ICT platform for the fruit growing sector in Belgium

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Project (2014-2019)
Innovations in fruit growing

Situation

- Upscaling companies
- Grower becomes manager – has to delegate tasks

New Needs

- Easier collecting and interpreting data
- Easier registration treatments
- Use data for
  - More correct applications
  - Taking strategic decisions

Topics

- ICT applications
- Sensor platforms
- Robotization / Localization

How to meet the growers' = customers' expectations

- Involve 10 growers from start
  - Open mindset
  - Interest in new technologies
- Incorporate their input in each project step
  - Translate issues into requirements
  - Identify issues at early stage
    - Less costs and time
- Involve them in the validation process
  - Growers act as owners of the development.

STEPS

1. Prioritize
2. Benchmark
3. Planning / concept
4. Prototype
5. Launch

1 Prioritize

- **ICT applications**
- Sensor platforms
- Robotization / Localization

- Base for further developments
- Technology readiness levels (**TRL**)
- Interest of growers

- Registration of spray applications
  - Complexity legal regulation
    - Dose
    - Number of applications
    - Waiting time
  - Time consuming – repeating elements

1. Prioritize
2. Benchmark
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2 Benchmark

- visit growers on-site
  - How do they work?
  - Applications are based on
    - Warning systems
    - advisers
- Investigate available registration software
  - Registration software is available but:
    - Mixes of products are not foreseen
    - Not compatible with website/extranet of grower association/cooperation's
    - Special fruit growing requirements are not supported

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3 Planning /concept

Generating and evaluating different concepts

- Discussion of possible solutions with the growers
- Ask input from growers with regards to the
  - ease of use
  - correct wordings
  - special requirements
- Translate input into requirements

1. Prioritize
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5. Launch

4 Prototype

Development of prototype according requirements.

- Validation by
  1. Advisers
  2. Our 2 test Gardens
  3. 10 growers

- Results: Improvements necessary
  - Simplifying
  - More "fruit" specific functions
  - User experiences

1. Prioritize
2. Benchmark
3. Planning / concept
4. Prototype
5. Launch

5 Launch

Eindelijk (Finally)
Vereenvoudigde (Simplified)
Administratie (Administration)

EVA
by pcfruit vzw

1. Prioritize
2. Benchmark
3. Planning / concept
4. Prototype
5. Launch

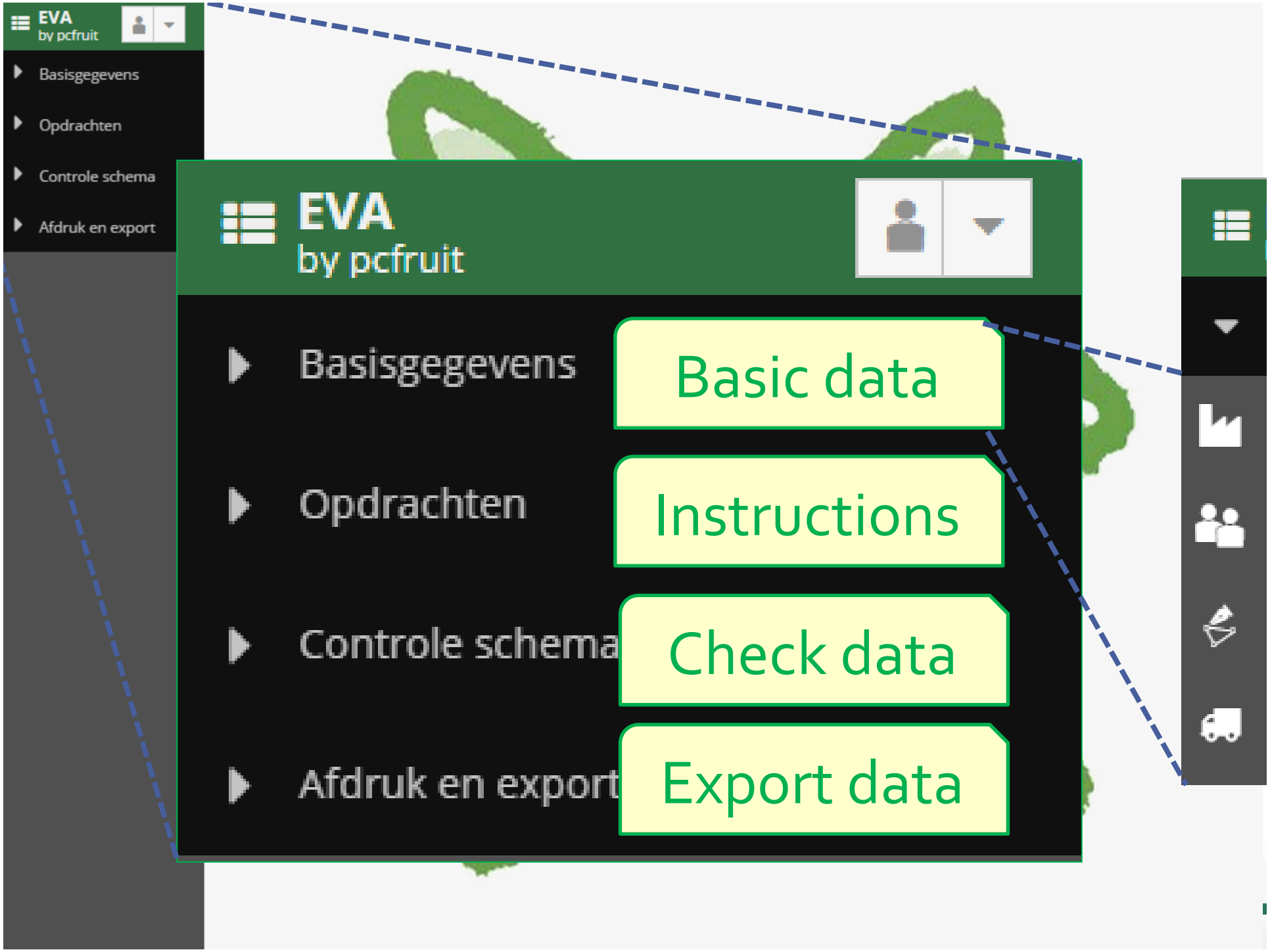
! One registration for a complete registration!

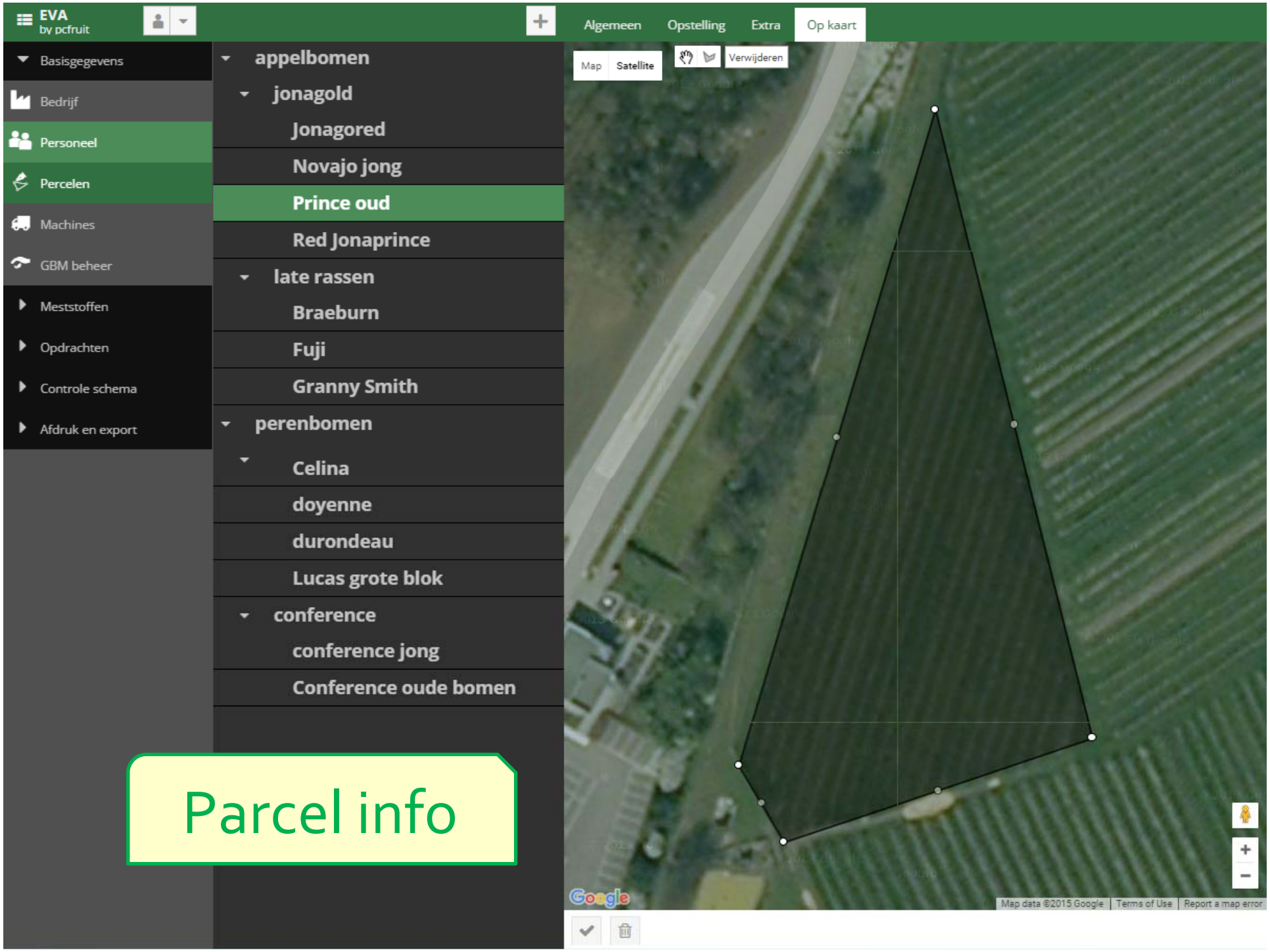
! Developed by growers for growers!

Result

- Web based application
  - Web app for PC / laptop / tablet
  - Mobile app for smartphone

Crops


EVA
by pcfruit
Basisgegevens
Opdrachten
Controle schema
Afdruk en export
Basic data
Instructions
Check data
Export data


EVA
by pcfruit
Algemeen
Opstelling
Extra
Op kaart
Basisgegevens
Bedrijf
Personeel
Percelen
Machines
GBM beheer
Meststoffen
Opdrachten
Controle schema
Afdruk en export
appelbomen
jonagold
Jonagored
Novajo jong
Prince oud
Red Jonaprince
late rassen
Braeburn
Fuji
Granny Smith
perenbomen
Celina
doyenne
durondeau
Lucas grote blok
conference
conference jong
Conference oude bomen
Map
Satellite
Verwijderen
Google
Map data ©2015 Google
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Report a map error

Parcel info

Selecteer producten

filter

Naam	Vijand	Dosis	Max toepassi...	Wachttijd
BELCAP 80 WG	schurft	1.2 kg / ha haag	10	28 dag
BELCHIM HYDRO	schurft	4 kg / ha haag	1	
BELCHIM HYDRO	kanker, neusrot	4 kg / ha haag	1	
BELLIS	grauwe schimmel	0.53 kg / ha h...	12	7 dag
BELLIS	zachtrot	0.53 kg / ha h...	12	7 dag
BELLIS	gloeosporiumrot/vrucht...	0.53 kg / ha h...	12	7 dag
BELLIS	echte meeldauw	0.53 kg / ha h...	12	7 dag
BELLIS	zwartvruchtrot	0.53 kg / ha	12	7 dag
BELLIS	schurft	0.53 kg / ha h...	12	7 dag
BLOSSOM PROTECT CO...	bacterievuur	8.75 kg / ha h...	5	
BLOSSOM PROTECT CO...	bacterievuur	1.25 kg / ha h...	5	
BONIPROTECT	grauwe schimmel	0.9 kg / ha haag	3	

Only available products are selectable in the advised dos

- Screen to check for possible failures

Toepassingen controle

CAPTAN 80 WG		Dosis	# toepassingen behandeling	# toepassingen actieve stof	# toepassingen familie
conference	Conference oude bomen	OK	1 / 10	CAPTAN: 5 / 10	EPSP synthase: 5 / -
	conference jong	OK	1 / 10	CAPTAN: 5 / 10	EPSP synthase: 5 / -
	doyenne	OK	2 / 10	CAPTAN: 5 / 10	EPSP synthase: 5 / -
	durondeau	OK	2 / 10	CAPTAN: 5 / 10	EPSP synthase: 5 / -
	Lucas grote blok	OK	2 / 10	CAPTAN: 5 / 10	EPSP synthase: 5 / -
	Celina	OK	2 / 10	CAPTAN: 4 / 10	EPSP synthase: 4 / -

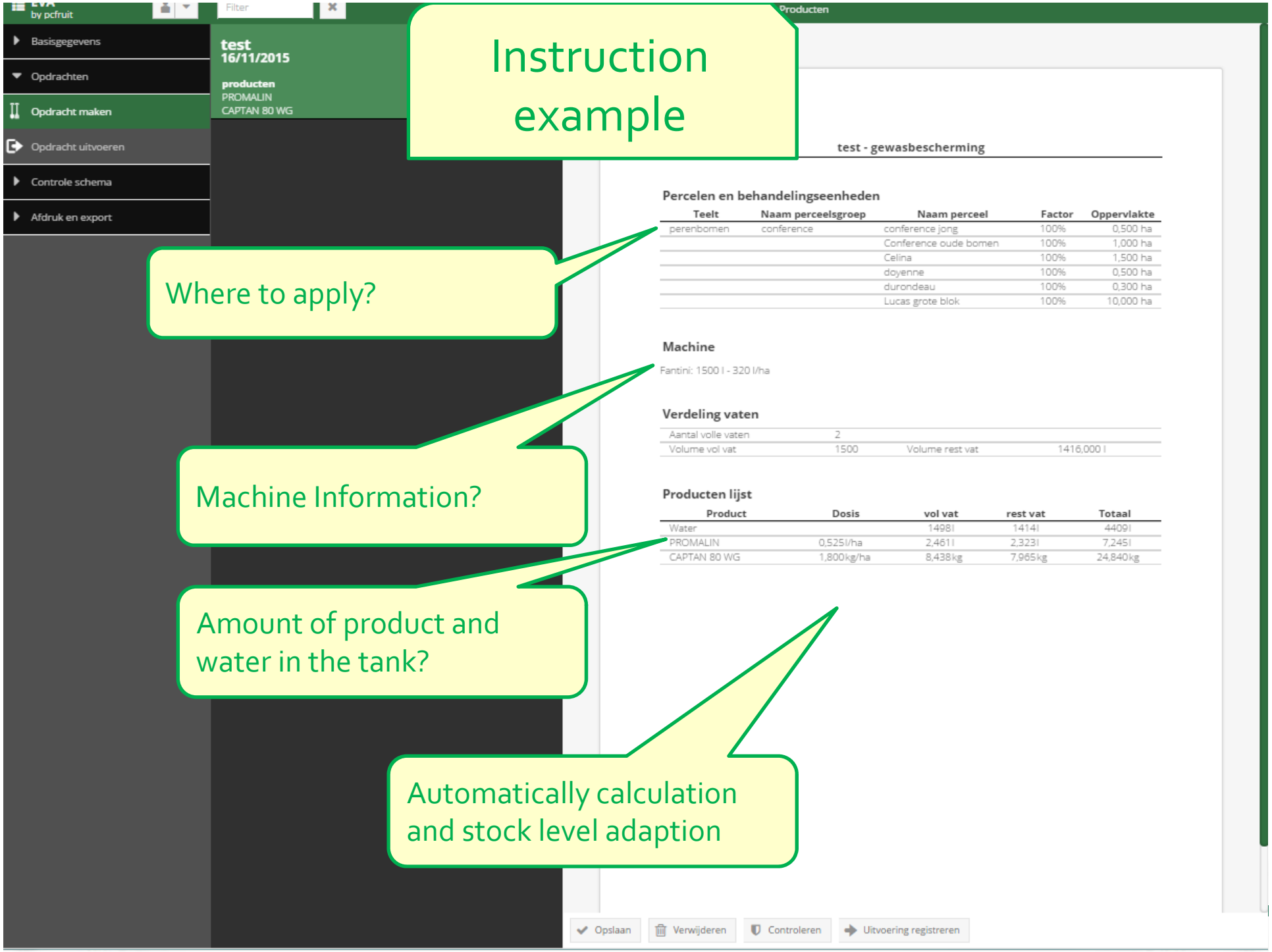
PROMALIN		Dosis	# toepassingen behandeling	# toepassingen actieve stof	# toepassingen familie
conference	Conference oude bomen	OK	2 / -	6-BENZYLADENINE: 2 / - GIBBERELLINE A4+7: 2 / -	SDHI: 6 / 4 SDHI: 6 / 4
	conference jong	OK	2 / -	6-BENZYLADENINE: 2 / - GIBBERELLINE A4+7: 2 / -	SDHI: 6 / 4 SDHI: 6 / 4
	doyenne	OK	2 / -	6-BENZYLADENINE: 2 / - GIBBERELLINE A4+7: 2 / -	SDHI: 6 / 4 SDHI: 6 / 4
	durondeau	OK	1 / -	6-BENZYLADENINE: 1 / - GIBBERELLINE A4+7: 1 / -	SDHI: 4 / 4 SDHI: 4 / 4
	Lucas grote blok	OK	1 / -	6-BENZYLADENINE: 1 / - GIBBERELLINE A4+7: 1 / -	SDHI: 4 / 4 SDHI: 4 / 4
				6-BENZYLADENINE: 1 / -	SDHI: 4 / 4

Opdracht opslaan | Opdracht verder bewerken

- Check Dose

- Check number of applications for each product or active ingredient

Instruction example



Where to apply?

Machine Information?

Amount of product and water in the tank?

Automatically calculation and stock level adaption

EVA
by pcfruit

Filteren

Afdrukken

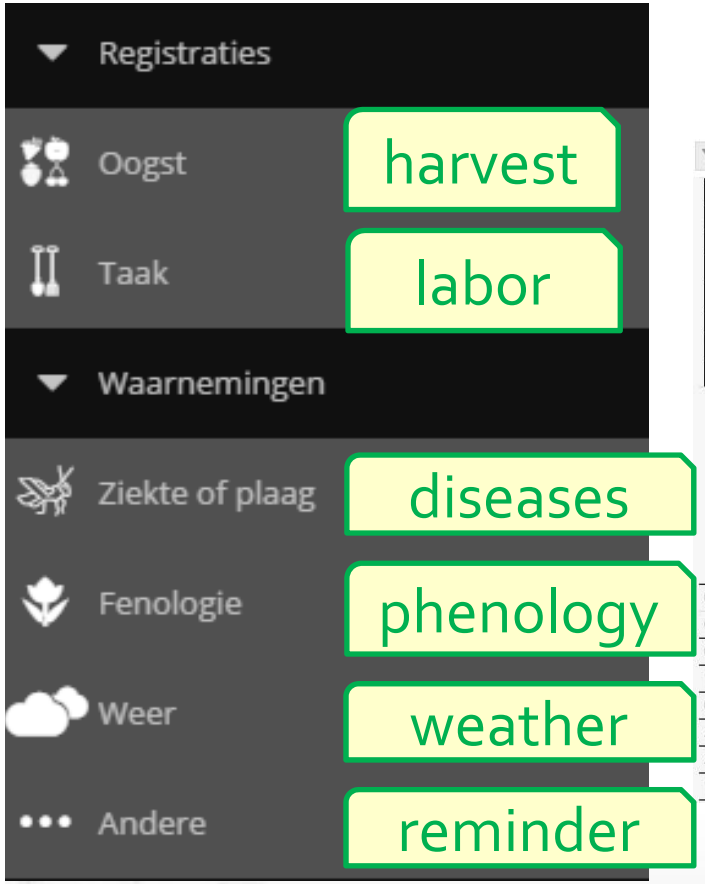
- Basisgegevens
- Opdrachten
- Opdracht maken
- Opdracht uitvoeren
- Controle schema
- Afdruk en export
- Bespuitingen
- Uitgevoerde opdrachten
- Aantal toepassingen

Overview of applications

Print and export

				perenbomen							
								conference			
				Celina	Lucas grote blok	doyenne	durondeau	Conference oude bomen	conference jong		
23/03/2015	HYDRO SUPER 25 WG	4 kg / ha haag	--	■	■	■	■	■	■	schurft	**Weer:** Zonnig
	SUN SPRAY 7 E	6.2 l / ha haag	--	■	■	■	■	■	■	dop-, schild- en wolluizen	**Uitvoerders:** Jef Helsen
01/04/2015	SYLLIT 400 SC	1.125 l / ha haag	+ 60 dagen	■	■	■	■	■	■	schurft	**Weer:** Zonnig
	Ureum 46%	2.667 kg / ha haag	--	■	■	■	■	■	■		**Uitvoerders:** Jef Helsen
14/04/2015	PHYTOCAP BAYER WG	1.2 kg / ha haag	+ 28 dagen	■	■	■	■	■	■	schurft	**Weer:** Zonnig
	TEPPEKI	0.08 kg / ha haag	+ 21 dagen	■	■	■	■	■	■	bladluizen	**Uitvoerders:** Jef Helsen
	Ureum 46%	2.667 kg / ha haag	--	■	■	■	■	■	■		
	Magnesiumnitraat	4 kg / ha haag	--	■	■	■	■	■	■		
23/04/2015	PROMALIN	0.2 l / ha haag	--					■	■	slechte vruchtzetting	**Weer:** Zonnig **Uitvoerders:** Jef Helsen
	BELCAP 80 WG	1.2 kg / ha haag	+ 28 dagen					■	■	schurft	
23/04/2015	CAPTAN 80 WG	1.2 kg / ha haag	+ 28 dagen			■				schurft	**Weer:** Zonnig
	PROMALIN	0.333 l / ha haag	--			■				slechte vruchtzetting	**Uitvoerders:** Jef Helsen
23/04/2015	CAPTAN 80 WG	1.2 kg / ha haag	+ 28 dagen	■	■		■			schurft	**Weer:** Zonnig
	Aminosol	1 l / ha haag	--	■	■		■				**Uitvoerders:** Jef Helsen
	Solubor DF	1.2 kg / ha haag	--	■	■		■				
29/04/2015	RAK 3+4	500 ampullen / ha	--	■	■	■	■	■	■	fruitmotje	**Weer:** Zonnig **Uitvoerders:** Jef Helsen
06/05/2015	MERPAN 80 WG	1.2 kg / ha haag	+ 28 dagen	■	■	■	■	■	■	schurft	**Weer:** Zonnig

Other registrations



Filteren

Aantal geselecteerde registraties	
Andere	0
Fenologie	0
Oogst	7
Spuitopdrachten	0
Taken	0
Weer	0
Ziekten en plagen	0

Totalen geselecteerd		
Werkuren	06:00	0,43 u/ha
Oogst	48740 kg	3471 kg/ha
Oogst	48,74 ton	3,47 ton/ha

Datum	Info 1	Info 2	Omschrijving	Manuela	Manuela	Manuela	Manuela	Manuela 2015	test Avermaete	appelbomen: 1 ha pitfruit	pitfruit	proef falchieri	Werkuren	Uitvoerders	Oogst (ton)	Oogst (kg)
06/12/2016	±1 x Palox appel 400 kg	3de pluk											00:00	Jef Helsen, Dany 2, Ludwine Meekers	0,33	327,27
06/12/2016	±9 x Palox appel 400 kg	3de pluk											00:00	Jef Helsen, Dany 2, Ludwine Meekers	3,27	3272,73
05/09/2016	1 x Palox appel 400 kg	1ste											01:00	Danny Vranken	0,40	400,00
11/04/2016	25 x Palox appel 400 kg	1ste	omschrijving										01:00	Dany Bylemans	10,00	10000,00
02/02/2016	2 x Palox 370 kg												01:00	Dany 2	0,74	740,00
22/01/2016	5 x Palox appel 400 kg												01:00	Manuela Milissen, Danny Vranken, Koen Marneffe	2,00	2000,00
22/01/2016	35 x Palox appel 400 kg	1											01:00	Danny Vranken, Wendy Van Hemelrijck	14,00	14000,00
17/01/2016	45 x Palox appel 400 kg												01:00	Koen Marneffe	18,00	18000,00

Different dose expressions !

Ligneous small fruit & vineyards

l or kg/ha LWA

Growers are used to it, they start the season with small plants

Apple pear & cherries

l or kg/ha standard orchard (based on LWA)

Strawberry

L or kg/ha ground

Current situation

Offered to growers (also non-ICT minded)

- a practical training (3 hour)
- access to our helpdesk.
  - Help function
  - Input Ideas for improvements

160 users > 10% of fruit growers in 1 year time

Future possibilities

EVA is the basic platform ready for extensions

- Link and transfer data to grower cooperation's (auctions)
- Extension to other crops / countries

Related to smart farming

- Integrate input of sensed data like
  - spray parameters,
  - visualisation drought status, pest status, plant stress, … from various sources (machine sensing, drones, satellite, …)
  - Automatized localisation for the input of issues (fallen tree, fire blight infection, …….)