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სოფლის მეურნეობის სამეცნიერო-კვლევითი ცენტრი

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"Agrometeostation-based DSS (decision support system): An applicable tool for fruit and grape farmers"

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Modern history of targeted Agri meteostations

- 2007 - Hobo weather station – Senaki college
- 2009-2010 - It was brought first in Georgia By company agrosphero,
- 2009-2010 - Real time meteo station was installed in two places – Mukhrani and Jigaura - SRCA
- 2012 and after. A number of agrimeteostations was brought since 2012 by donor organizations – USAID, UN FAO, UNDP etc
- Currently in country is operated more than 28 private meteostations with various service providers, like pessle, Davis Instrumentals and others.

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SRCA - leading organization on fruit and grapevine research in Georgia

- Experimental plot in Jigaura - Total 86 Ha- 25 ha of dedicated fruit research
- Labs - fruit lab, in-vitro Lab, Screen-houses,
- Fruit crop Germplasm collection of more than 12 species, around 400 accessions (cultivars, varieties, forms and etc.)
- Grape germplasm – more than 1100 accessions

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Scientific-research Center of Agriculture- SRCA

Jigaura - grape, fruit and agroforestry experimental station

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Agrometeostation common platforms

- Fieldclimate – Pessl instruments
- Davis Weather Stations
- Oregon Scientific Weather Stations
- Rim PRO
- Other platforms – Italy, Türkiye, France

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Agrimeteostations – an important part of precision agriculture

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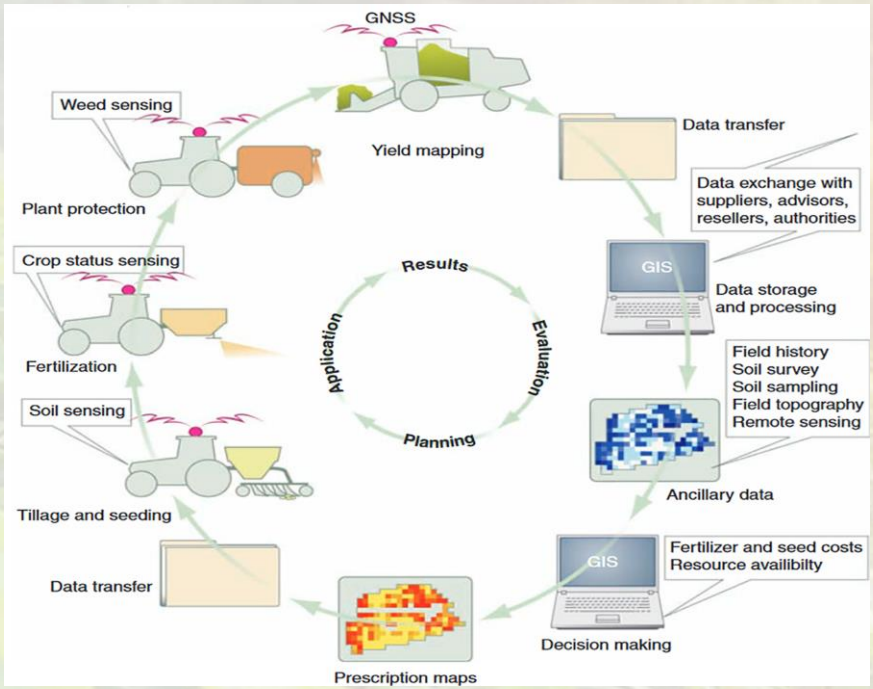

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Common descriptions of agrimeteostation - difference with regular meteostation

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- Realtime meteostation
- Hardware
- Software
- Solar battery
- Leaf wetness sensor
- Sensors

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Main positives sides of agrimeteostations

Adjusting pesticide application times

Period application

Soil moisture control – with soil sensors

Can be incorporated with meteo forecast

Can be calculated by chilling units

Can be alarm frost

Can be calculated Degree days

Can be incorporated into satellite views

Can be incorporated into Scouting for pests

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Dark side of Moon – agrimeteostations

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Easy buy – difficult use - tendency

“have not used” - problem

Location is important

Needs maintenance, and sensors needs calibrate

High cost – 4000 – 6000 euro

Without a subscription almost useless

Needs training

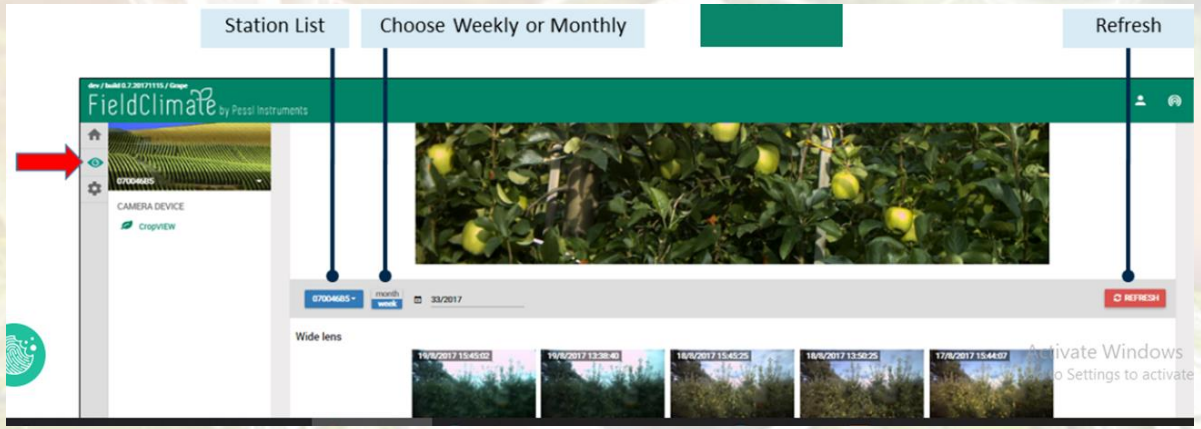
Need qualified users – not for start-uppers

Need decision-makers with skills

Whom dedicated – Small farmers ???

Some new features of agrimeteostations – cropview camera - example – fruit diameter Tool

- This tool is implemented in Field Climate, which allows you to manually draw circles around fruits, on pictures taken from your orchard or field by CropVIEW® device.
- If you precisely know the distance between the camera and the crop, you will also get a reliable measurement of fruit diameter in mm
- You select a picture from the zoom camera and Drawing" button on the top of the high-resolution picture.



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How does it is works? Username, Password

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Apple scab – conidia – Last 30 day

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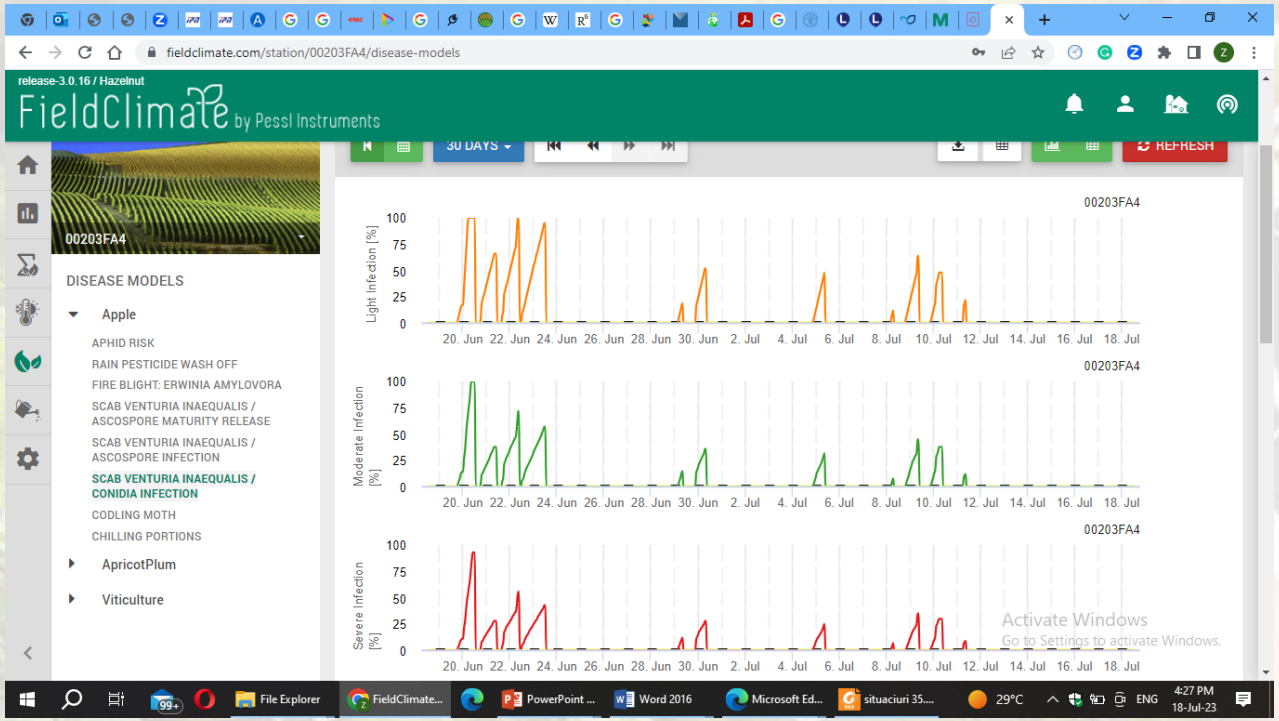

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APPLE - MeteoData practical use strategy

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Two types of fungicides against apple scab are used in conventional growing systems:

- Protective products like - Captan, Mancozeb, Dithianone, Cupper, Dodin and Strobilurins
- Curative products like DMI (diphenoconazol, tebuconazol), fluopiram (Luna), Pentiophirad (Fontelis, Afet), Pydiflumetofen (Miravis), Cyprodinil (Chorus), Pirimethanil (Scala)
- In this basically we have a preventative strategy. However, , a practical preventative strategy is not able to protect apple trees completely
- The protective spray only protects for a period of 4 to 7 days
- the exact date of infection (weak, moderate and severe) as well as the ascospore/conidia discharge model and with their experience they are able to estimate the importance of an infection.
- This gives the possibility to act with a curative product if an apple scab infection was too long after the last preventative spray.

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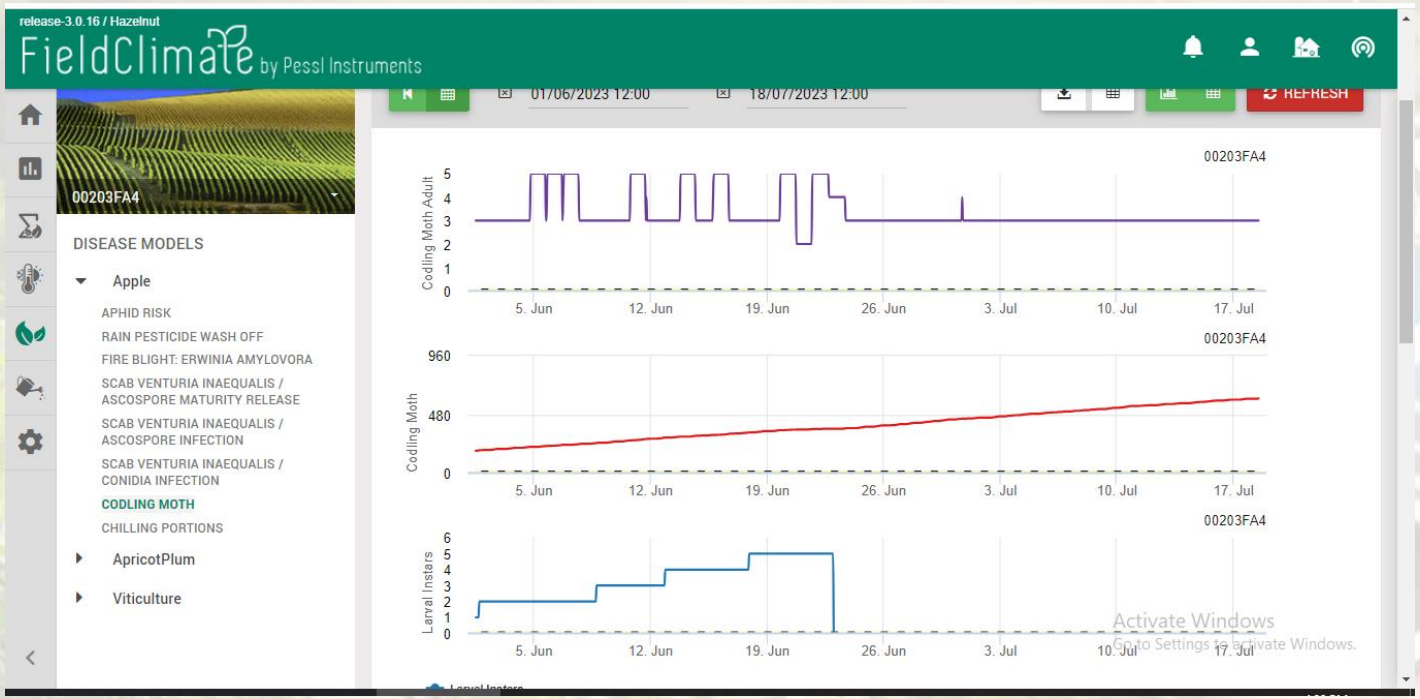
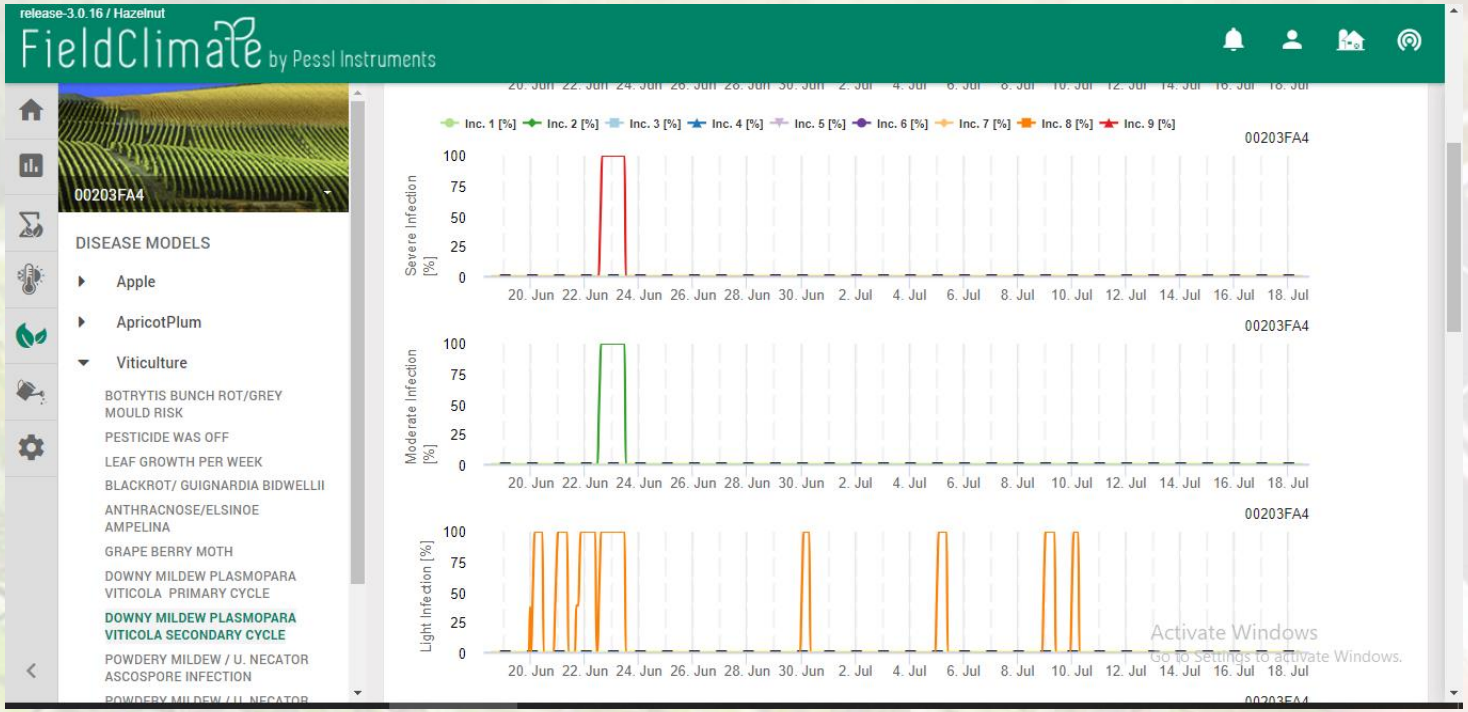
Practical example - Apple, codling moth



Practical example – Grape , Downy mildew



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Pilot Multispectral Analysis Studies NDMI Satellite Images - SRCA

(ND M I): - moisture index - humidity Normalized difference index
ND M I - -1.0 - 1.0
0. 2 -0. 5 Requires watering
0.5 – 0.7 does not need watering
0.8 – 1.0 excess water
1 0 * 10 meter pixels , % area distribution

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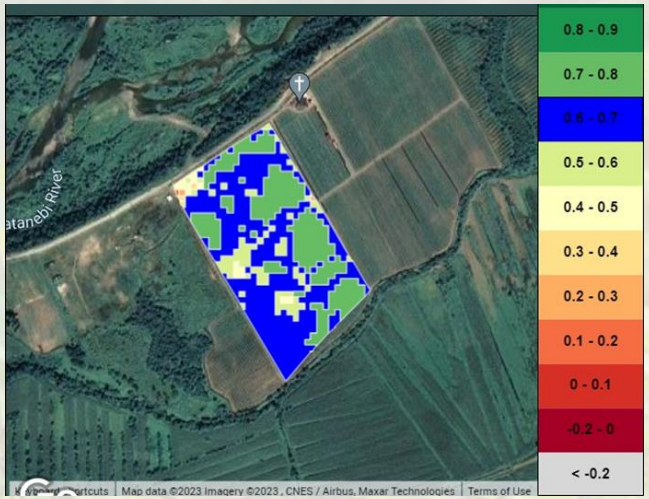
Pilot multispectral analysis studies - NDVI and LAI SRCA



(NDVI): - vegetation index - vegetation Normalized difference index
NDVI range - -1.0 - 1.0
0 - land without vegetation
0.1 -0.5 Weak development
0.6 and above - strong development

(LAI) Leaf Area Index The ratio of leaf area with land area
0 -2 is low,
3-4 is high
1 0 * 10 meter pixel ,
% distribution of areas

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Virtual meteostation - affordable version for small farmers

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Price – 180.00 euro per annum

perfect entry into precision agriculture with no maintenance cost.

Optimize your fieldwork planning from the comfort of your home.

Very cost-effective, simple to use , and activated with a few clicks on the computer or phone.

Users get access to the whole FieldClimate suite of tools.

Can be any point on Earth – without exception.

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Future plans for practical use of meteostations In Georgia

- Incorporate in agrimeteostations scouting of insects
- Validating soil moisture sensors for local soil conditions
- Validating satellite imagery for NDVI multispectral analysis
- Fruit Dendrometer Incorporating
- Nutrition management - validating

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THANK YOU FOR YOUR PARTICIPATION!

გმადლობთ მონაწილეობისთვის!

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