



# EXPIERENCE AND RESULTS OF APPLE SCAB SIMULATION MODEL RIMpro ADOPTION IN PRACTICE IN LATVIA

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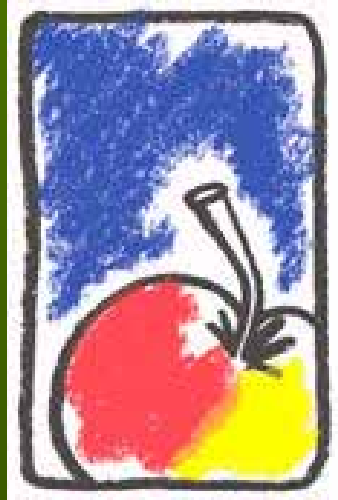


*Venturia inaequalis* (Cooke) Wint.) is the most important fungal pathogen in fruit-growing in Latvia.



The simulation model **RIMpro** gives information on the discharge of ascospores and can be helpful in determining the time of the severe infection during the primary scab infection period.





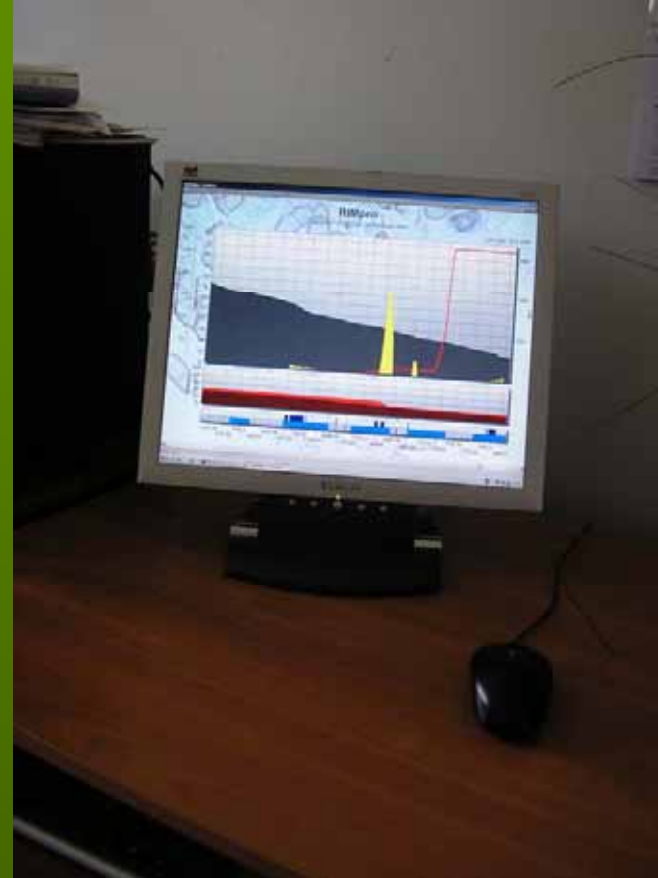
Adaptation of apple scab **simulation model RIMpro** in integrated plant protection in Latvia was carried out in Latvian Plant Protection Research Centre during 2003 – 2007 (2003 – 2005 in 1, 2006 – 3 and 2007 – 8 farms).

In 2007 **the aim of investigation** was to determine efficacy of RIMpro use in practice in Latvia.

# MATERIALS AND METHODS



Weather stations located in different regions of Latvia



RIMpro installed on PC of LPPRC

**Type of weather stations: Metos Compact (company Pessi) – 1, Lufft – 9**

**RIMpro signals above 50 RIM value were accepted as the risk**

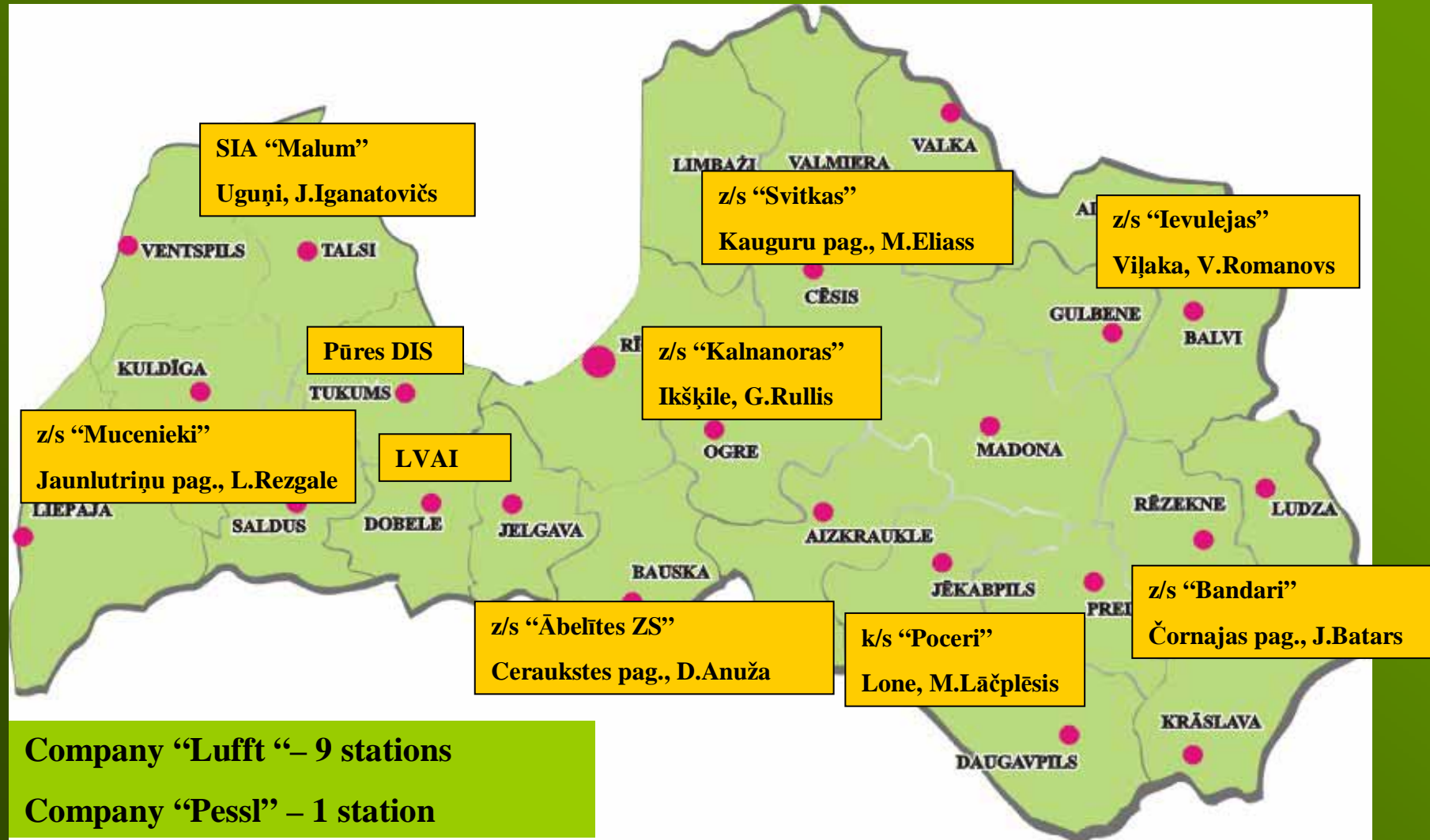
**Information for growers were sent via mobile phone**

**Orchards were inspected 3 times per season to determine efficacy of signals showed by RIMpro**

**Type of assessments: damaged surface by 9 scores scale, calculated in %, on 100 leaves and fruits per plot**

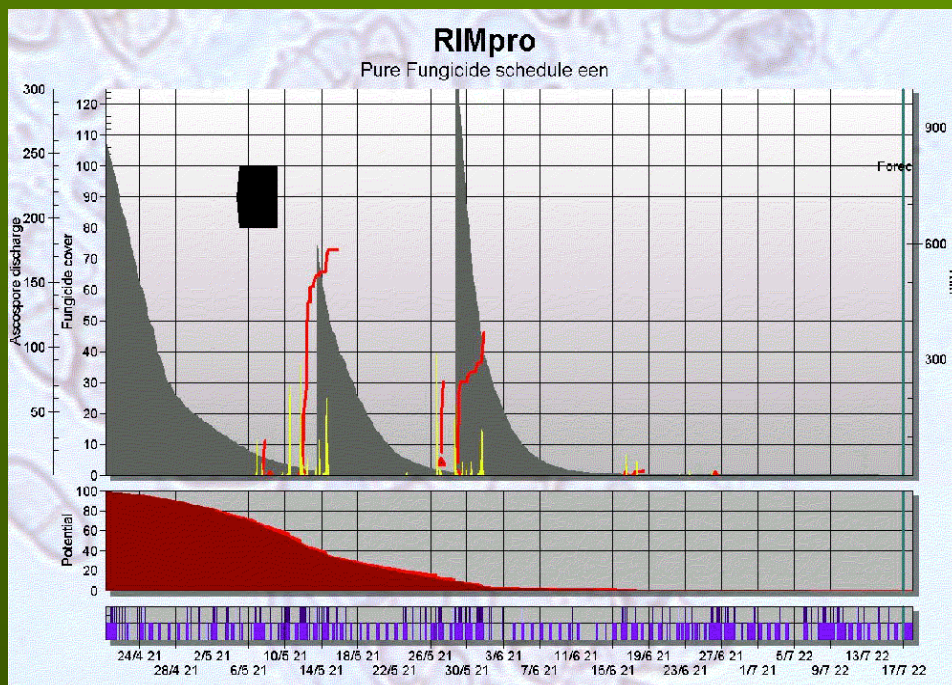


# LOCATION OF THE WEATHER STATIONS



## RESULTS

- In all apple orchards the first protective application with copper containing fungicide Champion was carried out during green tip stage of apples before ascospores discharge (15. – 28.04.).
- Further applications were carried out according to RIMpro signals and our recommendations.



# PURE RESEARCH STATION

## Tukums region west / central part of Latvia

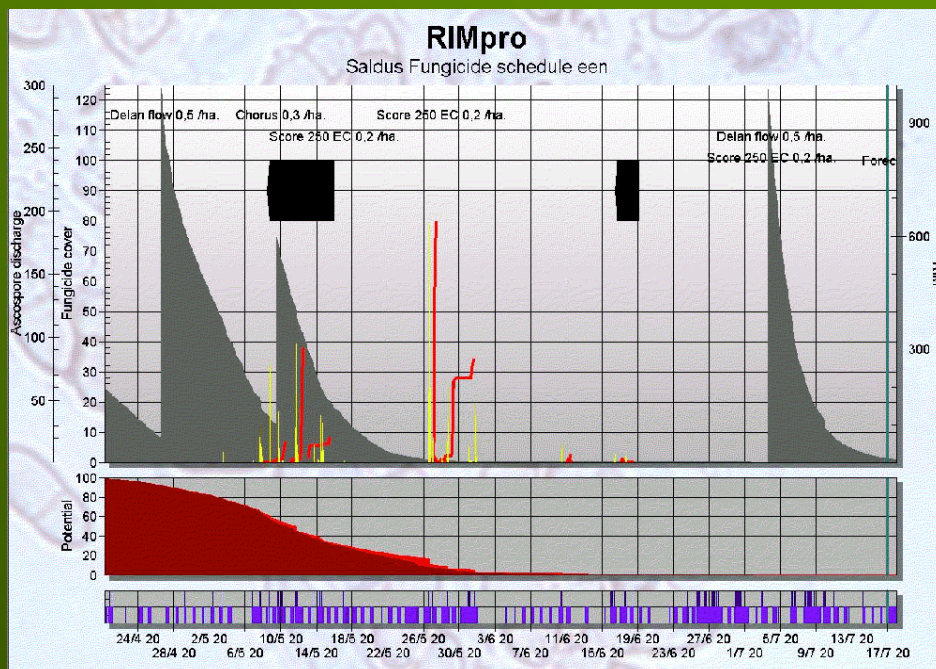
Cultivar – 'Antonovka'

Primary scab infection period		Fungicides use		
Dates	RIM values per day (>150 RIM)	Date	Residues from previous use, %	Fungicide
–	–	17.04.	–	Champion 50
08.05.	90	–	6.0	–
11. – 16.05.	441	14.05.	0	Chorus 75
27.05. – 01.06.	246	29.05.	0	Effector
17. – 19.06.	13	–	0	–



# Apple scab incidence in Pure Research Station

Number of fungicides applications (during primary + secondary infection period)	Amount of infected objects, %					
	Assessment – 3 <sup>rd</sup> 10 day period of June				September	
	Control		RIMpro signals		Control	RIMpro signals
	leaves	fruits	leaves	fruits	fruits	fruits
3 + 0	4.0	–	0	–	–	–



# MUCENIEKI

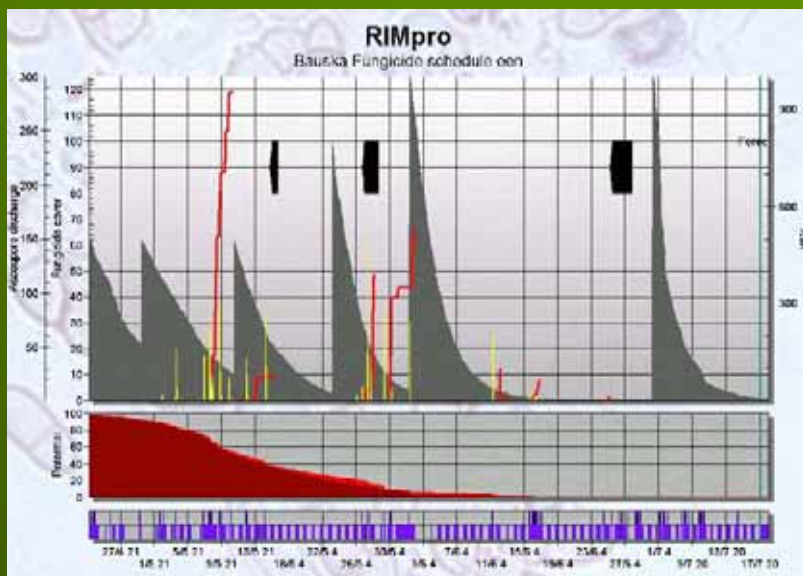
## Saldu region south / west part of Latvia

Cultivar – ‘Saltanat’

Primary scab infection period		Fungicides use		
Dates	RIM values per day (>150 RIM)	Date	Residues from previous use, %	Fungicide
–	–	16.04.	–	Mancozeb
–	–	27.04.	–	Effector
8. – 13.05.	95	10.05.	16	Chorus 75
14. – 16.05.	42	16.05.	21	Score 250
27.05. – 01.06.	276	28.05.	6	Score 250

## Apple scab incidence in farm "Mucenieki"

Number of fungicides applications (during primary + secondary infection period)	Amount of infected objects, %					
	Assessment – 3 <sup>rd</sup> 10 day period of June				September	
	Control		RIMpro signals		Control	RIMpro signals
	leaves	fruits	leaves	fruits	fruits	fruits
5 + 1	46.0	55.0	5.0	0	46.0	11.0



# ABELITES

## Bauska region south / central part of Latvia

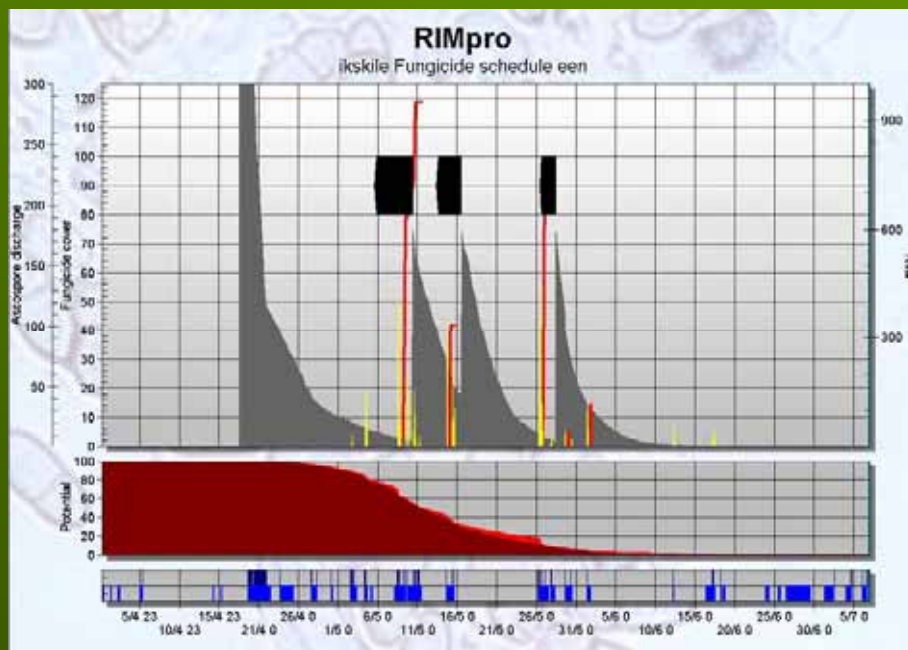
Cultivar – 'Ligol'

Primary scab infection period		Fungicides use		
Dates	RIM values per day (>150 RIM)	Date	Residues from previous use, %	Fungicide
–	–	15.04.	–	Champion 50
8. – 9.05.	421	11.05.	13	Mancozeb + Chorus 75
14. – 16.05.	58	–	22	–
26. – 28.05.	210	23.05.	4	Candit
29.05. – 02.06.	422	01.06.	6	Mancozeb + Chorus 75
11. – 12.06.	98	–	0	–
15. – 17.06.	60	–	0	–
24. – 29.06.	0	30.06.	0	Mancozeb + Score 250

# Apple scab incidence in farm "Abelites"

Number of fungicides applications (during primary + secondary infection period)	Amount of infected objects, %					
	Assessment – 3 <sup>rd</sup> 10 day period of June				September	
	Control		RIMpro signals		Control	RIMpro signals
	leaves	fruits	leaves	fruits	fruits	fruits
5 + 0	4.0	2.0	0	0	3.0	0





# KALNANORAS

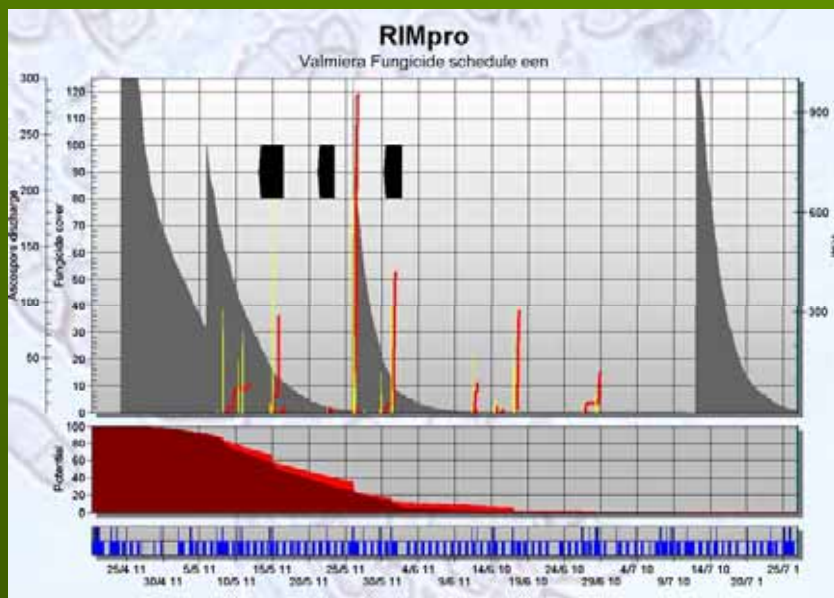
## Ogre region central part of Latvia

Cultivar – 'Spartan'

Primary scab infection period		Fungicides use		
Dates	RIM values per day (>150 RIM)	Date	Residues from previous use, %	Fungicide
–	–	18.04.	–	Champion 50
–	–	27.04.	26	Mancozeb
8. – 11.05.	832	10.05.	14	Chorus 75
14. – 15.05.	337	16.05.	25	Chorus 75
26. – 28.05.	652	28.05.	0	Chorus 75
29.05. – 01.06.	78	–	12	–

# Apple scab incidence in farm "Kalnanoras"

Number of fungicides applications (during primary + secondary infection period)	Amount of infected objects, %					
	Assessment – 3 <sup>rd</sup> 10 day period of June				September	
	Control		RIMpro signals		Control	RIMpro signals
	leaves	fruits	leaves	fruits	fruits	fruits
4 + 1	27.3	39.0	0.25	4.5	82.3	6.9



# SVITKAS

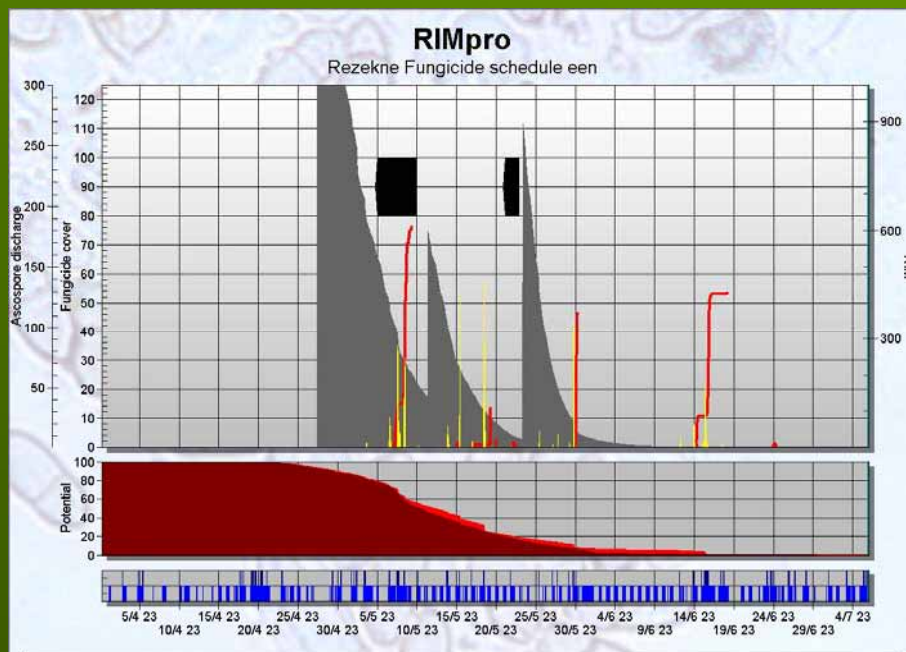
## Valmiera region north part of Latvia

Cultivar – 'Auksis'

Primary scab infection period		Fungicides use		
Dates	RIM values per day (>150 RIM)	Date	Residues from previous use, %	Fungicide
–	–	24.04.	–	Champion 50
8. – 12.05.	53	06.05.	39	Candit
15. – 16.05.	168	17.05.	14	Score 250
26.05.	739	26.05.	18	Mancozeb + Chorus 75
31.05. – 01.06.	224	04.06.	0	Score 250
12.06.	89	–	0	–
15. – 18.06.	83	–	0	–
27. – 29.06.	60	–	0	–

## Apple scab incidence in farm "Svitkas"

Number of fungicides applications (during primary + secondary infection period)	Amount of infected objects, %					
	Assessment – 3 <sup>rd</sup> 10 day period of June				September	
	Control		RIMpro signals		Control	RIMpro signals
	leaves	fruits	leaves	fruits	fruits	fruits
5 + 1	16.0	16.0	0	0	18.0	0



# BANDARI

## Rezekne region east part of Latvia

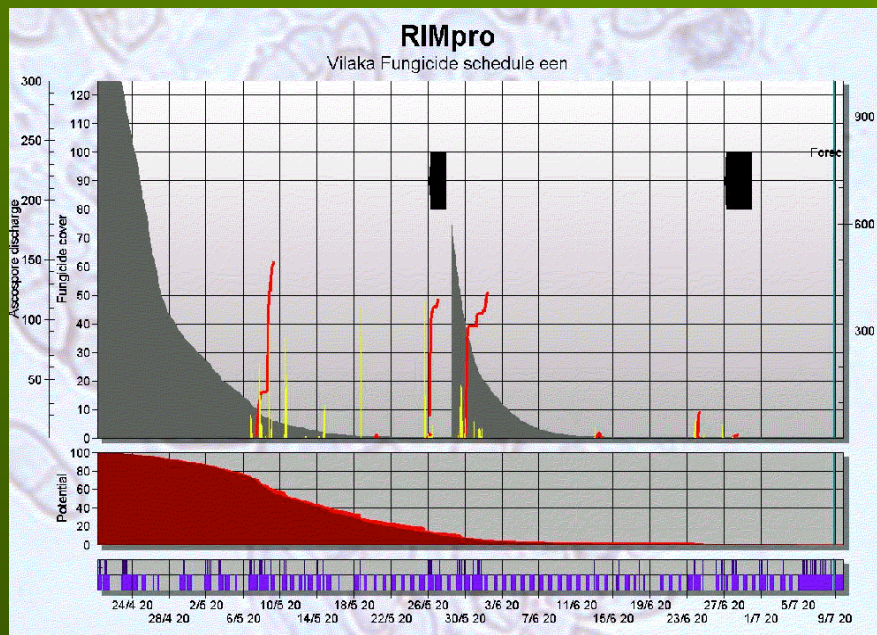
Cultivar – 'Belorusskoye Malinovoye'

Primary scab infection period		Fungicides use		
Dates	RIM values per day (>150 RIM)	Date	Residues from previous use, %	Fungicide
–	–	28.04.	–	Champion 50
8. – 10.05.	437	12.05.	43	Chorus 75
20.05.	110	24.05.	11	Effector + Chorus 75
31.05.	372	–	5	–
15.– 19.06.	356	–	0	–



## Apple scab incidence in farm "Bandari"

Number of fungicides applications (during primary + secondary infection period)	Amount of infected objects, %					
	Assessment – 3 <sup>rd</sup> 10 day period of June				September	
	Control		RIMpro signals		Control	RIMpro signals
	leaves	fruits	leaves	fruits	fruits	fruits
3 + 0	0	0	0	0	0	0



# IEVULEJAS

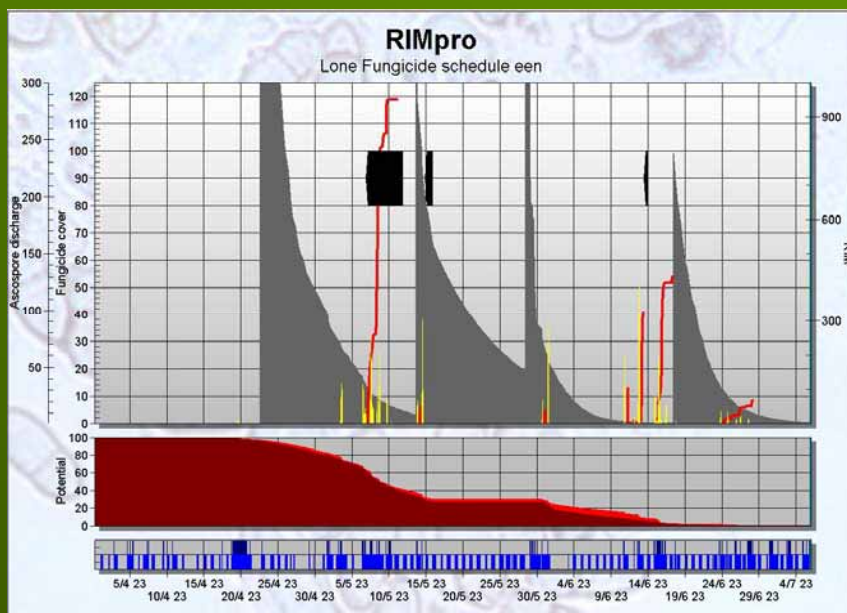
## Balvi region north / east part of Latvia

Cultivar – 'Lobo'

Primary scab infection period		Fungicides use		
Dates	RIM values per day (>150 RIM)	Date	Residues from previous use, %	Fungicide
–	–	20.04.	–	Champion 50
8. – 10.05.	364	– (!)	11	– (!)
27.05.	385	29.05.	0	Chorus 75
30.05. – 02.06.	299	–	19	–

## Apple scab incidence in farm "Ievulejas"

Number of fungicides applications (during primary + secondary infection period)	Amount of infected objects, %					
	Assessment – 3 <sup>rd</sup> 10 day period of June				September	
	Control		RIMpro signals		Control	RIMpro signals
	leaves	fruits	leaves	fruits	fruits	fruits
2 + 1	54.0	94.0	38.0	76	–	–



# POCERI

## Jekabpils region south / east part of Latvia

Cultivar – 'Geneva Early'

Primary scab infection period		Fungicides use		
Dates	RIM values per day (>150 RIM)	Date	Residues from previous use, %	Fungicide
–	–	23.04.	–	Champion 50
08. – 09.05.	536	– (!)	18	– (!)
15.05.	50	14.05.	0	Mancozeb + Chorus 75
31.05. – 01.06.	22	29.05.	22	Mancozeb + Candit
12. – 14.06.	145	– (!)	0	– (!)
16. – 18.06.	405	18.06. (!)	0	Candit (!)

## Apple scab incidence in farm "Poceri"

Number of fungicides applications (during primary + secondary infection period)	Amount of infected objects, %					
	Assessment – 3 <sup>rd</sup> 10 day period of June				September	
	Control		RIMpro signals		Control	RIMpro signals
	leaves	fruits	leaves	fruits	fruits	fruits
4 + 1	85.0	92.0	3.0	3.0	96.0	–



# CONCLUSIONS

- The common apple scab primary infection period lasted from the May 8th until the June 19th in Latvia, 2007.
- In different regions there were 3 – 6 separate scab infection periods above 50 RIM values (1 – 4 above 100 RIM).
- 3 – 5 fungicides applications (including the first protective) were necessary for sufficient scab control if carried out in determined terms.

- Even one undone application resulted with significant scab expansion (farm "Ievulejas").
- In 2007 mainly curative fungicides Chorus 75 or Score 250 separately or in mixture with protective product after infection was recommended.
- In generally RIMpro signals were acceptable for control apple scab in Latvia if the fungicides applications were carried out accordingly to recommendations.

# PROBLEMS...

- technical problems
- access to internet
- professional advisors
- computer specialists
- amount of weather stations
- no precisely weather prognosis
  
- How to make RIMpro user friendly???
  
- It is easier to create new DSS than to achieve that farmers use and trust in it.



**THANKS FOR YOUR  
ATTENTION!!!**