf>
- Gil, E., Escolà, A. 2009. Design of a decision support method to determine volume rate for vineyard spraying. Applied Engineering in Agriculture, 25(2):145-151. <http://asae.frymulti.com/abstract.asp?aid=26323&t=2>



Using Simple Technology To Improve Spray Deposition and Reduce Drift at Dalrymple Vineyards

Bill Dalrymple
Dalrymple Farms, Ovid, NY

Reprinted from Sustainable Viticulture in the Northeast, Issue 5



I first saw Andrew Landers demonstrate his spray patternator at a field day demonstration in 2004. It inspired me to build my own. The unit I built cost me less than \$50, and as you can see is made mostly out of old window screens I had laying around. Each screen has a channel in the bottom that funnels the water into the seven gallon-sized jugs, so I can run my sprayer for 15 minutes and find out how evenly the water is being distributed in the canopy.

When I first tried it out with my standard sprayer settings, it was throwing spray way up to the top, which obviously wasn't making it into the vine canopy. I was able to change the direction that nozzles were pointing to adjust for the direction of air coming out of the fan - downward

canopy, instead of having half of it shoot into the air. It greatly reduced drift.

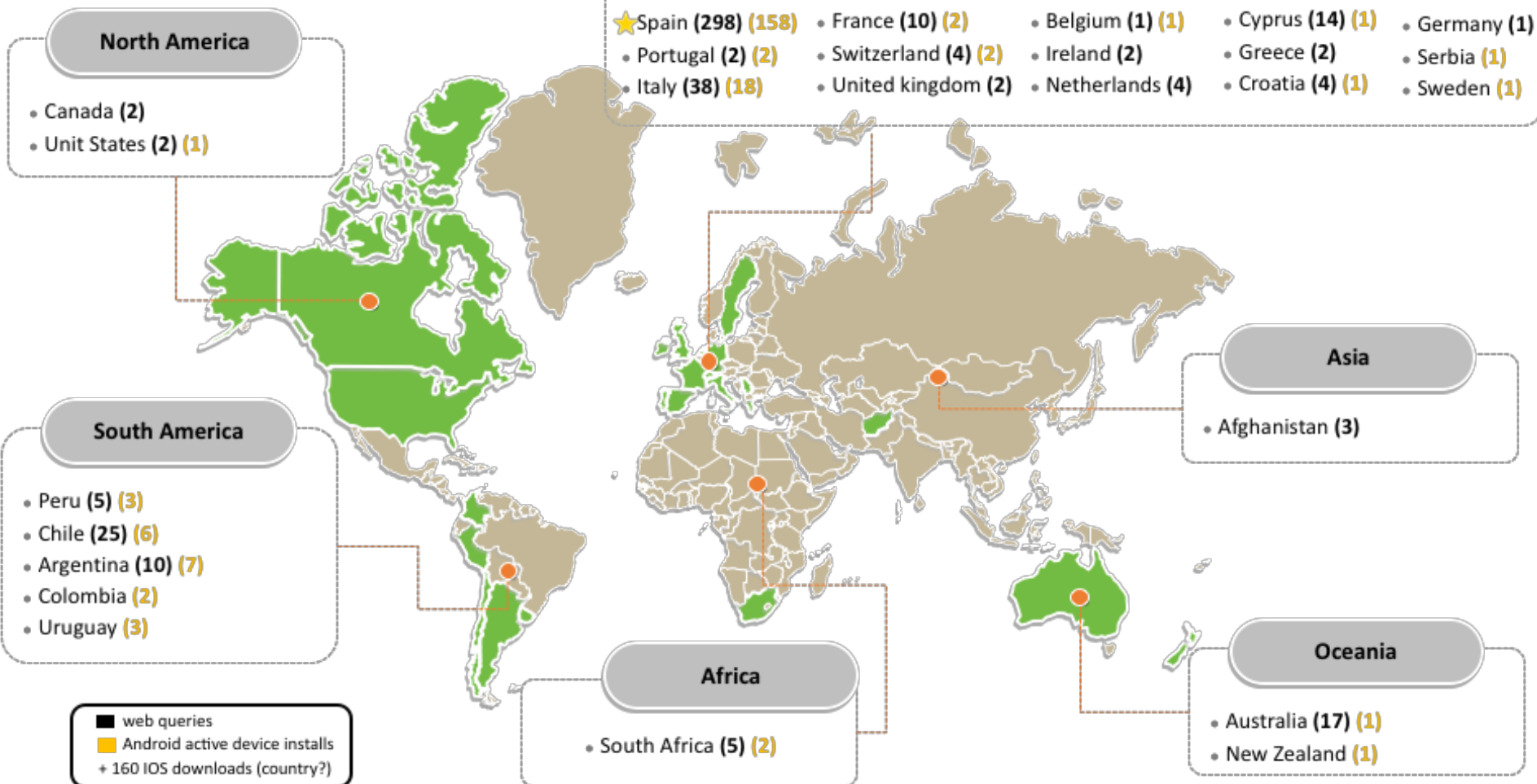
I worked with Andrew and Emilio Gil on using the "Dosavina" program on my farm. It uses vine dimensions, growth stage, spray material, variety, and spray conditions to calculate an optimum amount of water to deliver per acre. Early in the season, I was able to mix my fungicides in the appropriate concentration for 50 GPA, but actually apply much lower volume - down to as low as 17 GPA in some cases. I feel we got the same coverage while applying much less material per acre. We didn't need so much water to cover the relatively small leaf area present before bloom, and we figure we've saved around \$2000 - \$3000 on spray materials annually on our farm.

<http://www.cals.cornell.edu/cals/grapesandwine/appellation-cornell/issue-5/upload/Landers-Research-Focus-2011-1.pdf>

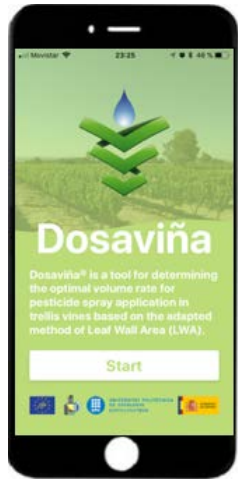


DOSAVIÑA USAGE MAP (827 download)

October 15th 2018



Practical information



Dosaviña APP can be downloaded typing “*dosaviña*” or “*dosavina*”



Dosaviña APP can be downloaded typing “*dosaviña*”. For other languages without “ñ” is suggested to go with the smartphone to Dosaviña website (www.dosavina.upc.edu) and follow the APP download link

