EuroBlight Workshop
9-14 October, Saint Petersburg, Russian Federation

Using information about the spatial dispersal of *Phytophthora infestans* for managing late blight

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ARO, The Volcani Center

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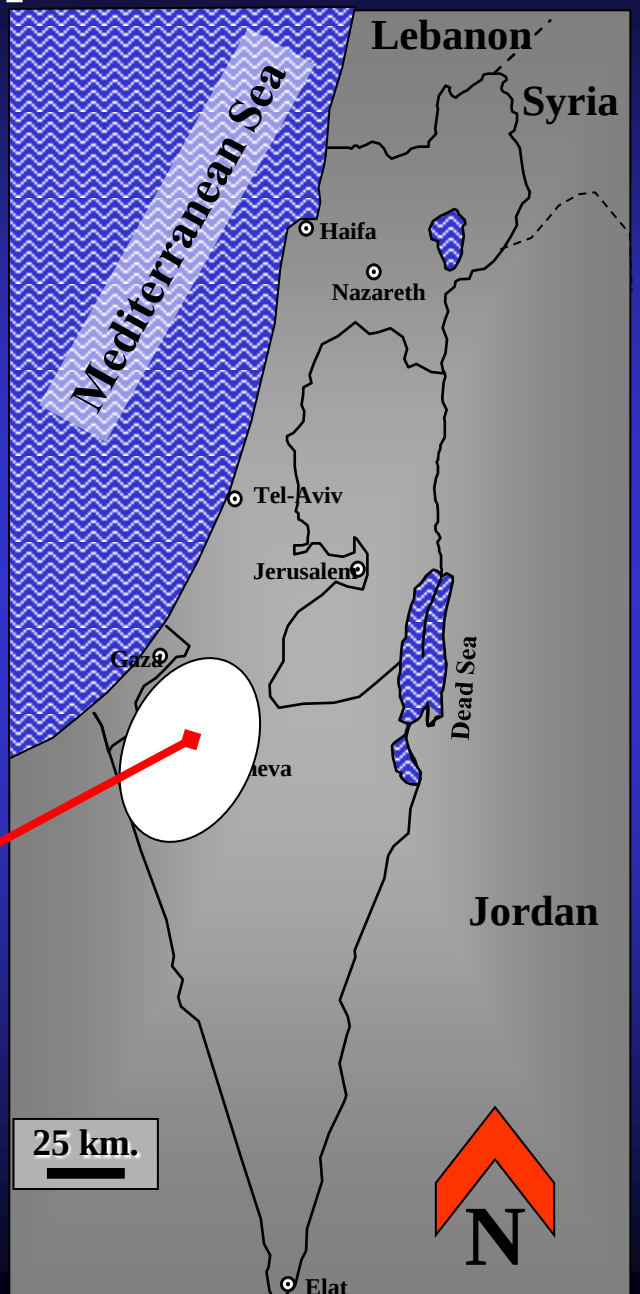
Scantask Ltd

Uri Zig
Yaham

Potato production in Israel



Northern Negev

10,000 ha


HM-AXP

Decisions about spray timing and fungicide type are based on "on-site" information (scouting, weather, etc.)

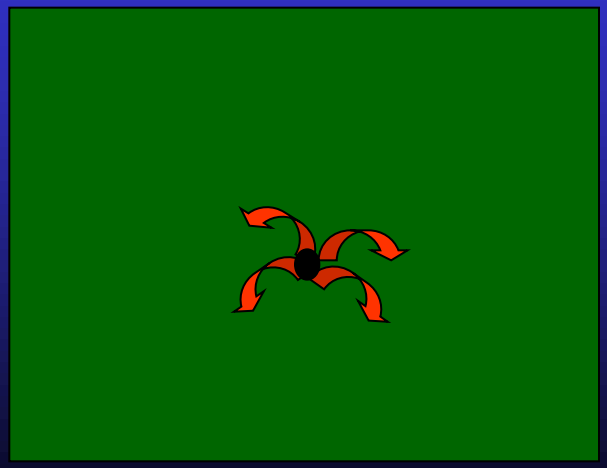
Late blight management can be improved by relying on regional information…..

- About the sources of initial inoculum.
- About the spatial dispersal of the disease on a regional basis.

What are the sources of initial inoculum?

The disease may be originated within the field

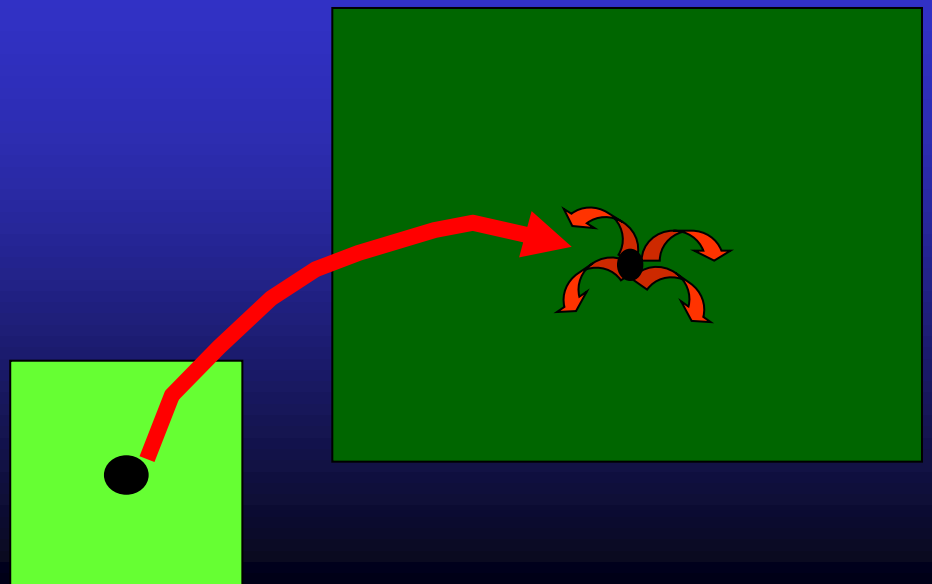
- Infested seed tubers
- Infected volunteer potato plants
- Oospores (?)



What are the sources of initial inoculum?

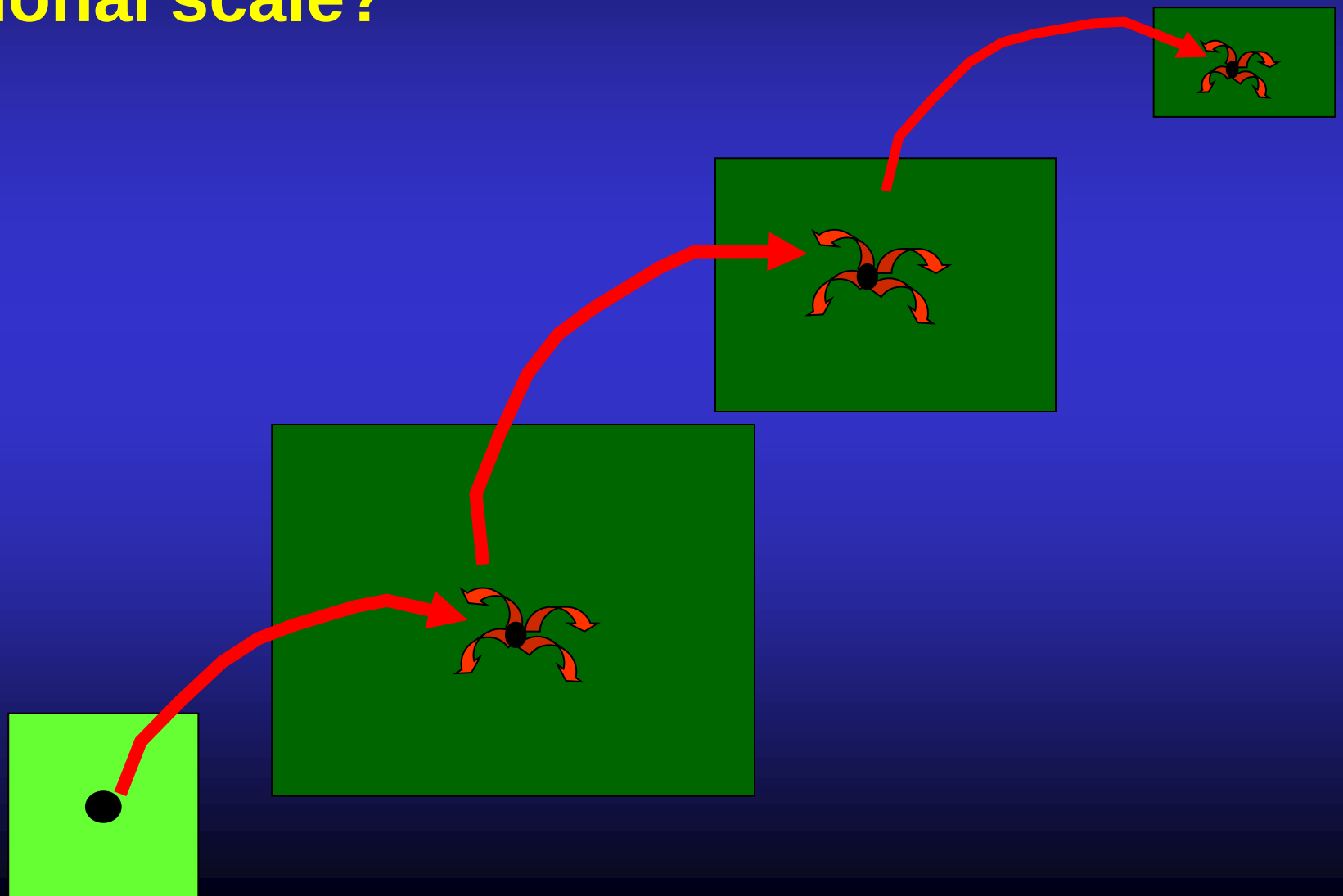
The disease may be originated from external sources

- Adjacent tomato greenhouses
- Infected volunteer plants growing in adjacent fields
- Dump sites

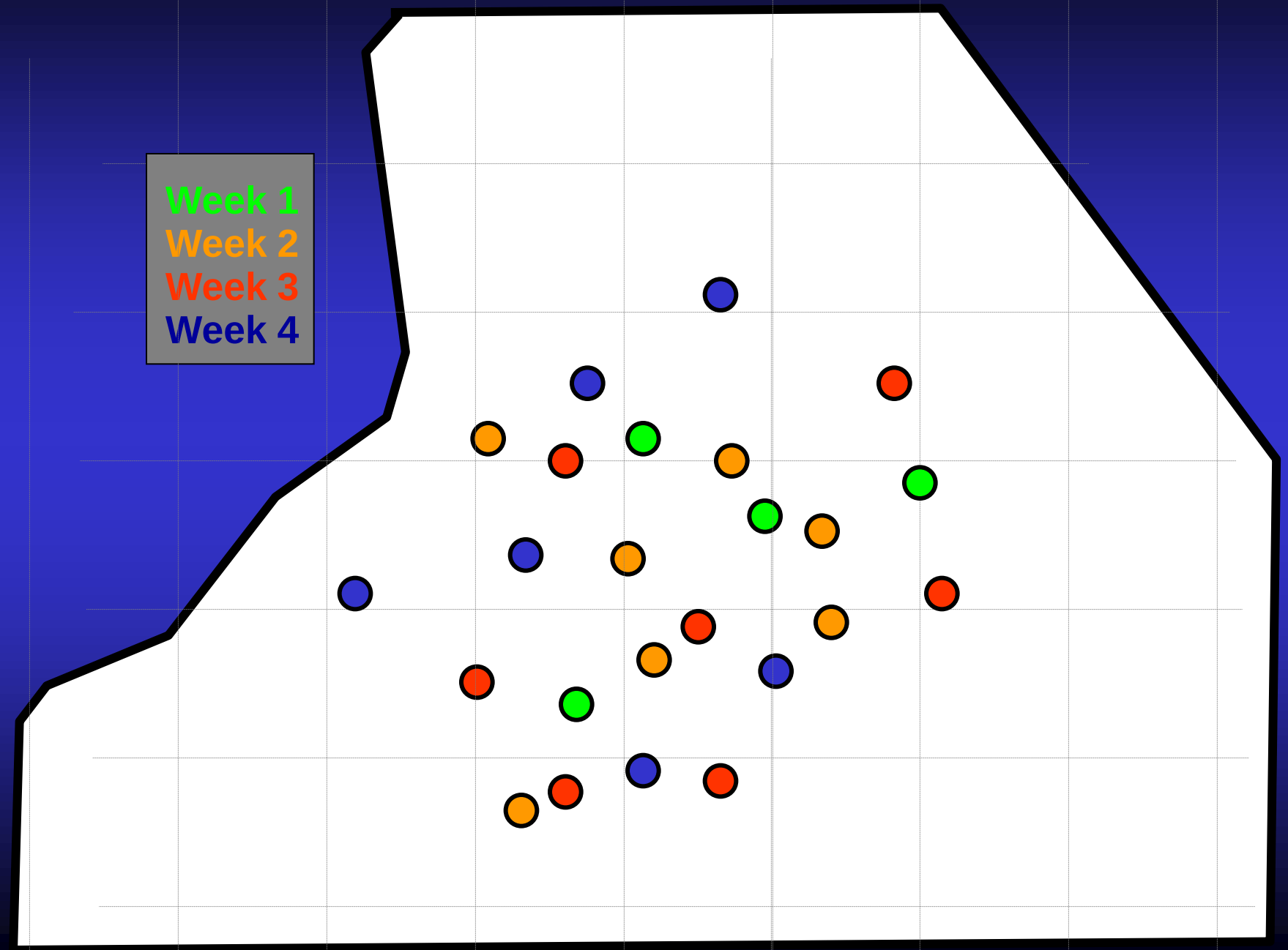


What are the sources of initial inoculum?

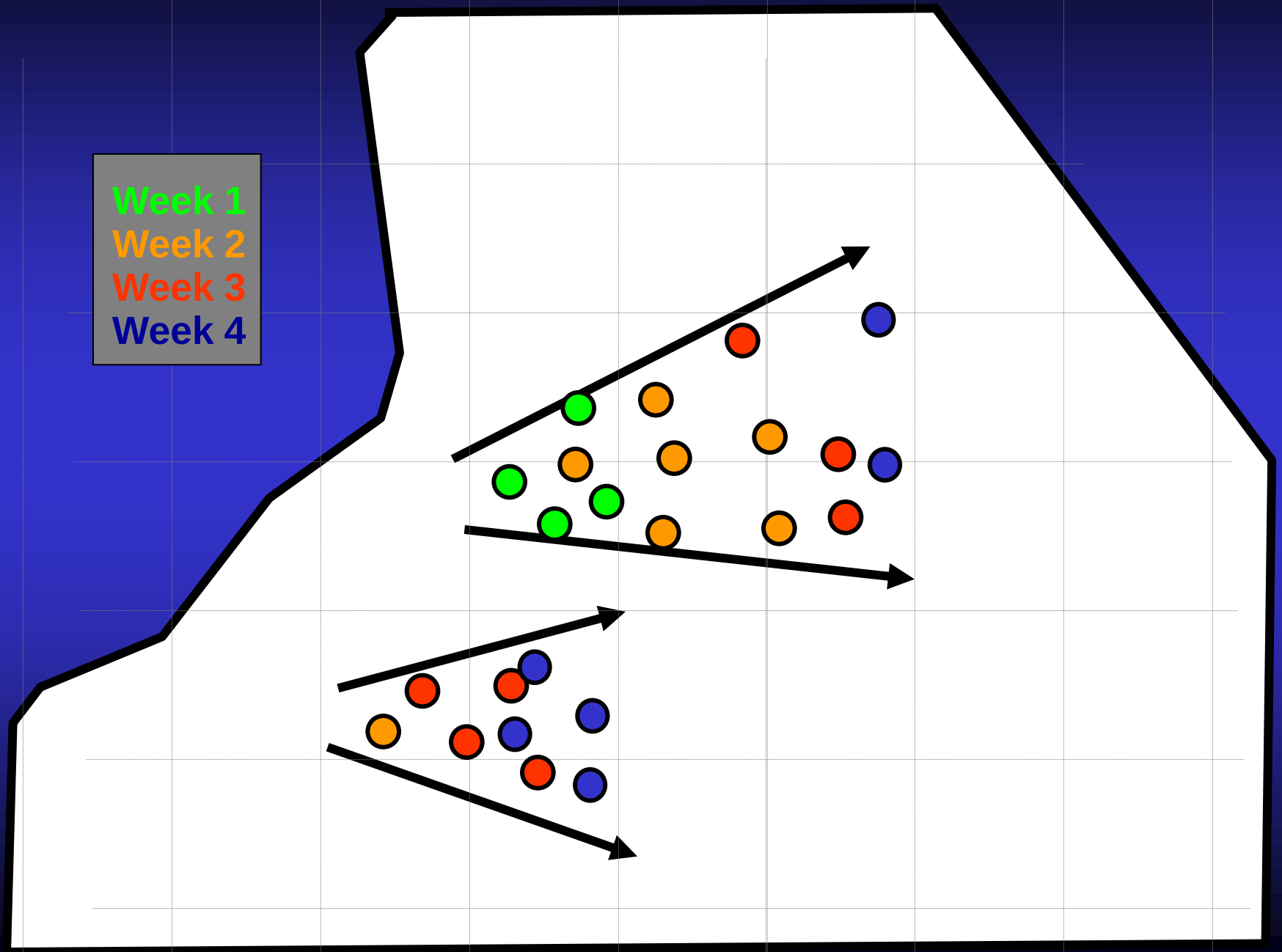
What is the pattern of pathogen spread on a regional scale?



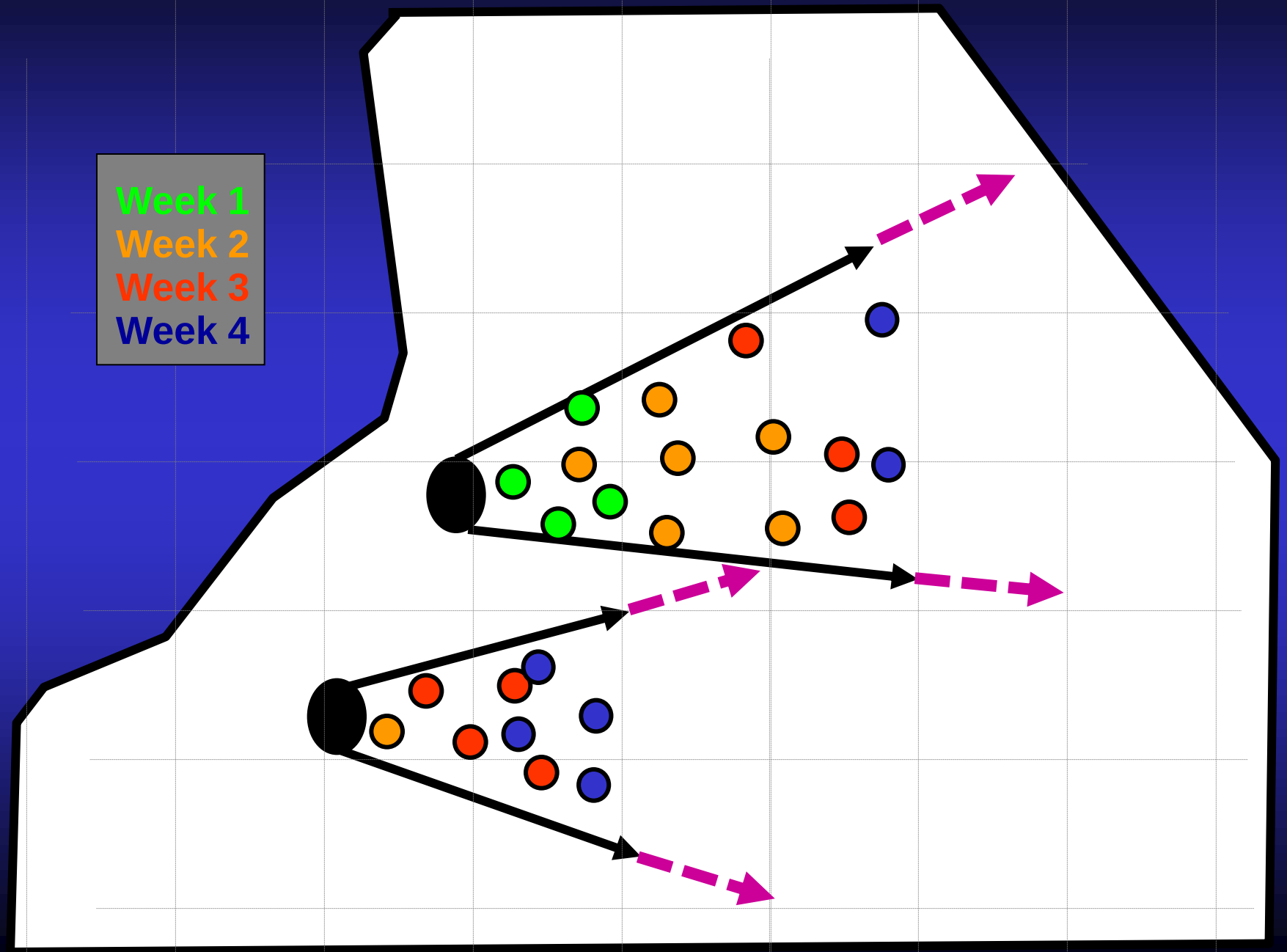
Spread of late blight in time and space



…. but if…..



…. then…..



Objectives

- To document late blight spread in time and space, on a regional basis;
- To identify the source/s of initial inoculum;
- To predict future areas of risk.

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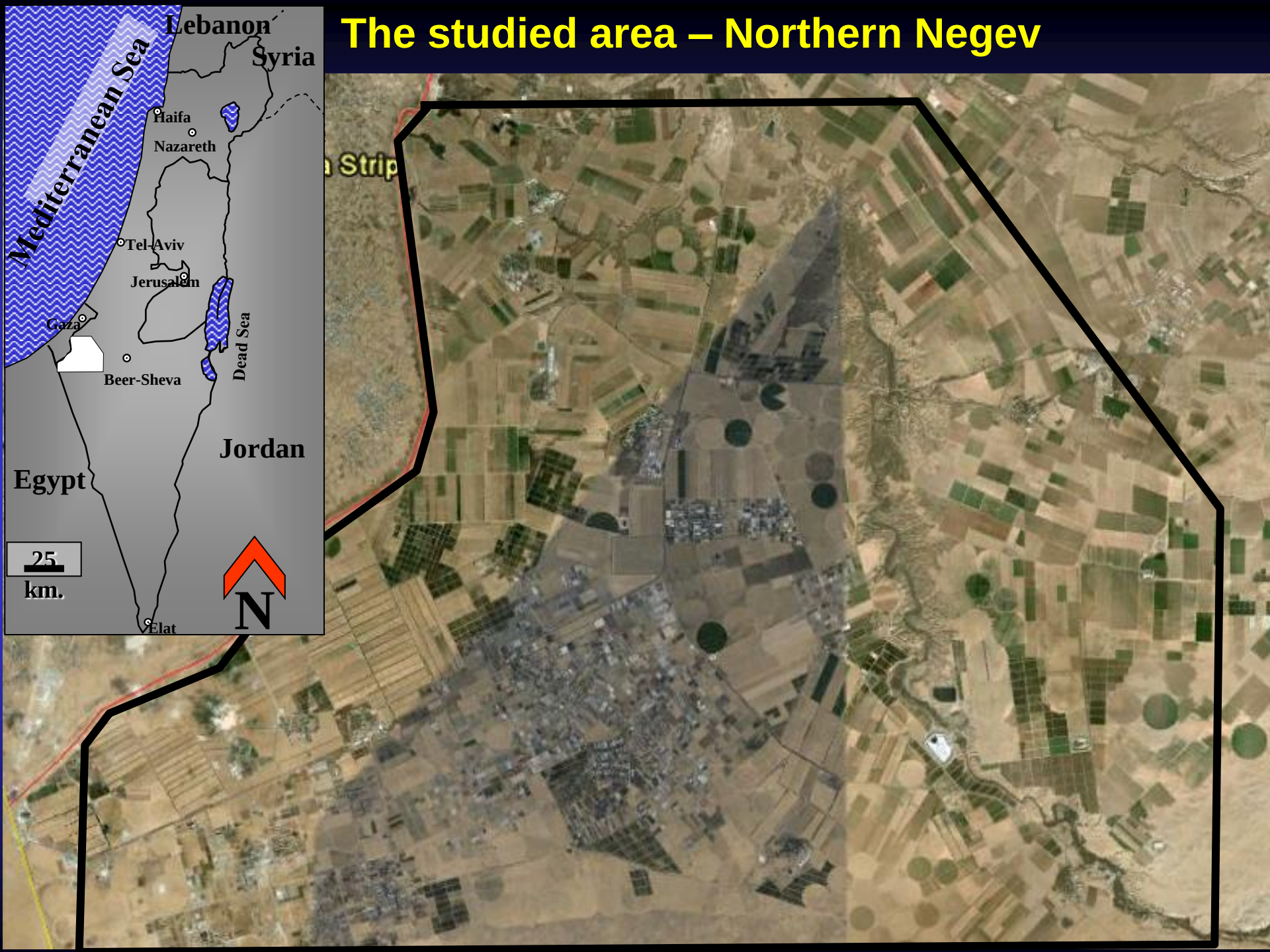
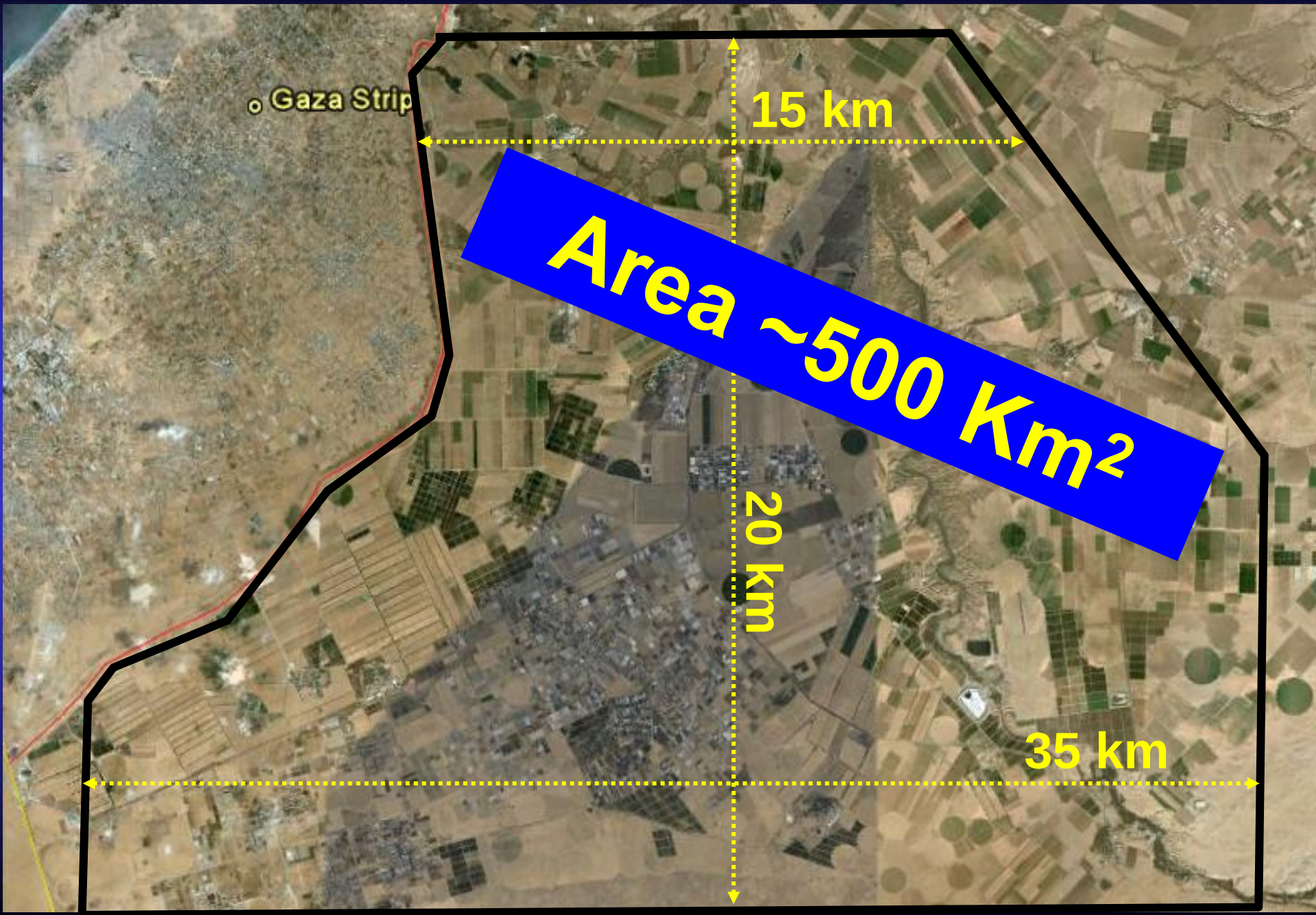
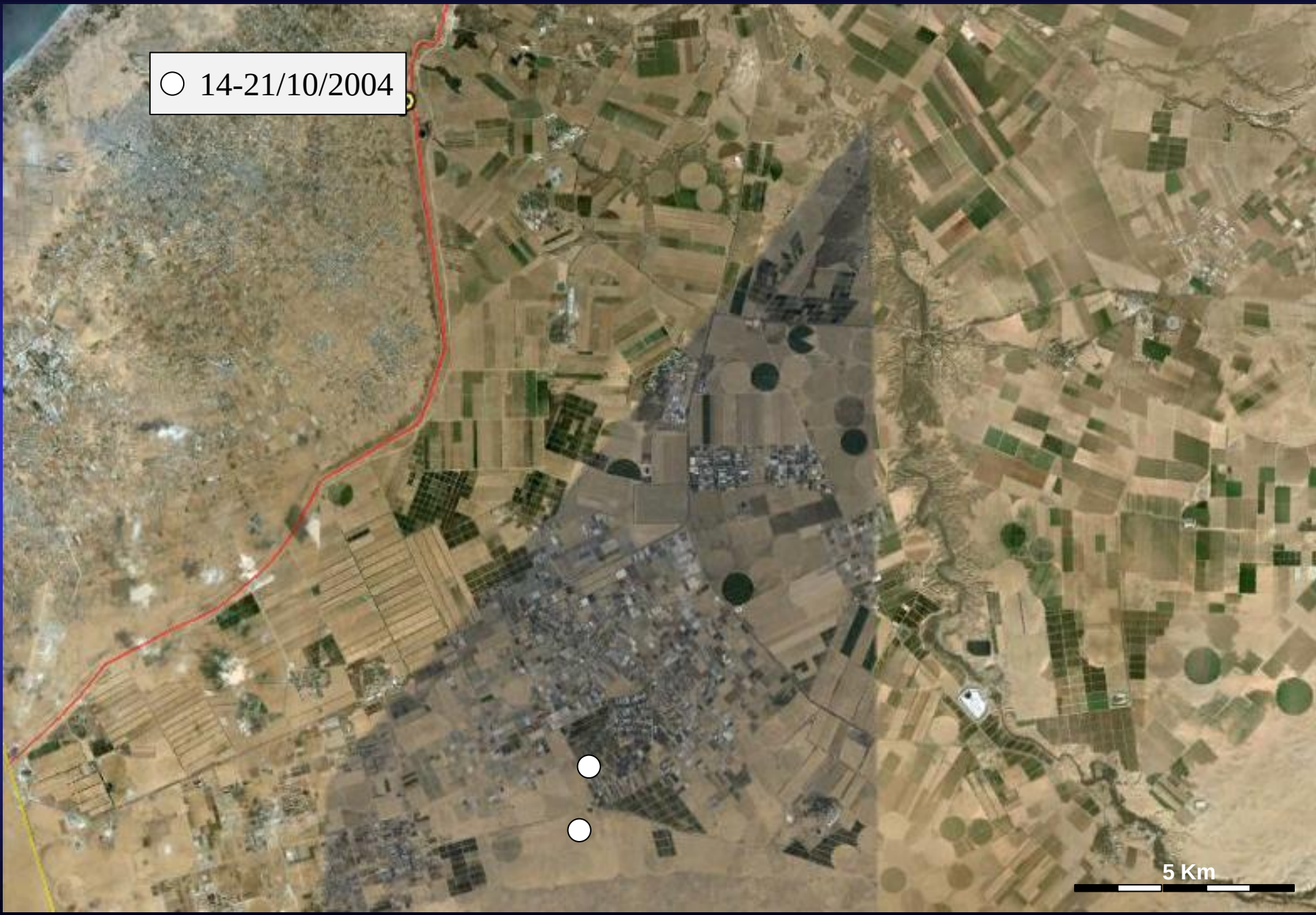
The studied area – Northern Negev



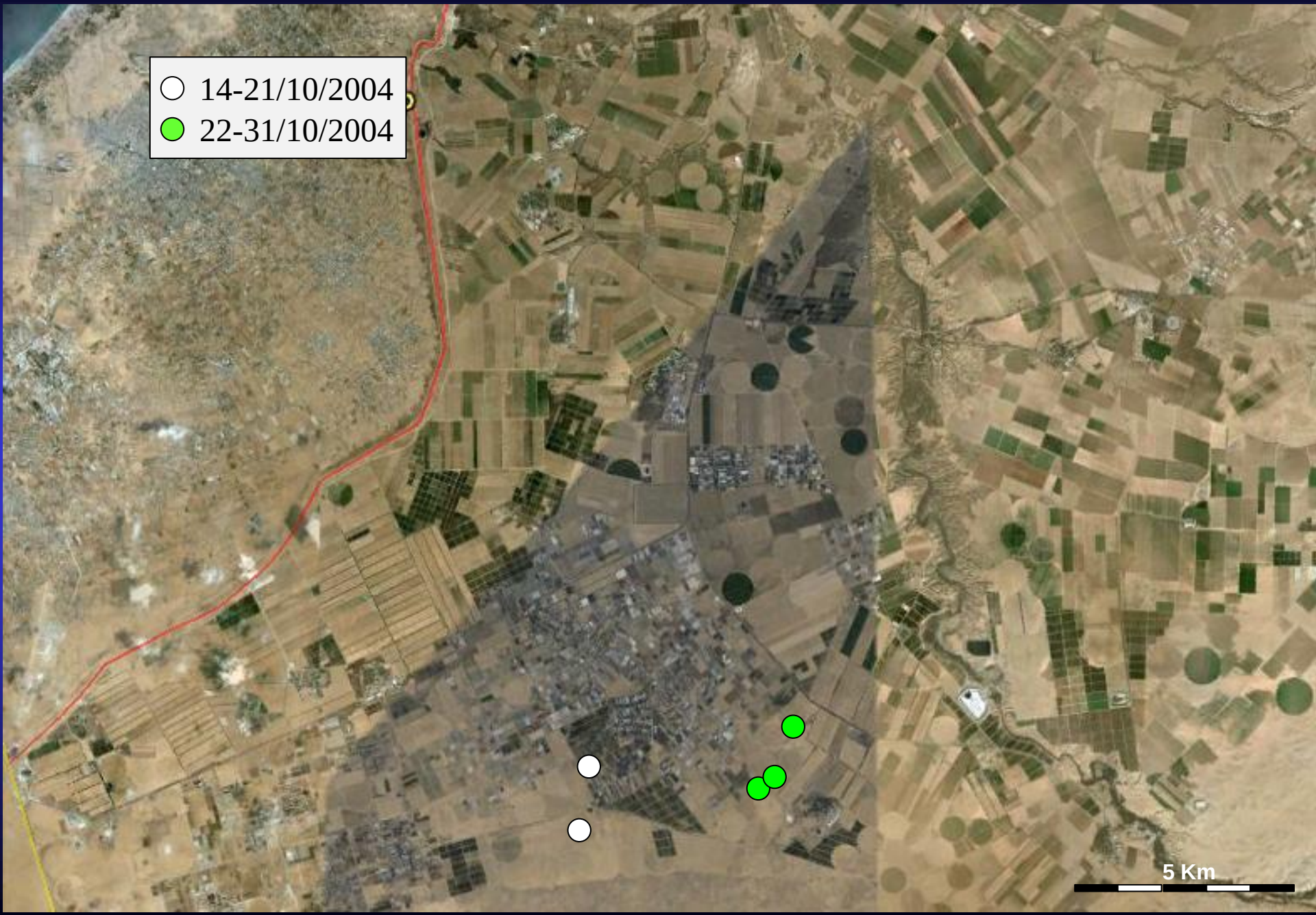
The studied area – Northern Negev



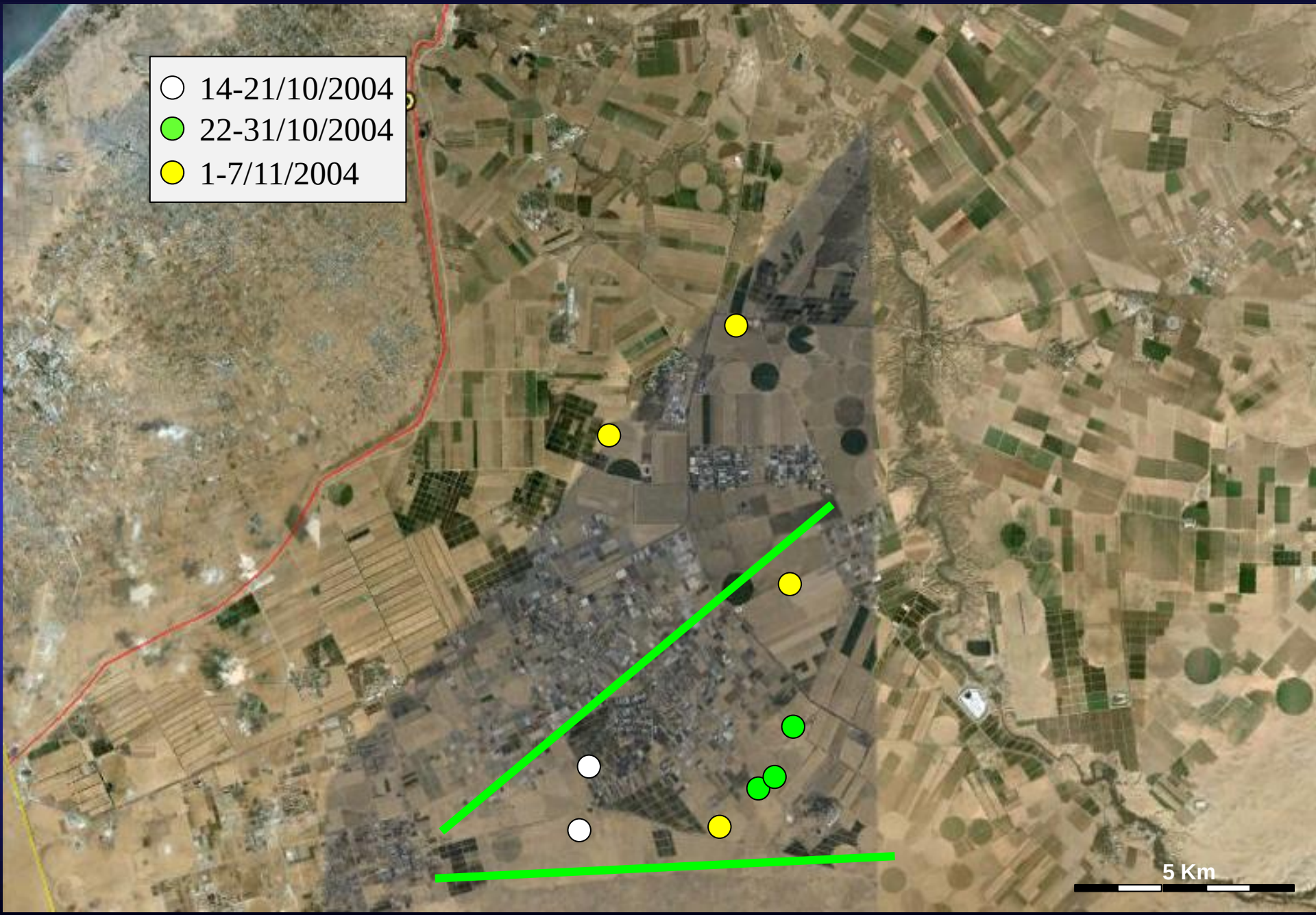
Autumn season 2004-5



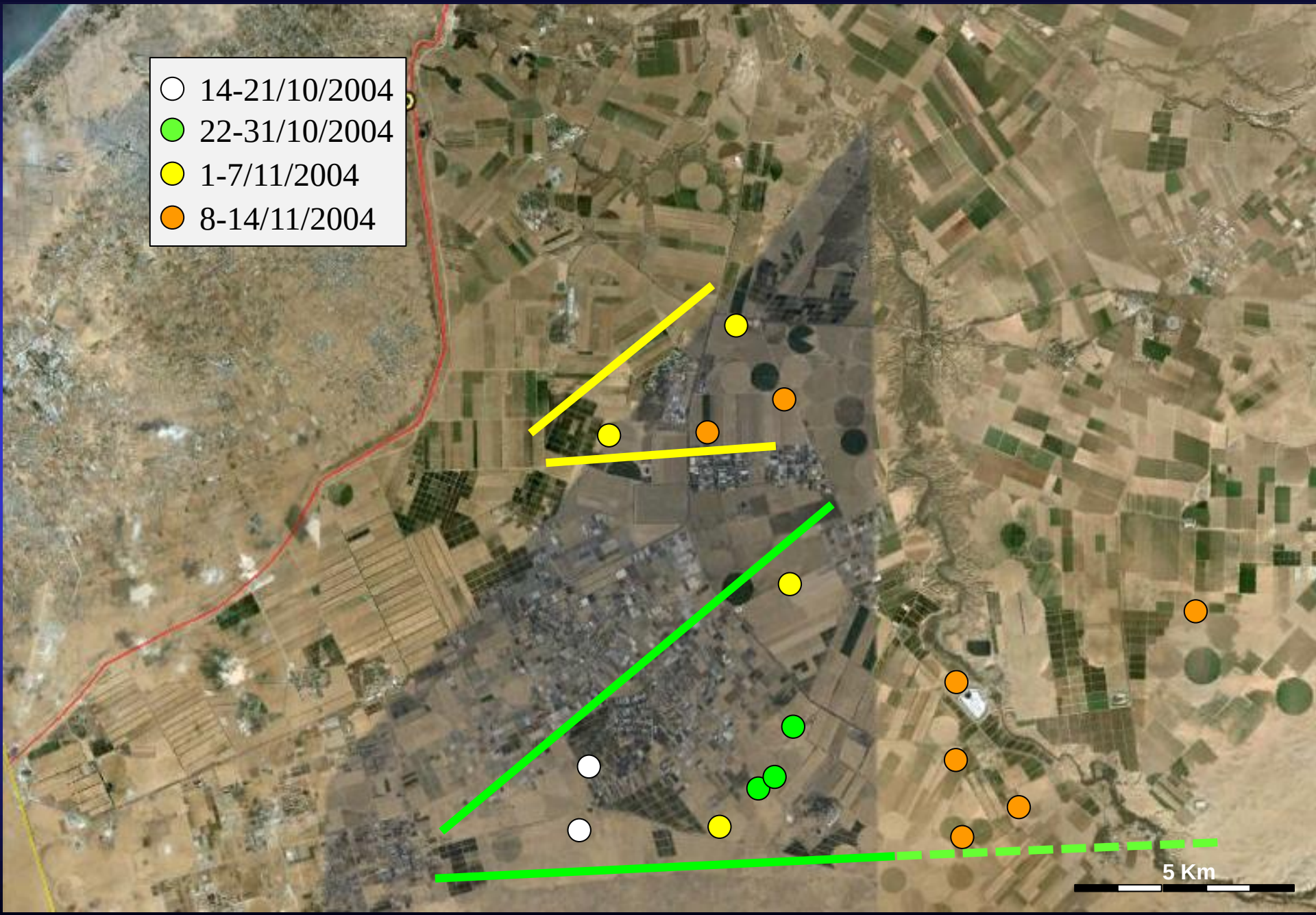
Autumn season 2004-5



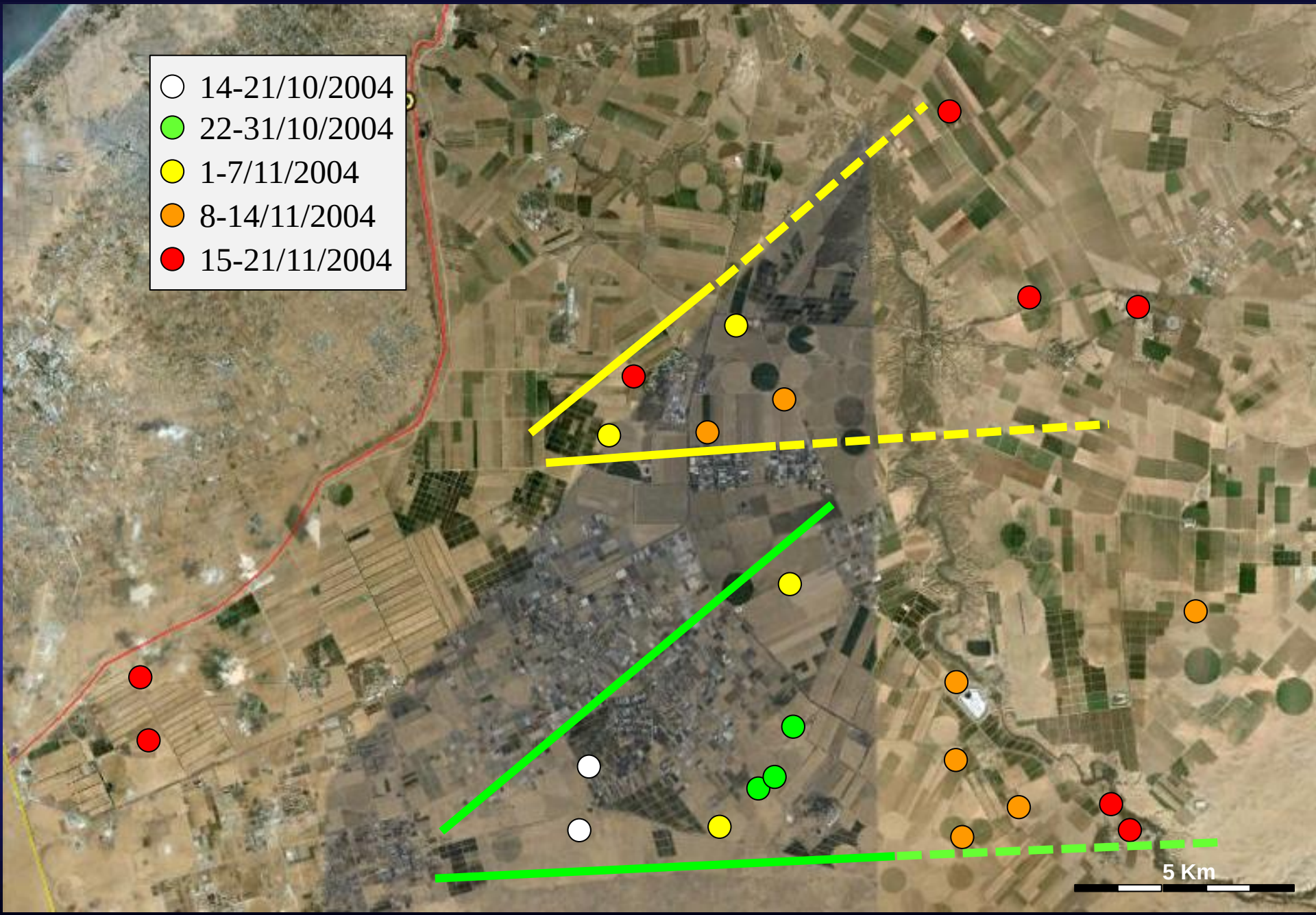
Autumn season 2004-5



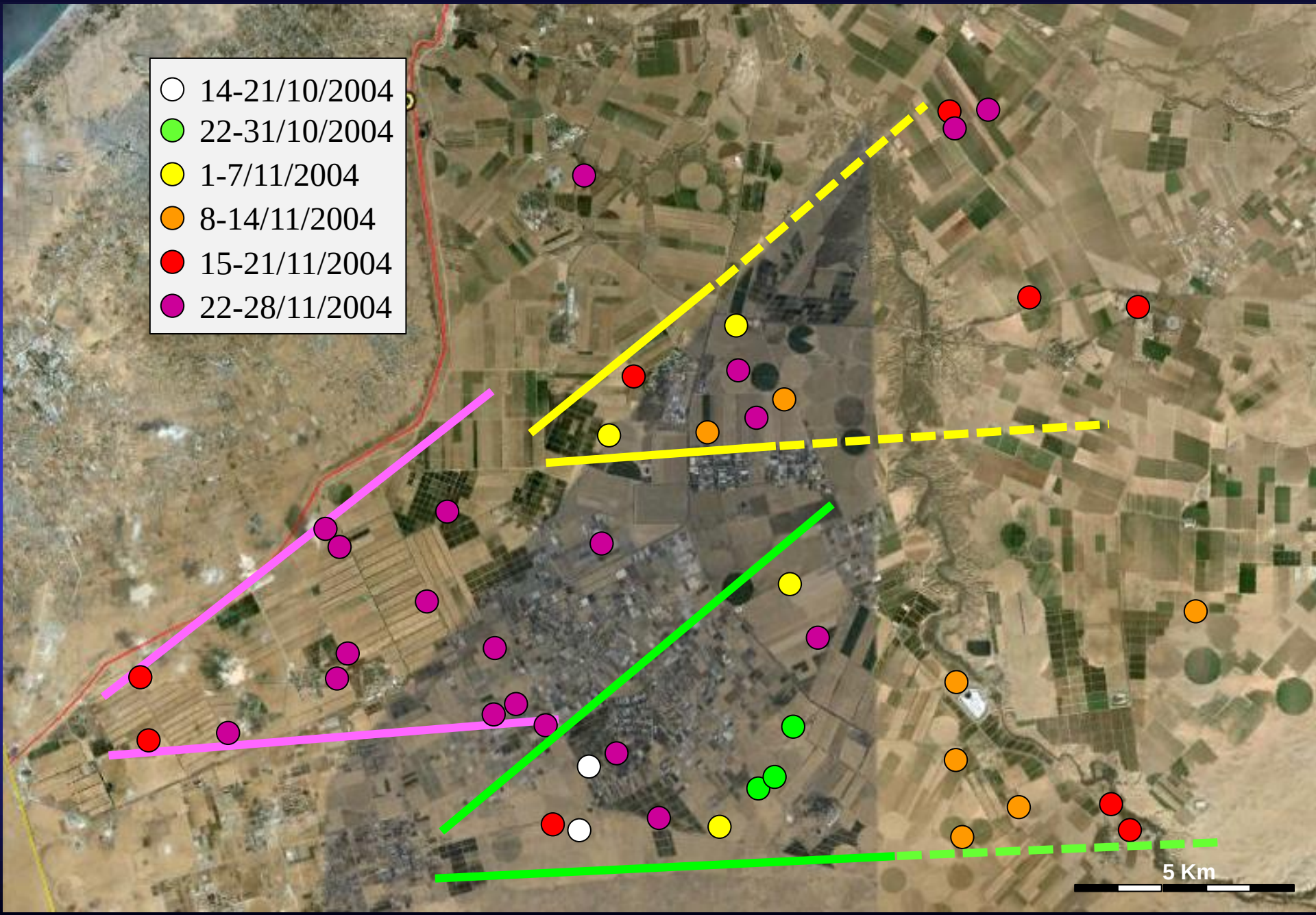
Autumn season 2004-5



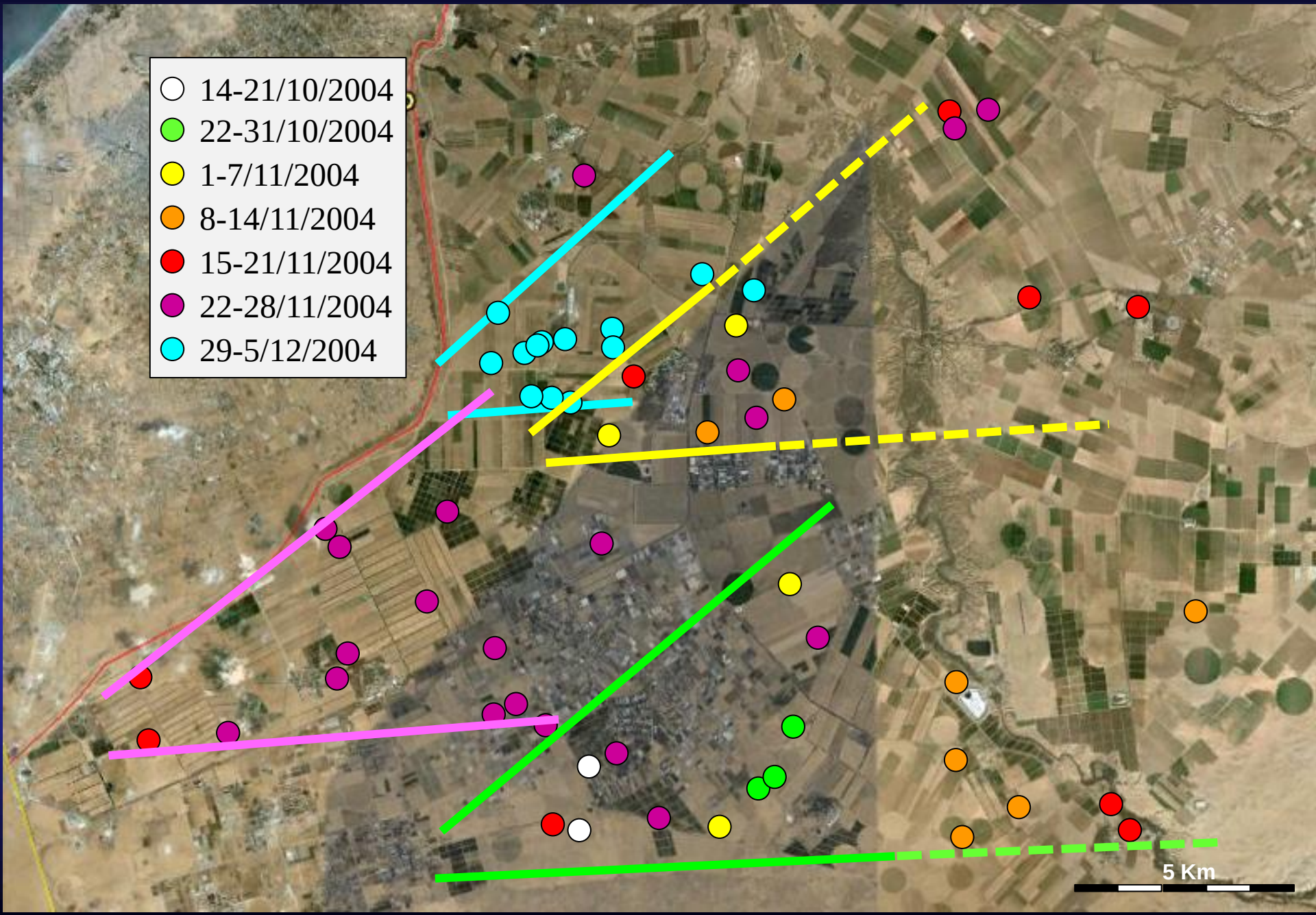
Autumn season 2004-5



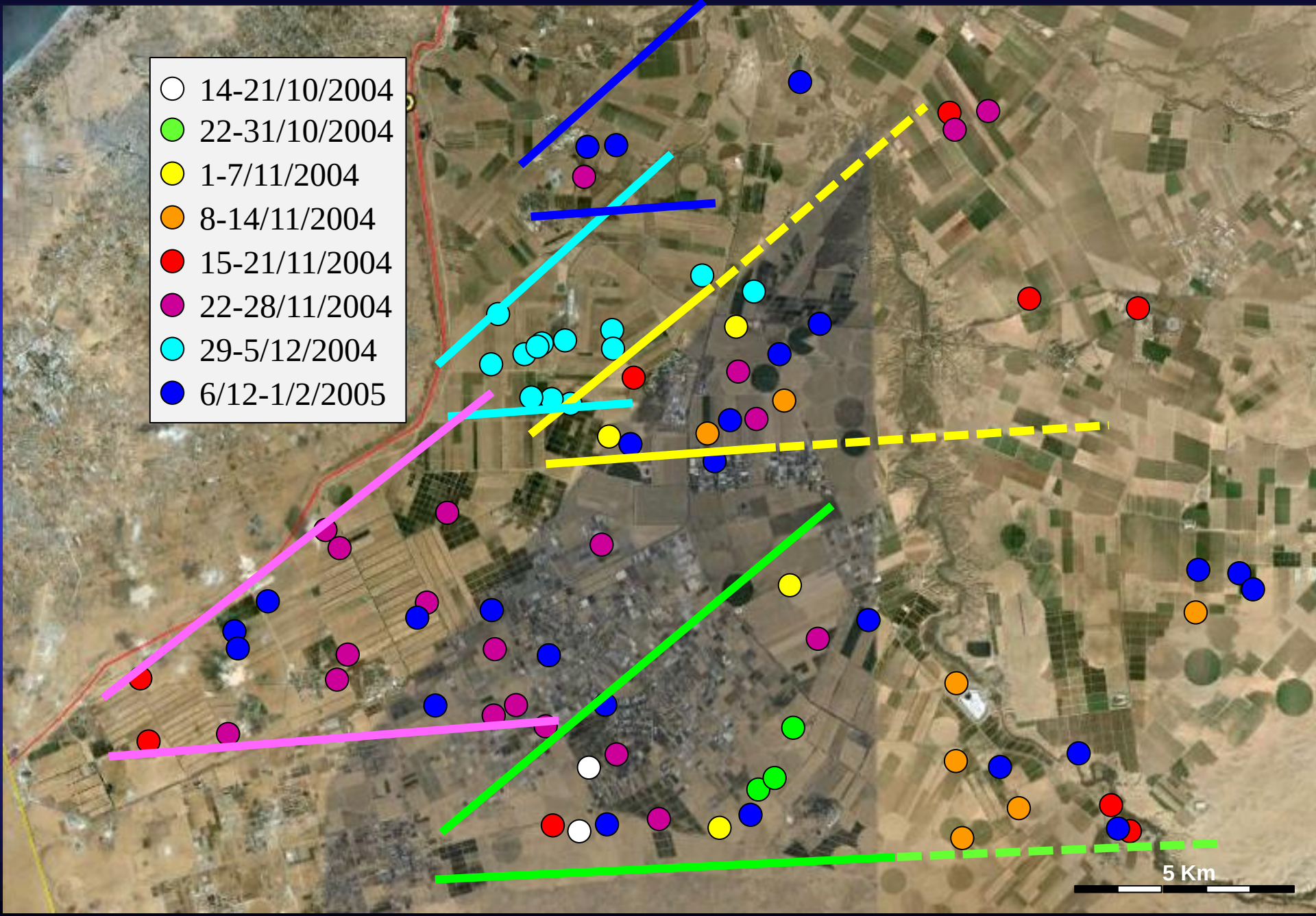
Autumn season 2004-5



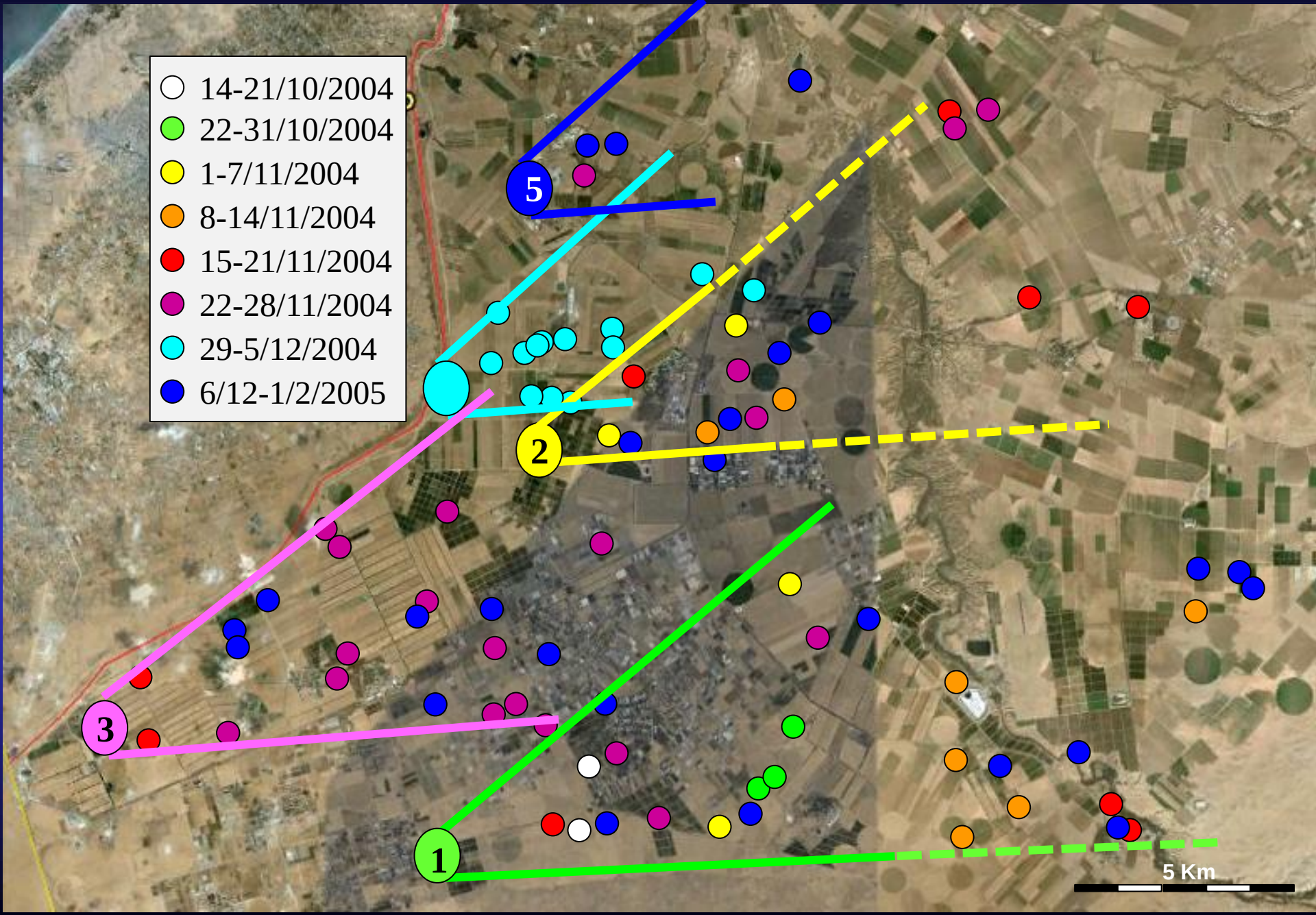
Autumn season 2004-5



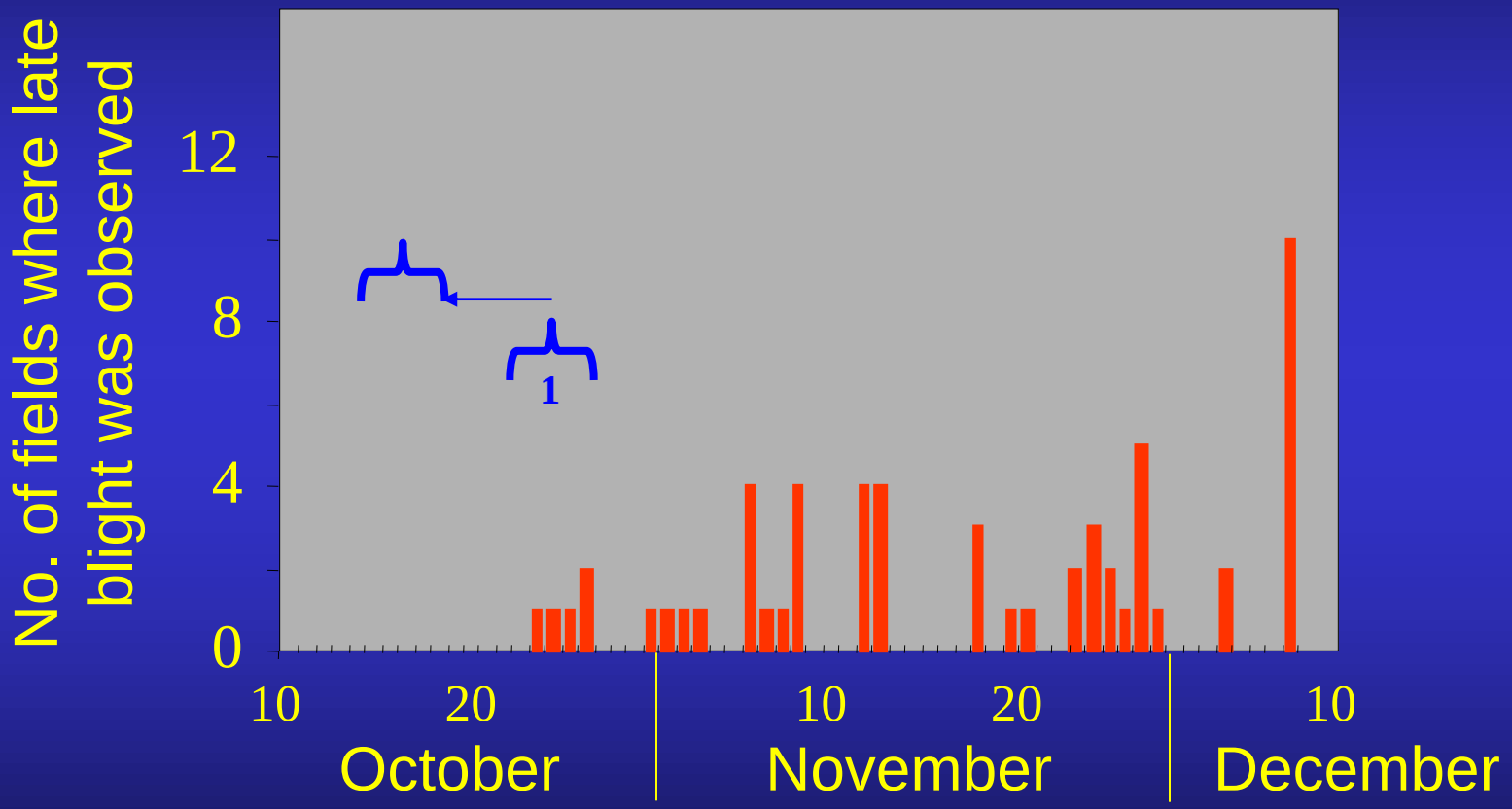
Autumn season 2004-5



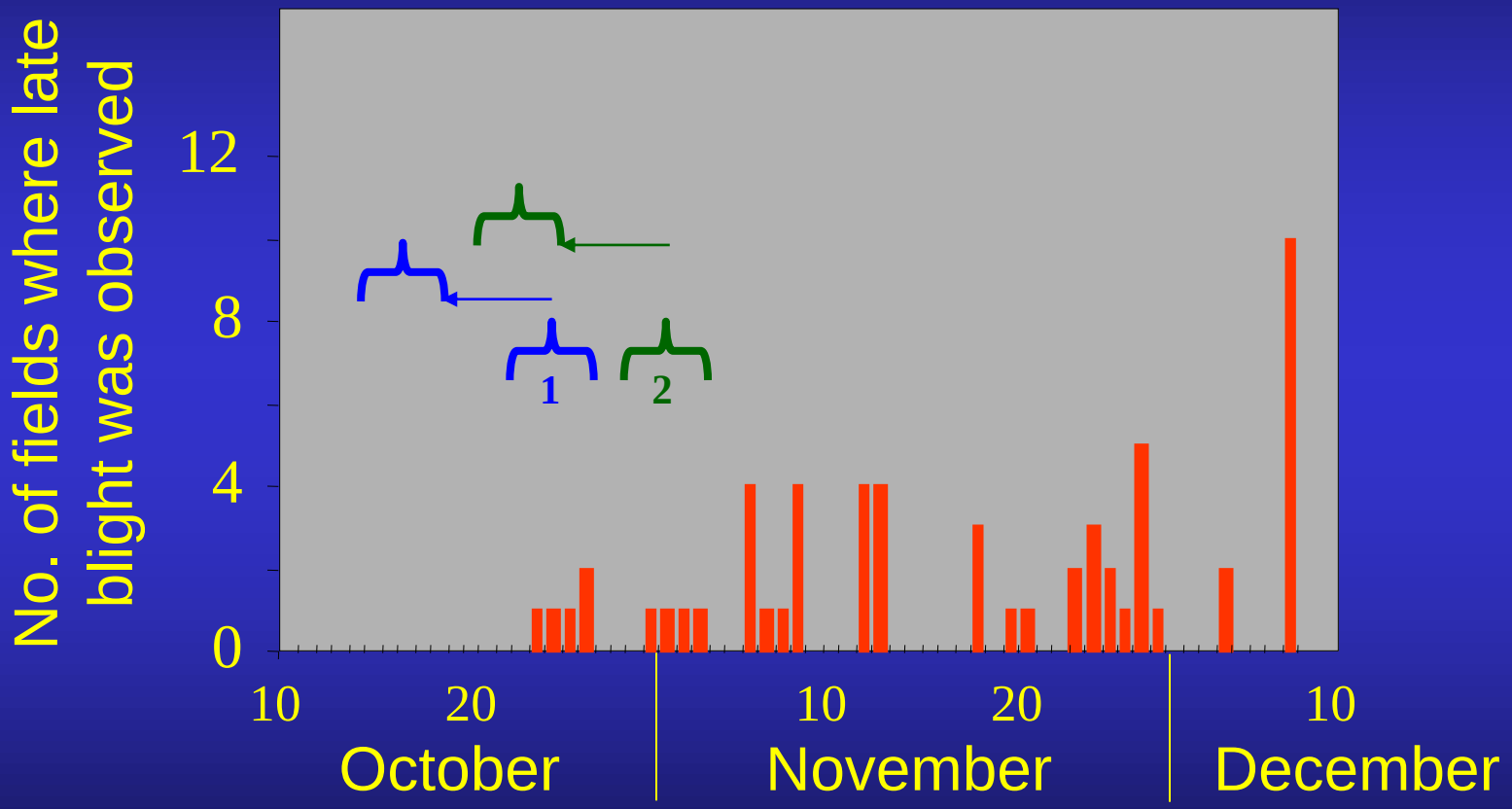
Autumn season 2004-5



Time of late blight detection



Time of late blight detection



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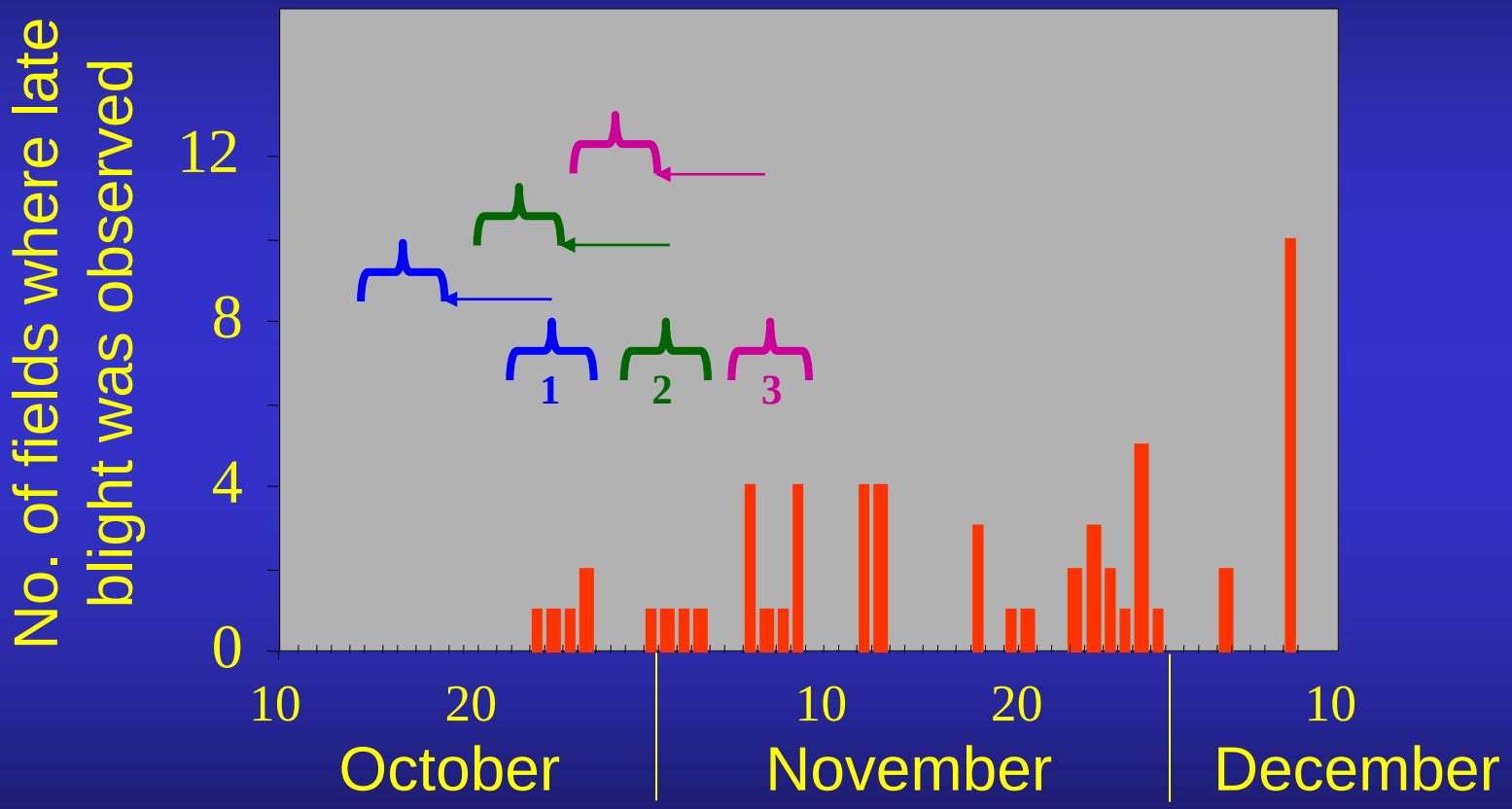
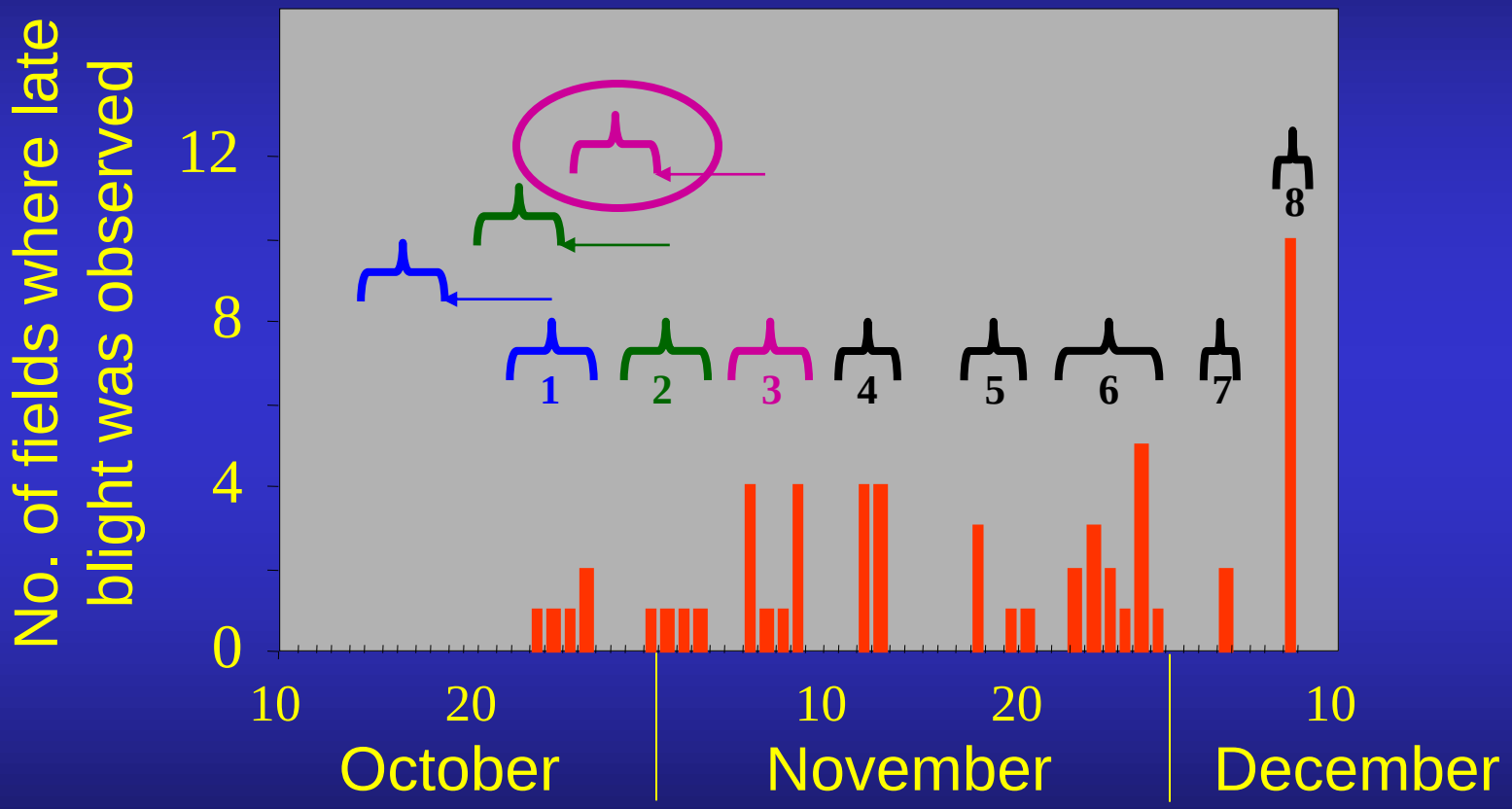
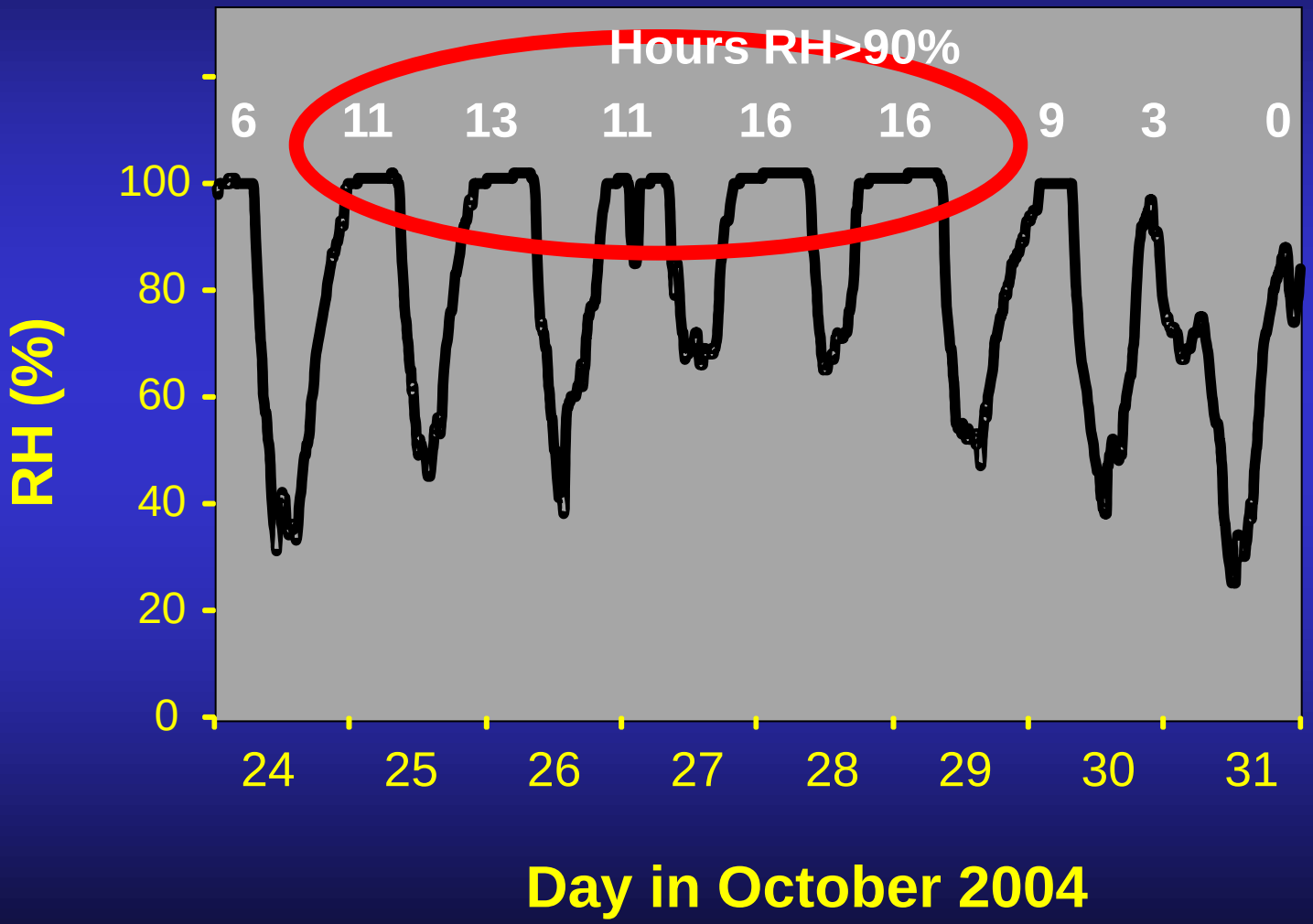


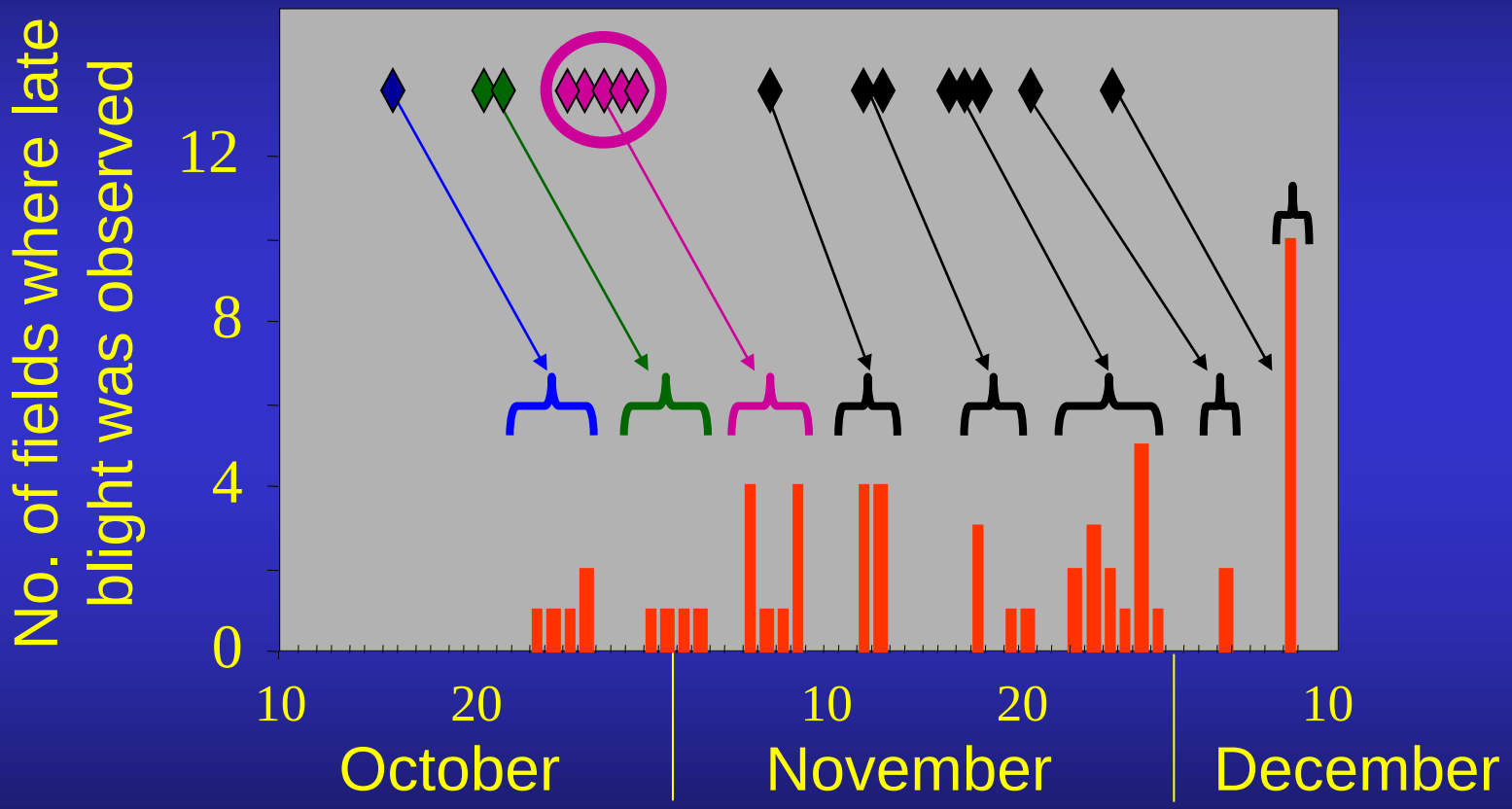
Time of late blight detection



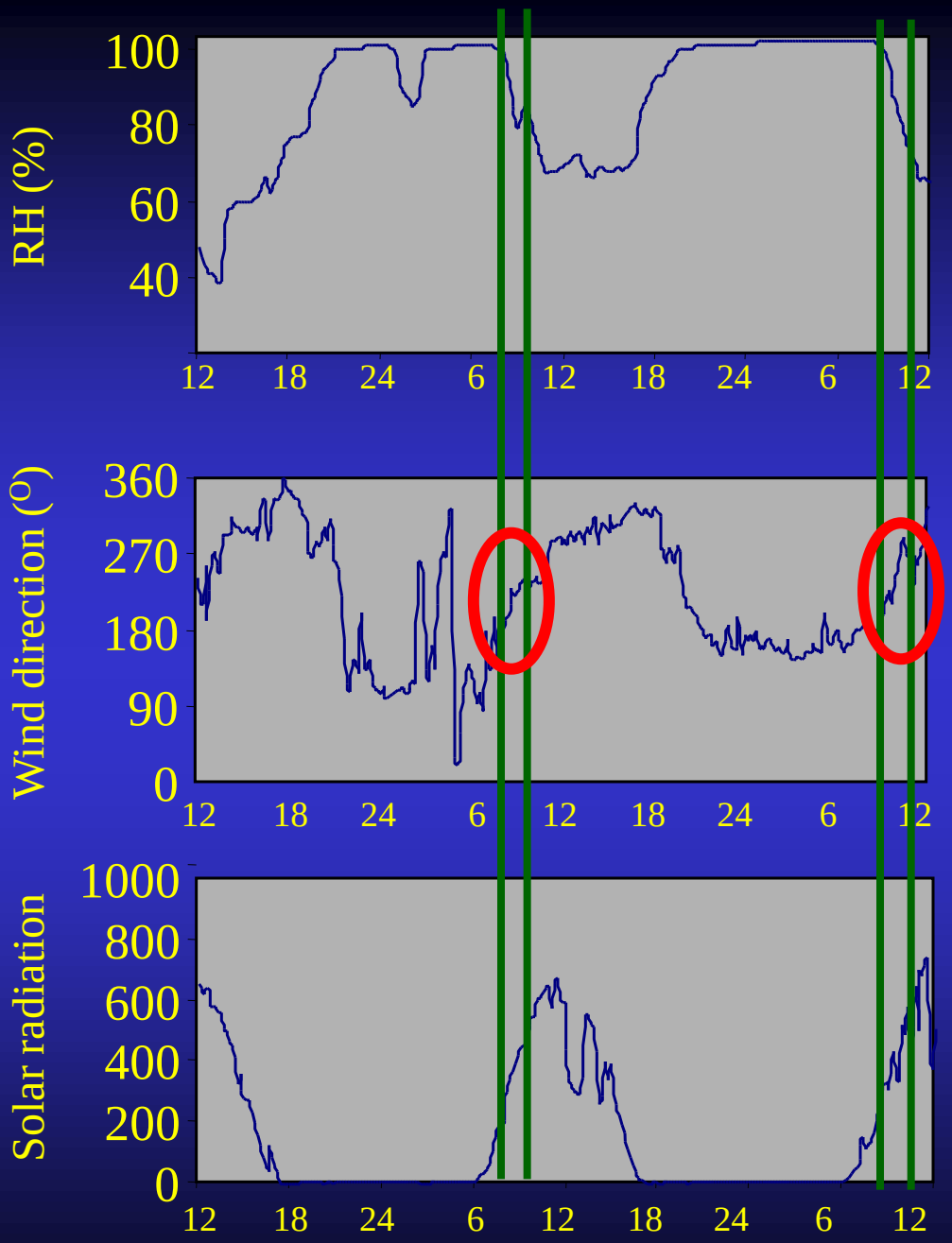
Occurrence of infection event # 3

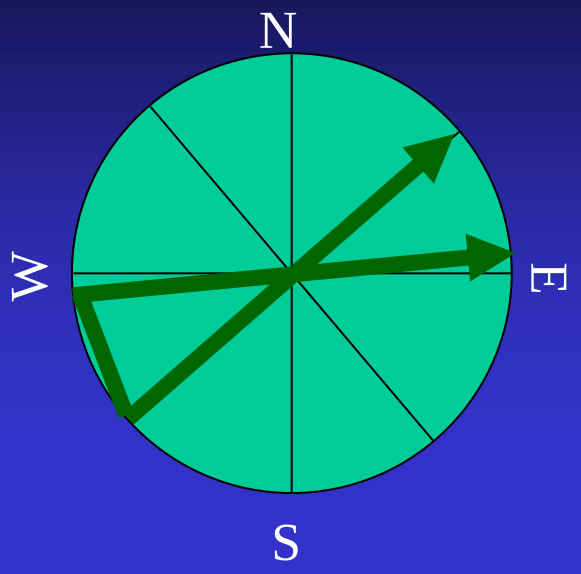


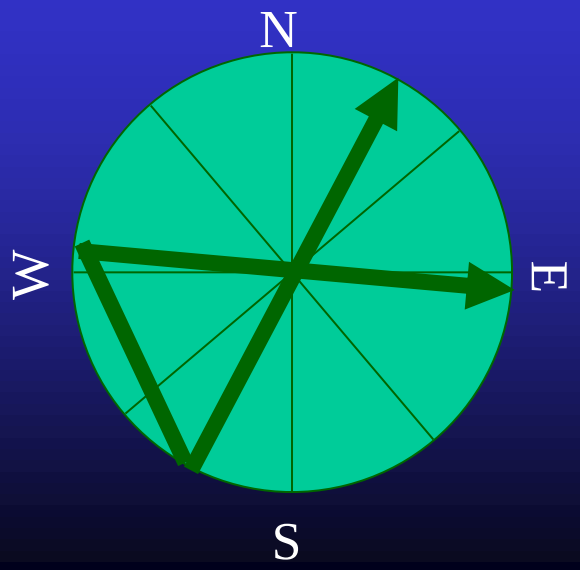
Time of late blight detection and infection



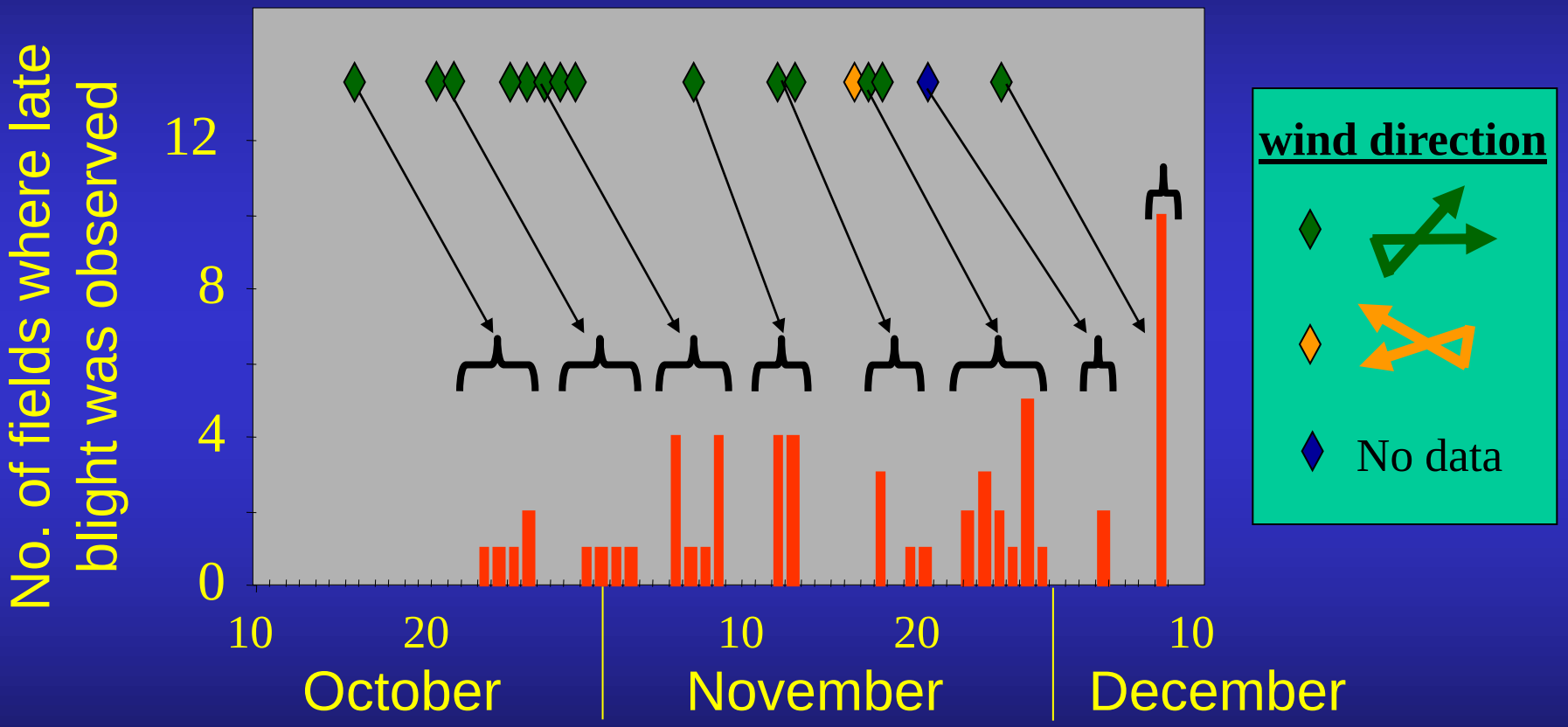
Wind direction when the plants were drying



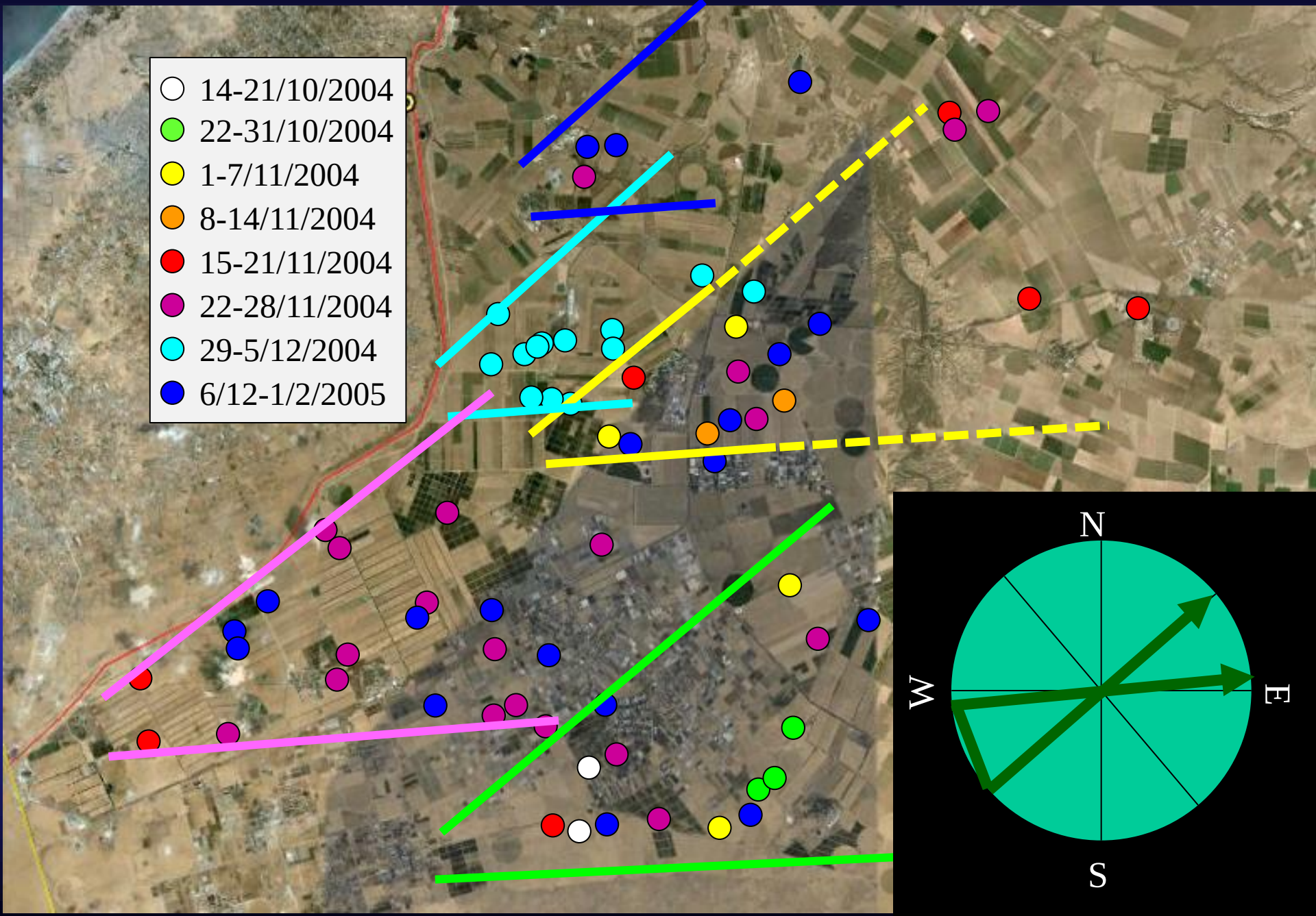




Wind direction when the plants were drying at the infection dates in autumn 2004-5

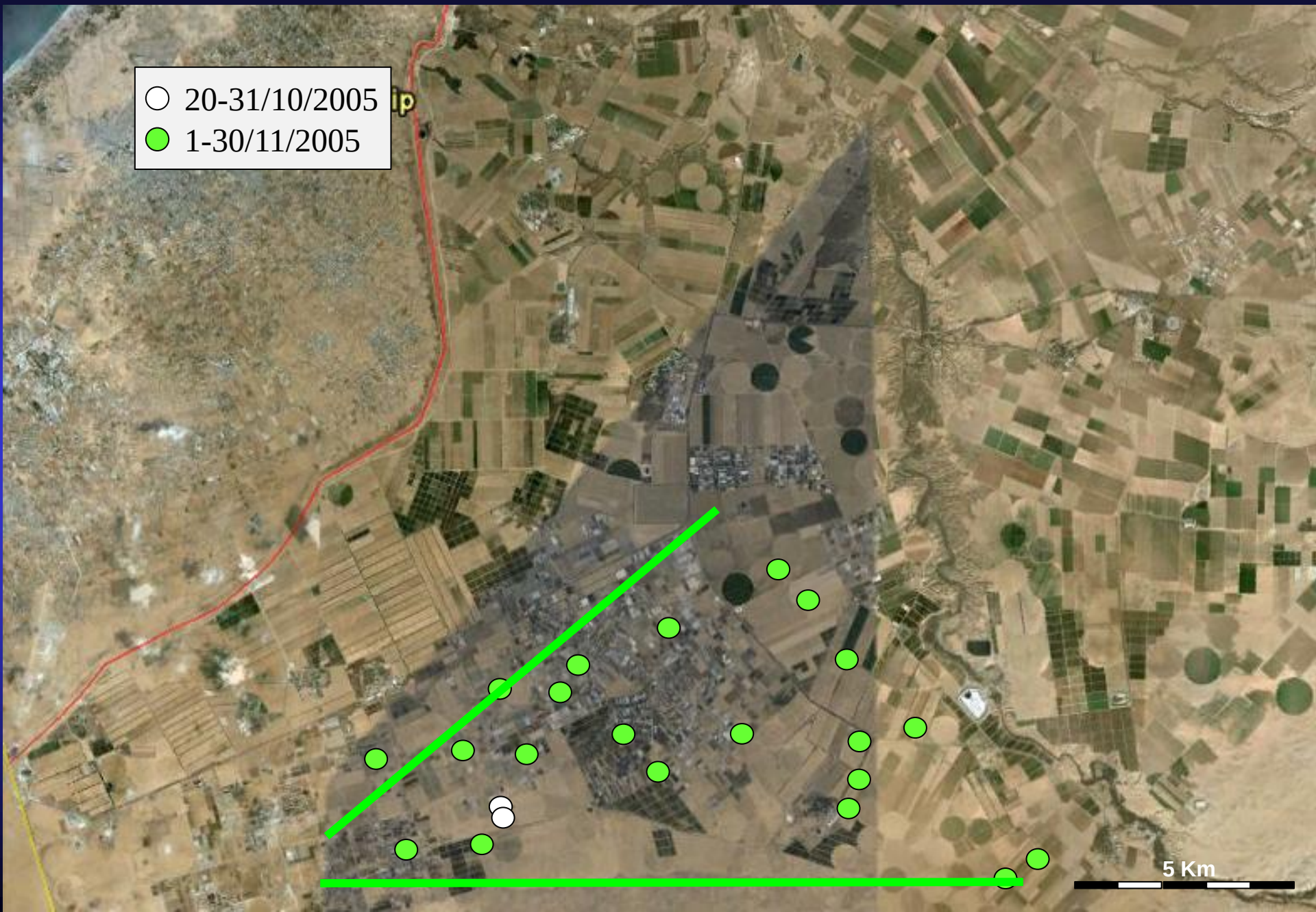


Autumn season 2004-5

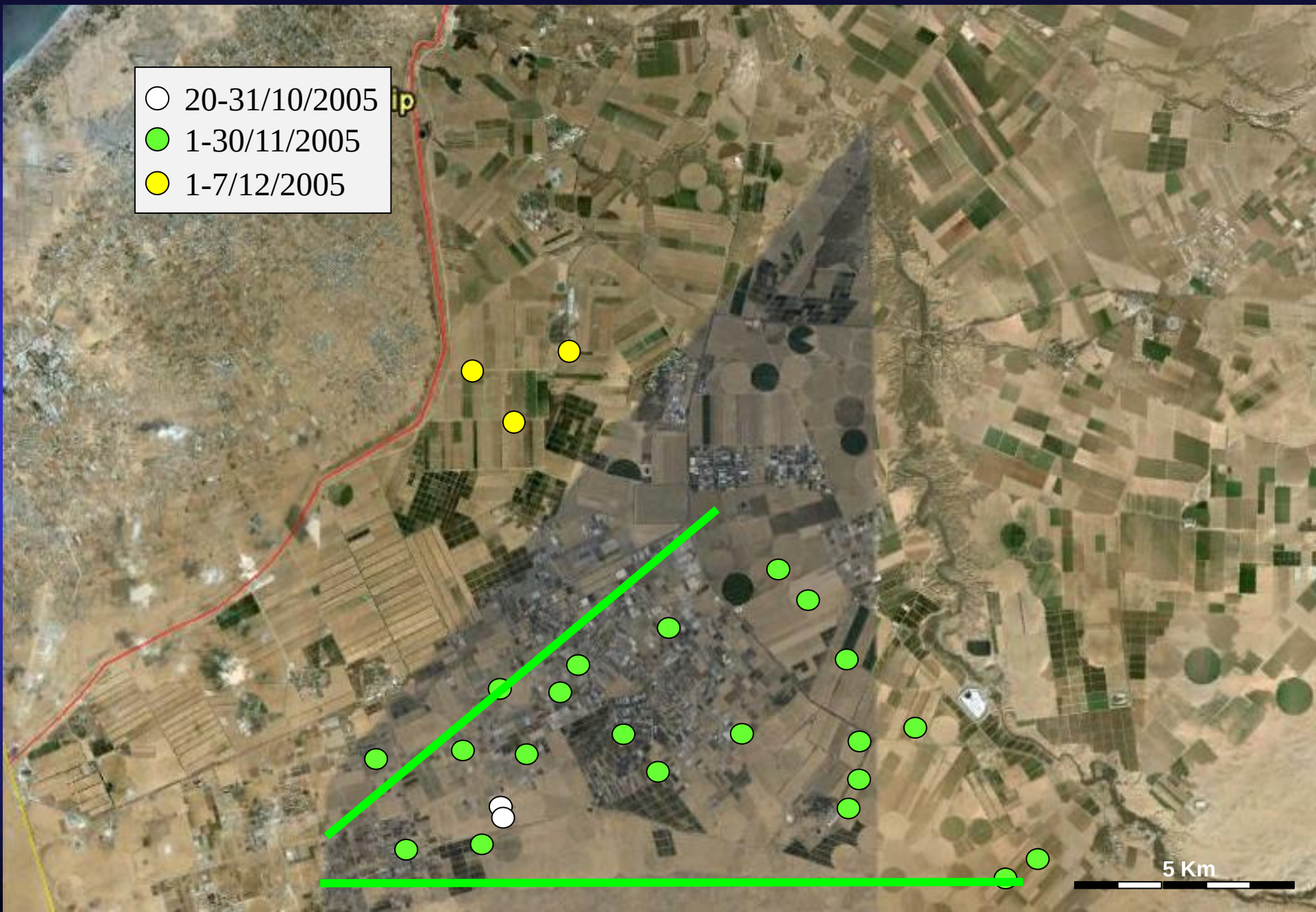


Autumn season 2005-6

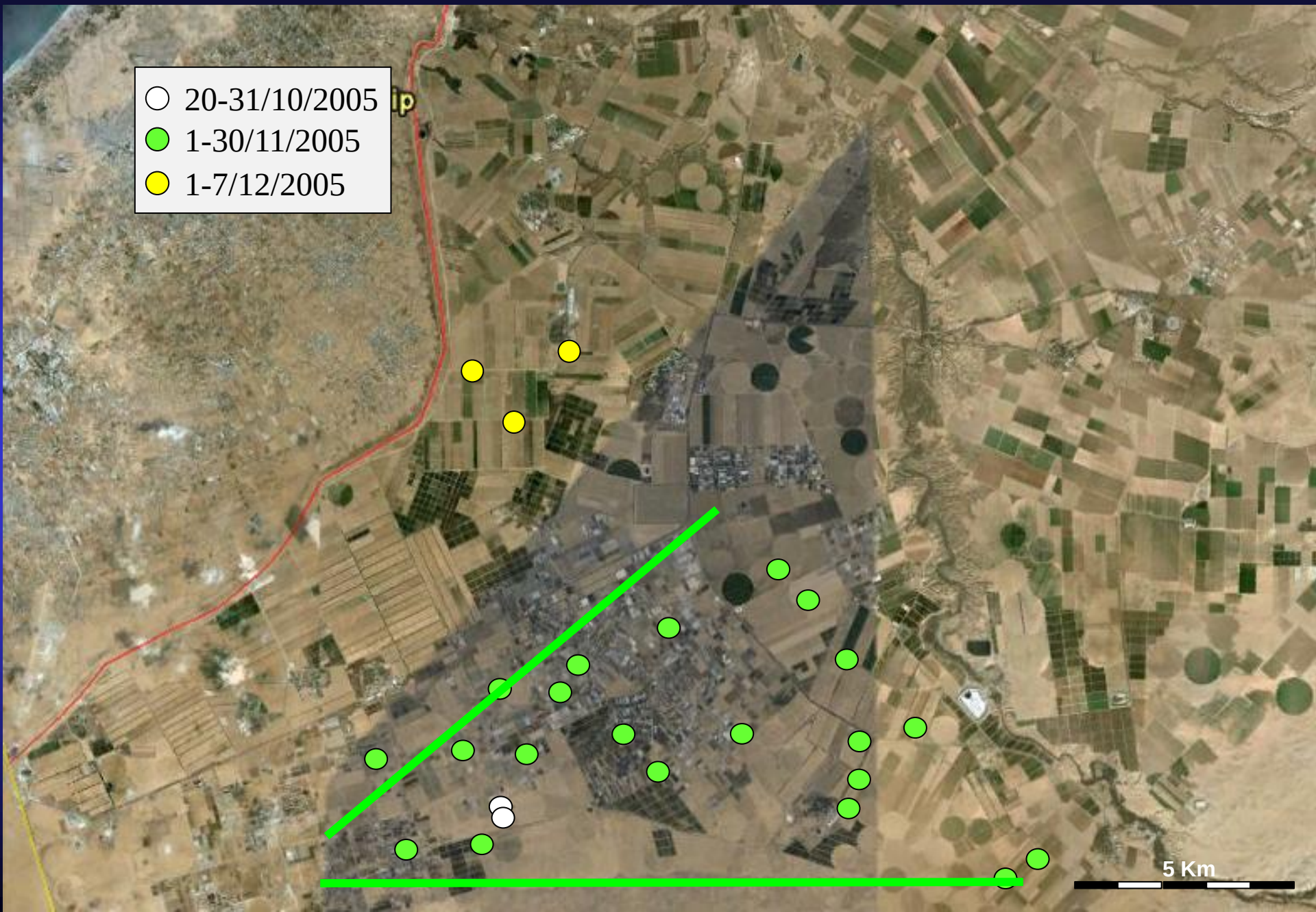
Autumn season 2005-6



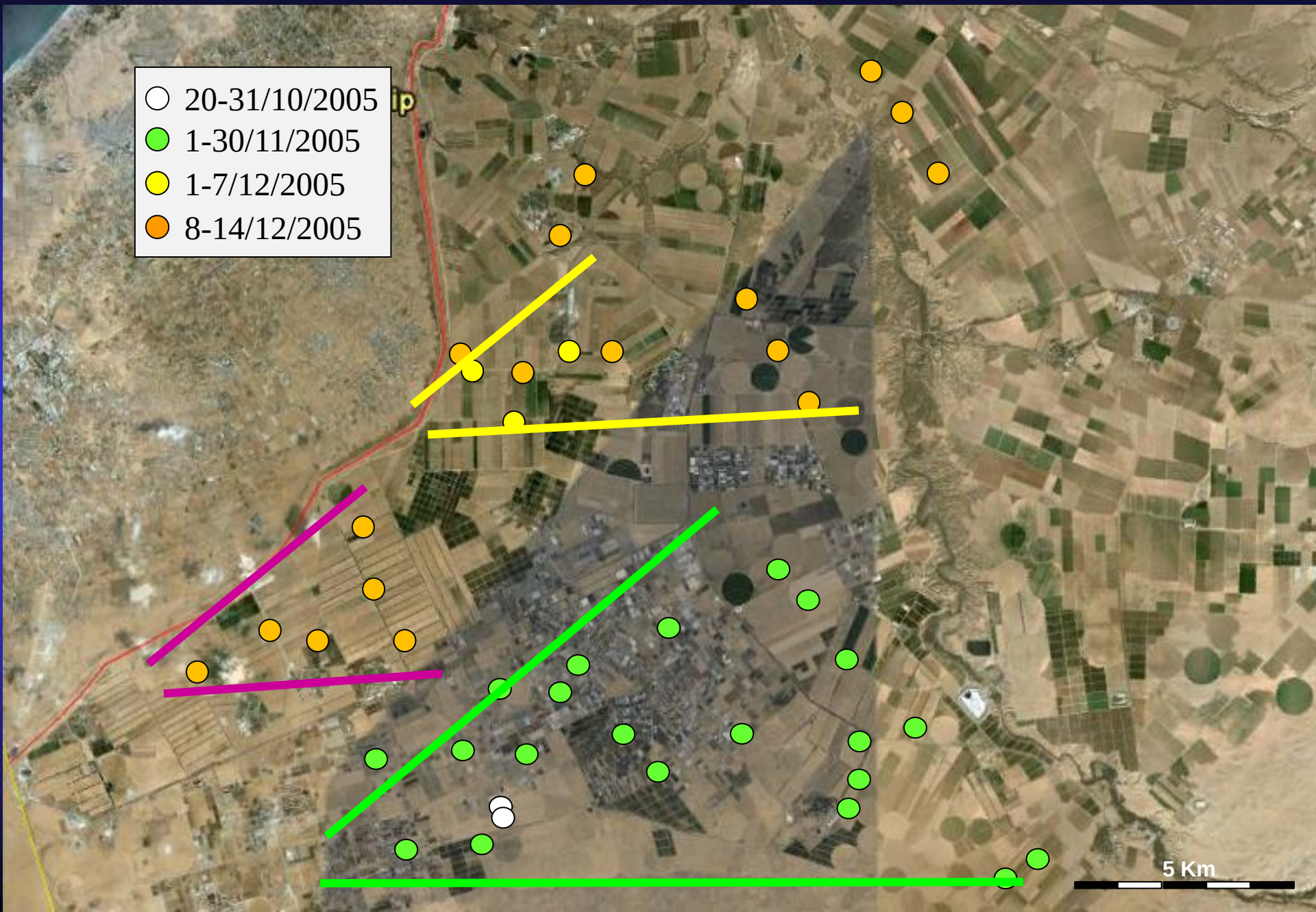
Autumn season 2005-6



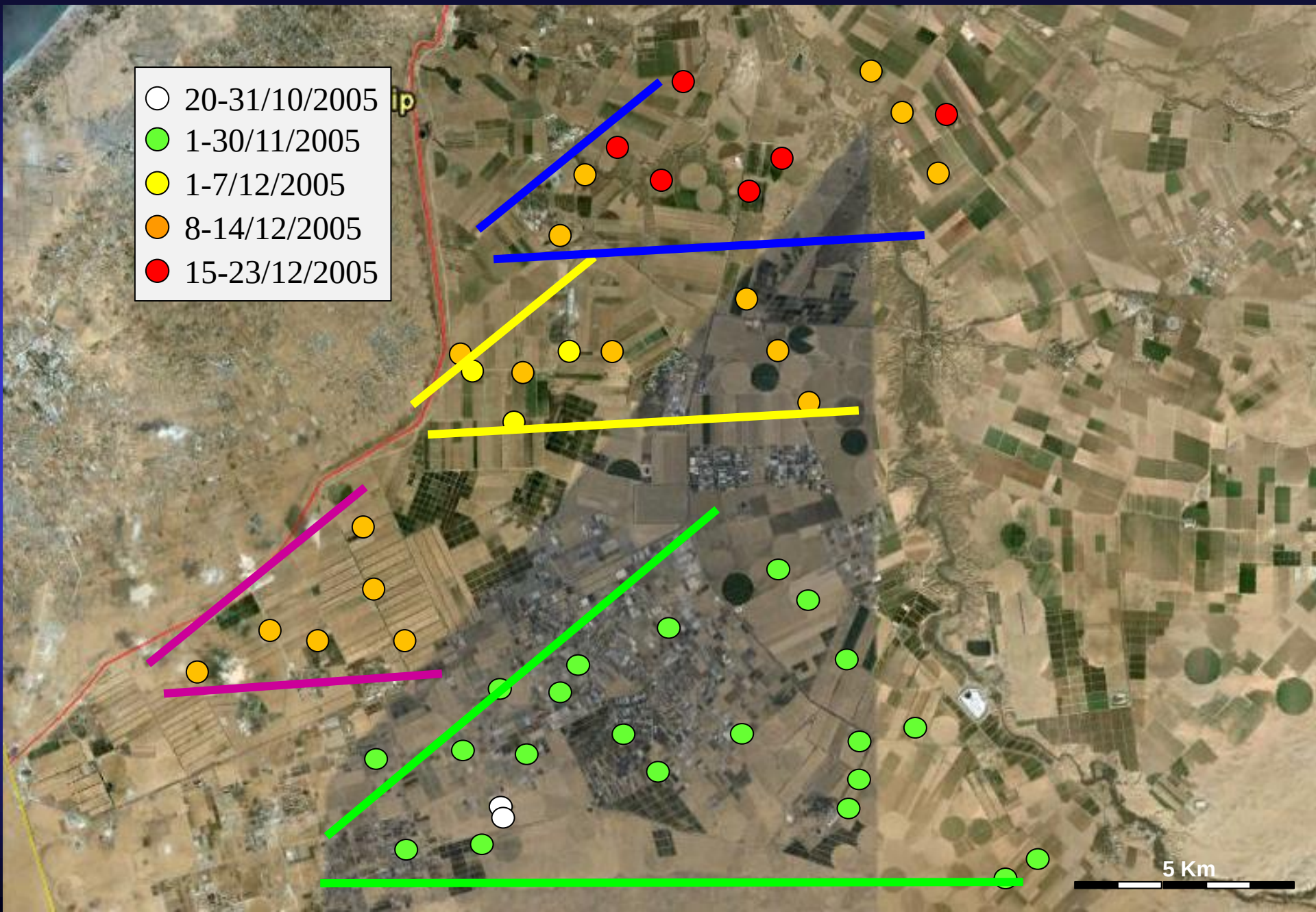
Autumn season 2005-6



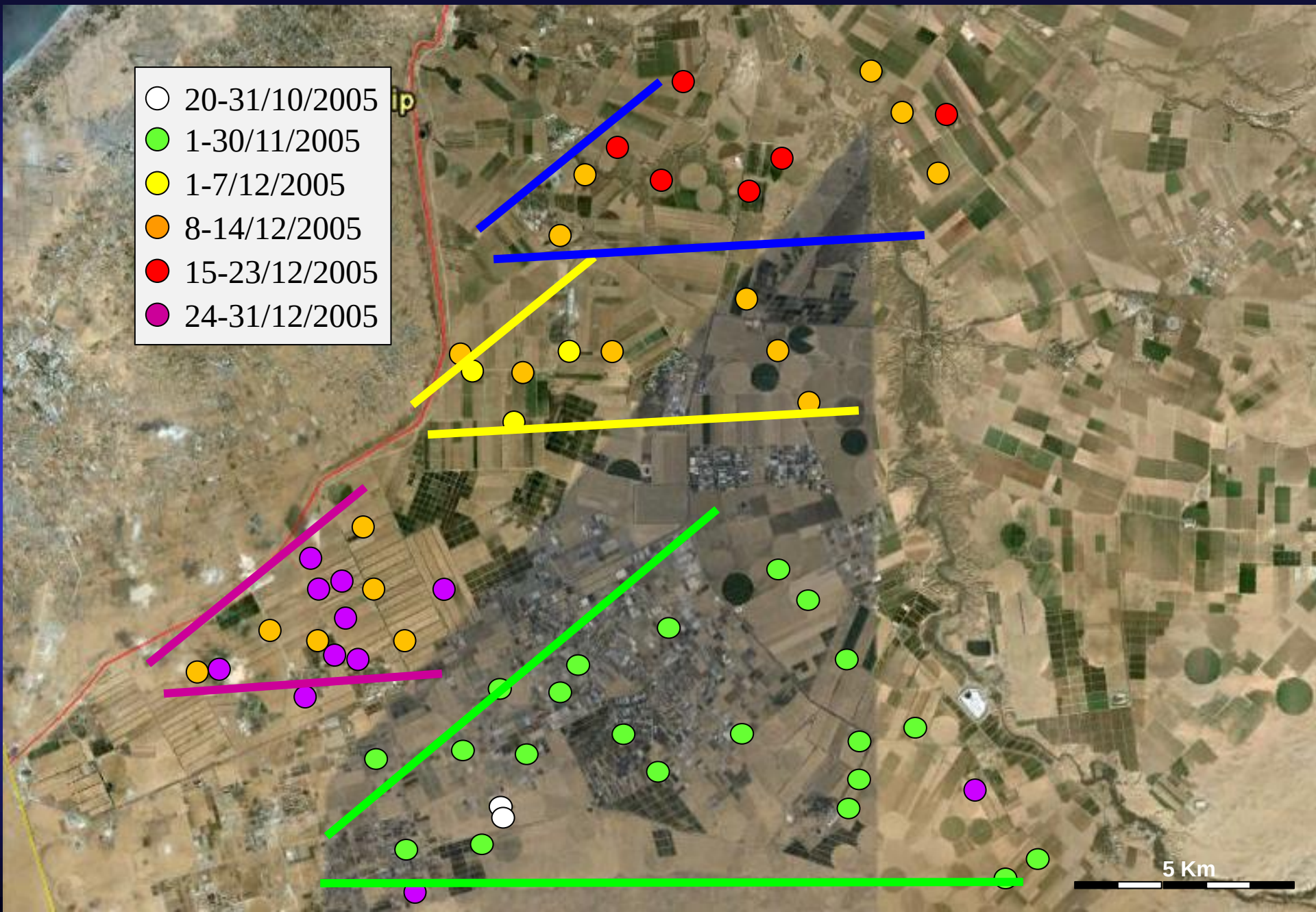
Autumn season 2005-6



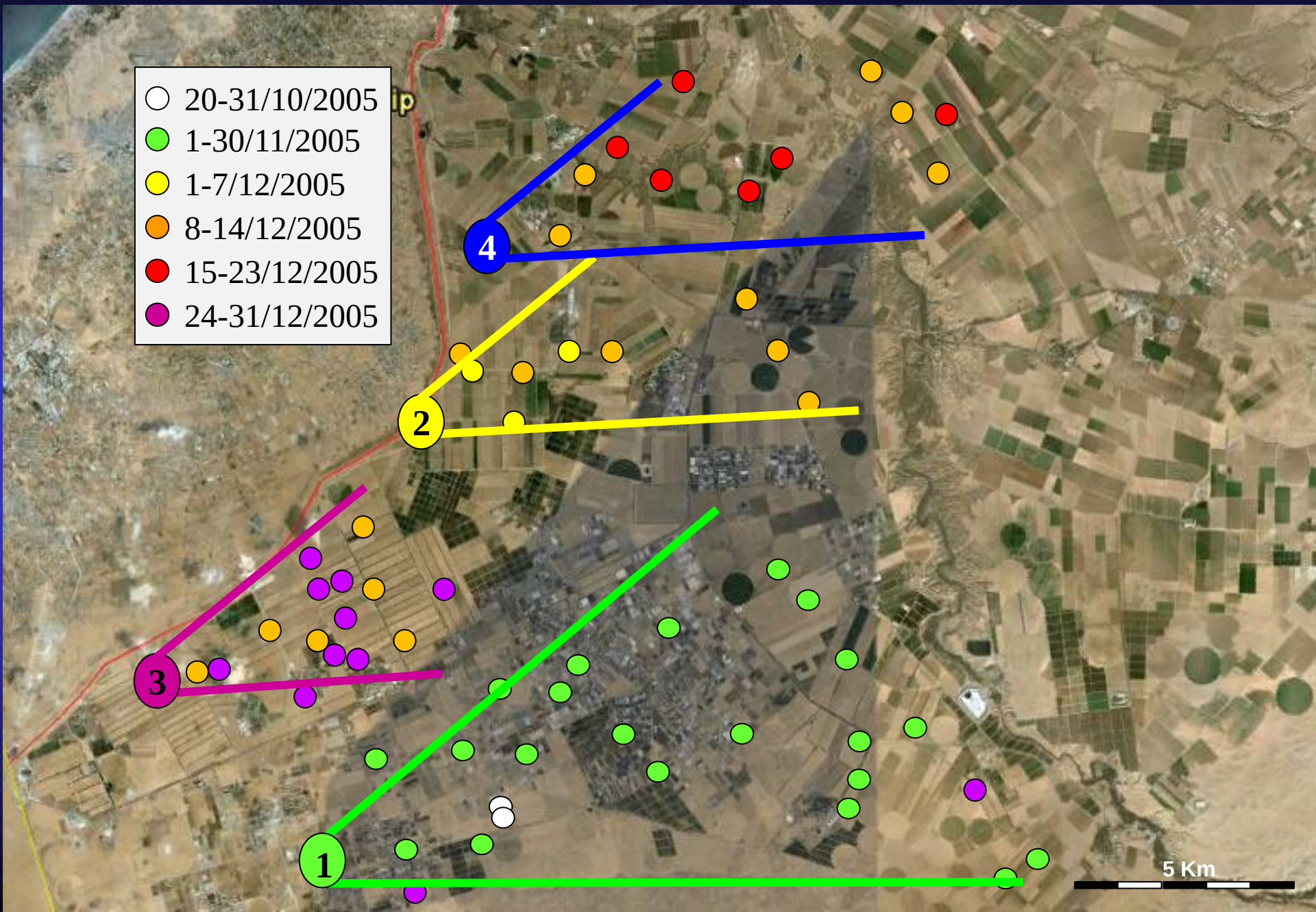
Autumn season 2005-6



Autumn season 2005-6



Autumn season 2005-6



Autumn seasons 2006-7 and 2007-8

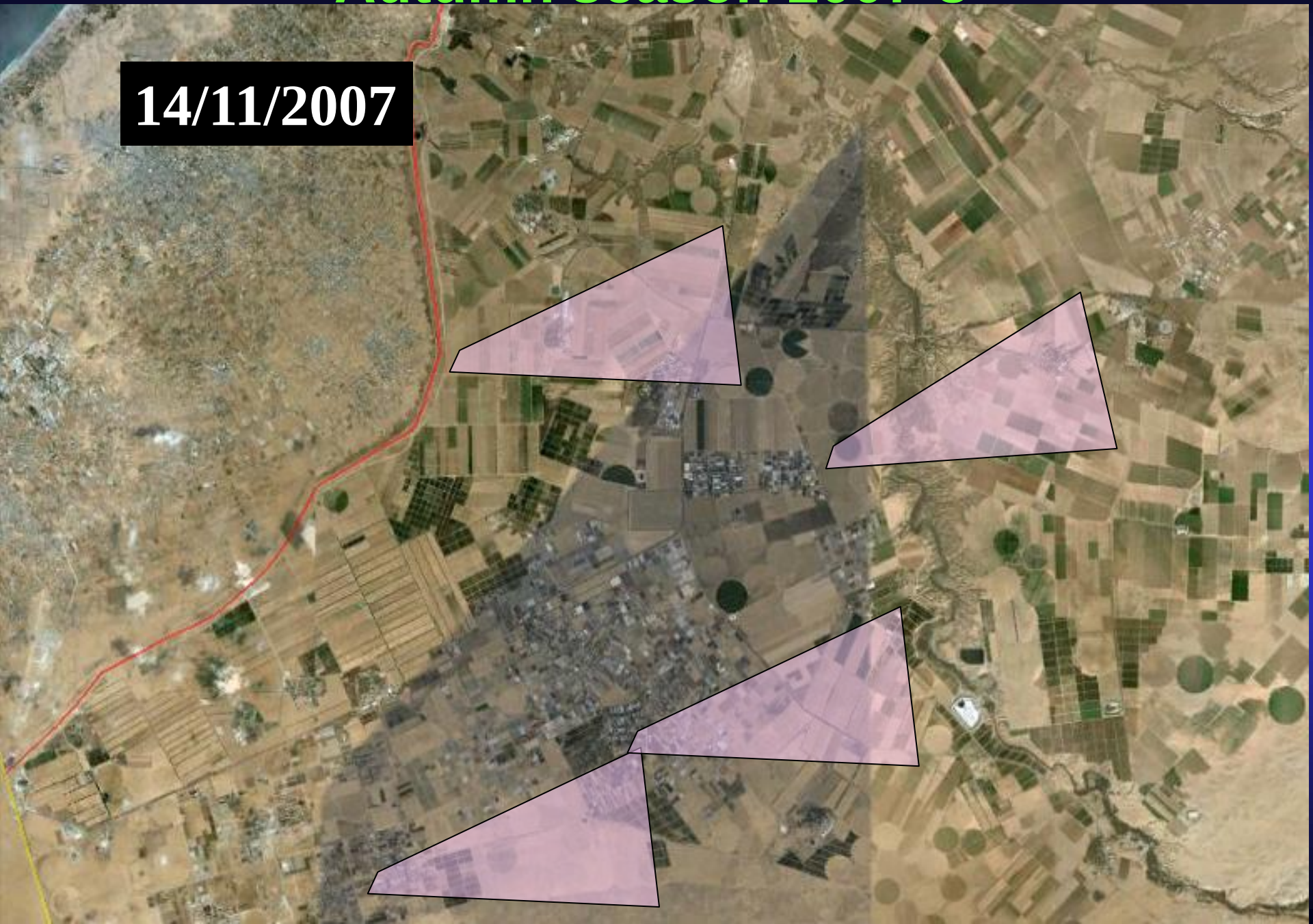
Pilot program

Static maps updated twice a week sent by e-mail to growers

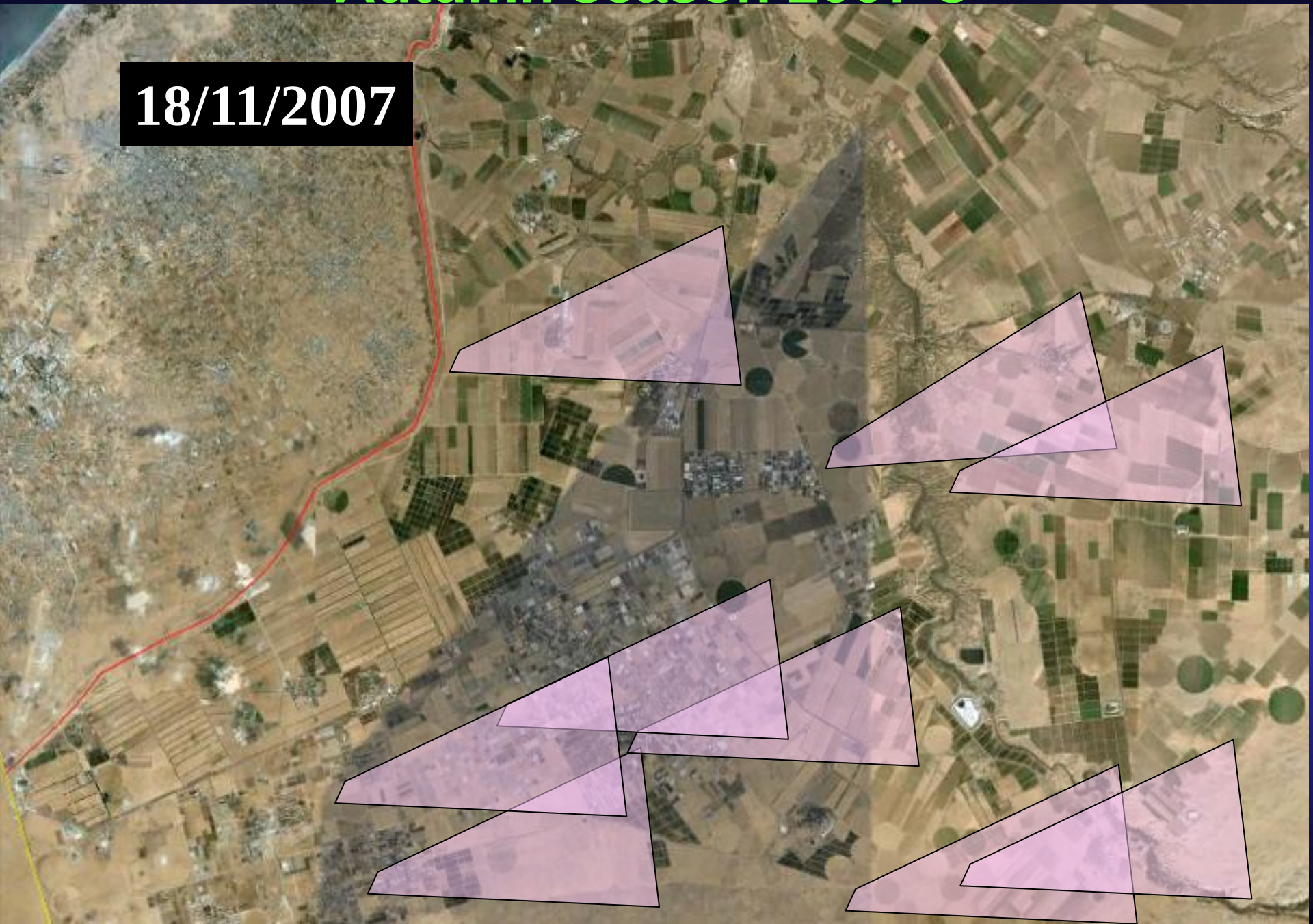
Autumn season 2007-8

Autumn season 2007-8

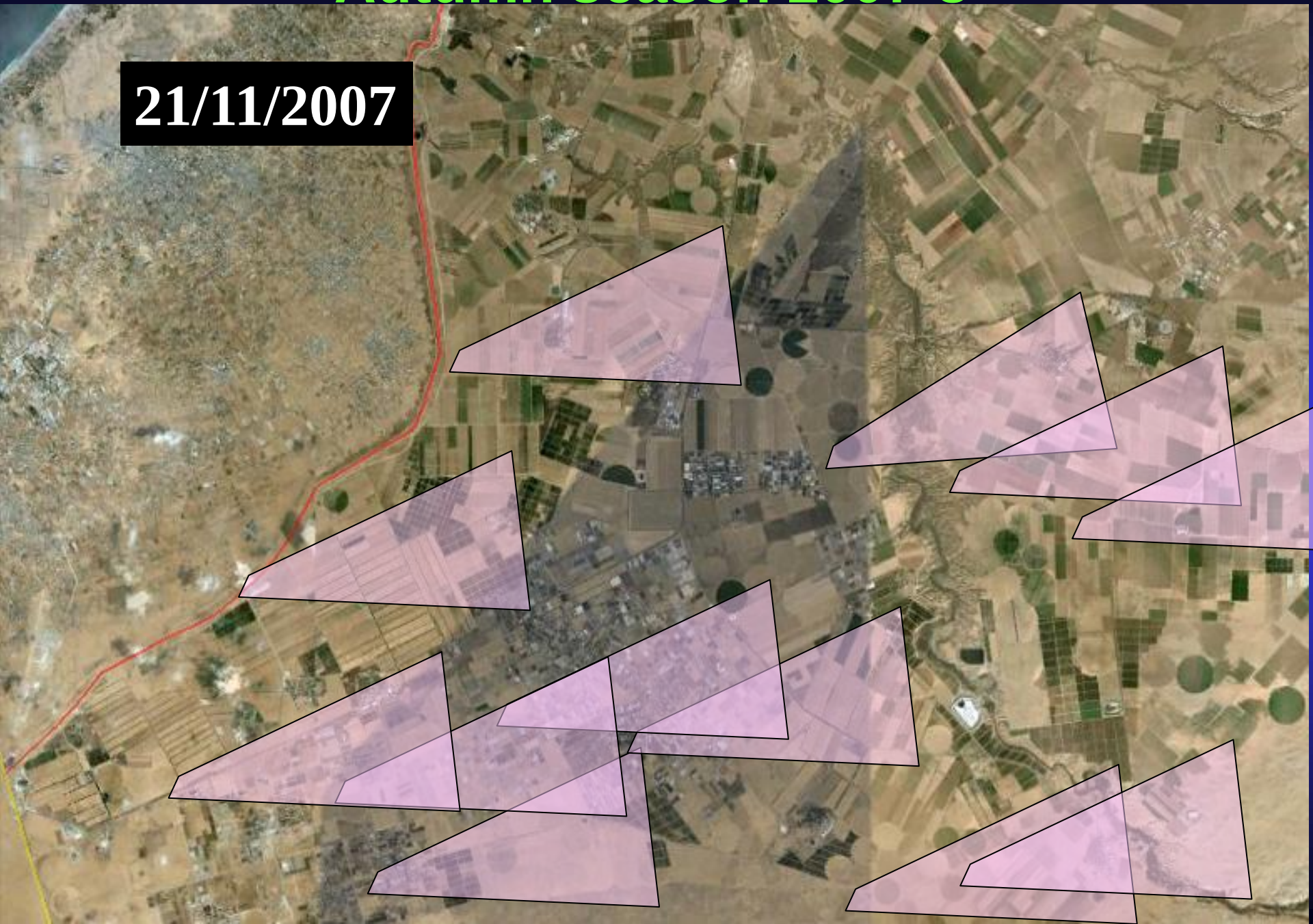
Autumn season 2007-8



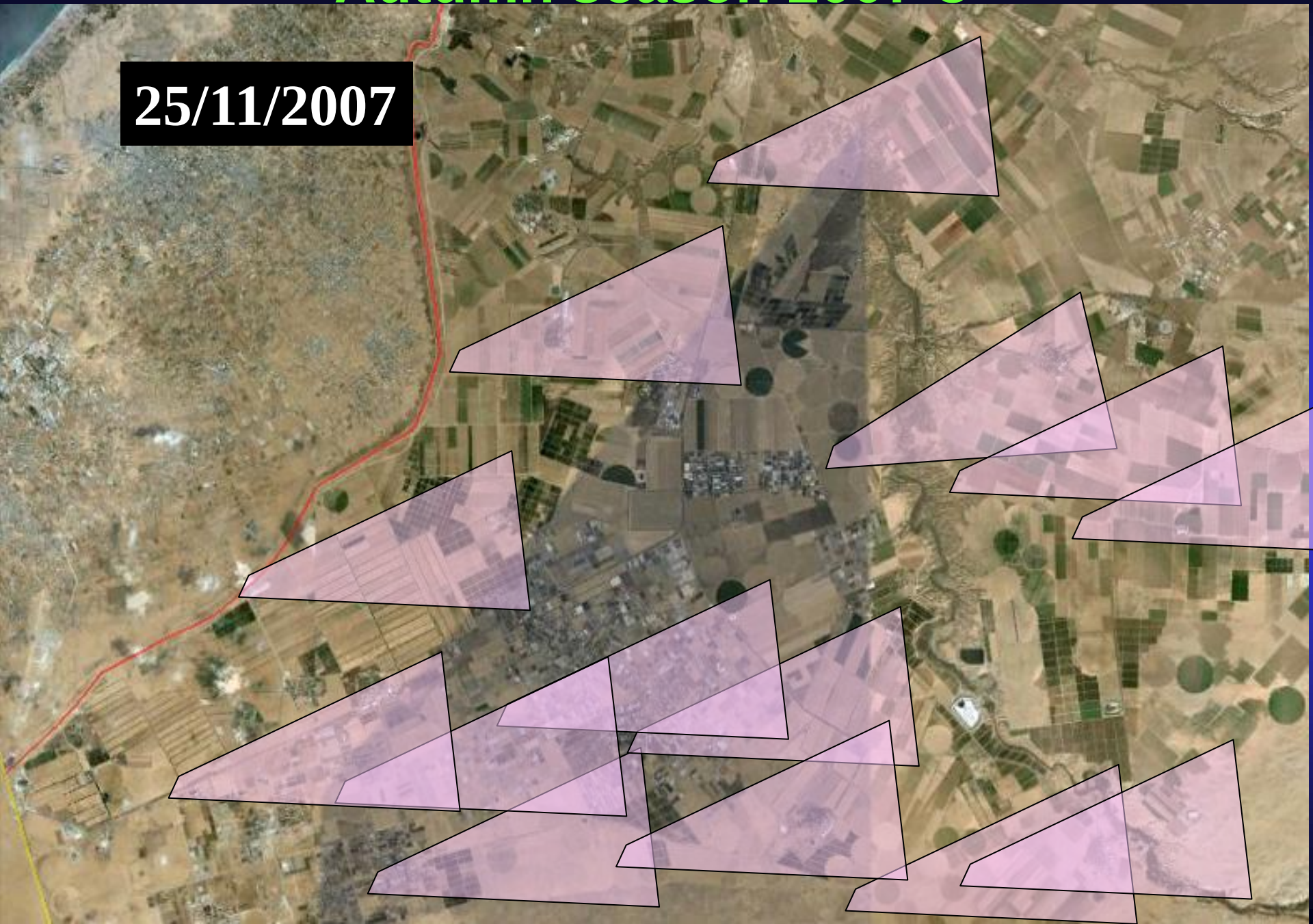
Autumn season 2007-8



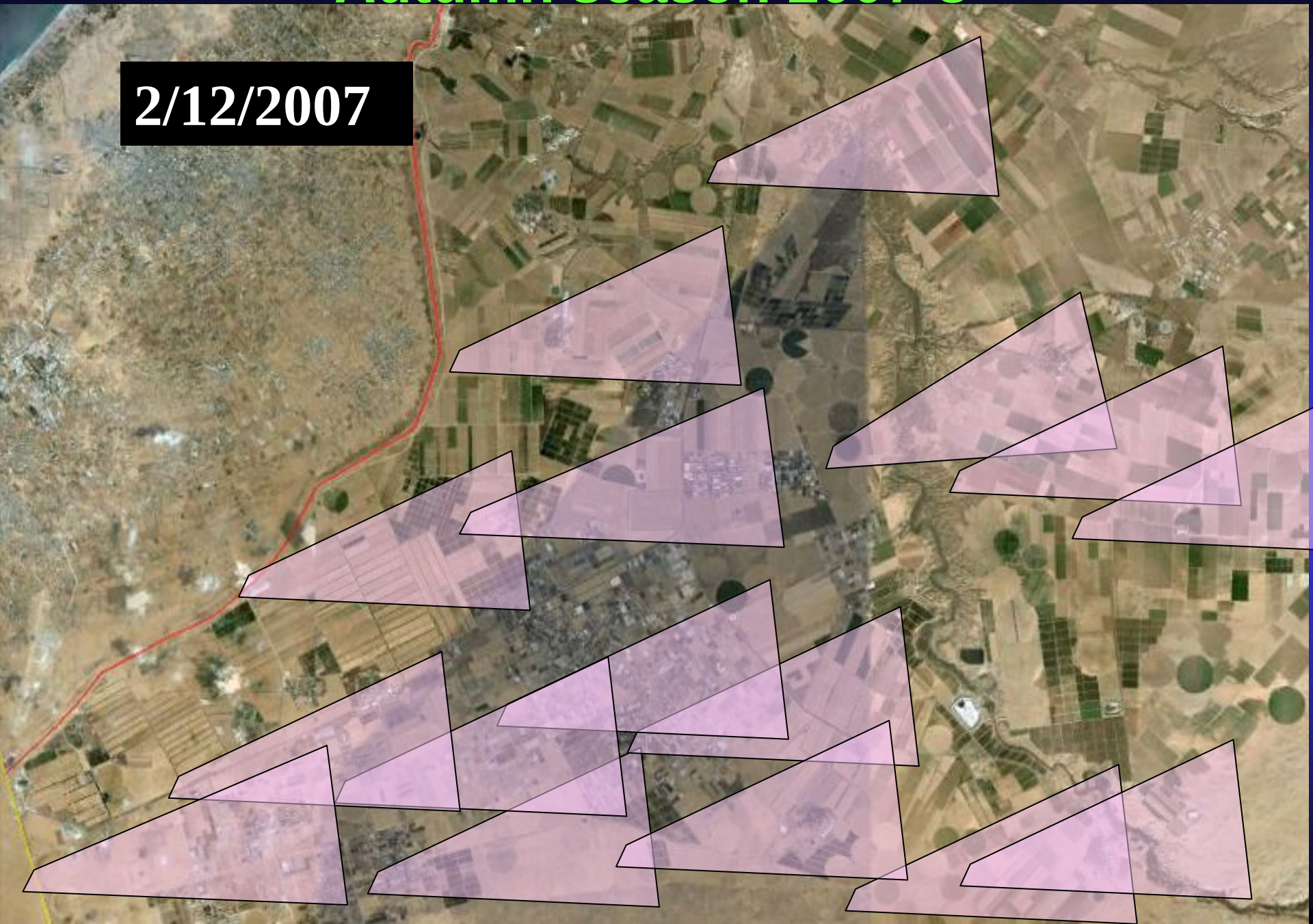
Autumn season 2007-8



Autumn season 2007-8



Autumn season 2007-8

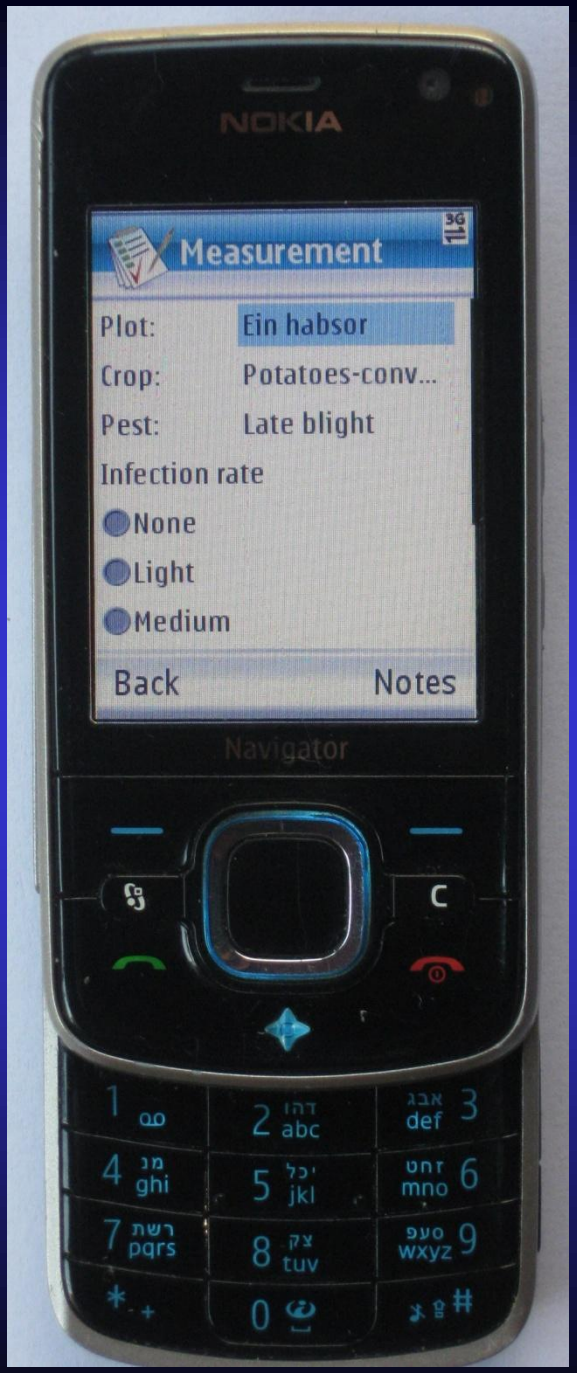


Autumn season 2010-11

Web-based site

Interactive maps updated daily
available on-line

www.pest-scout.co.il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Late blight
Infection rate
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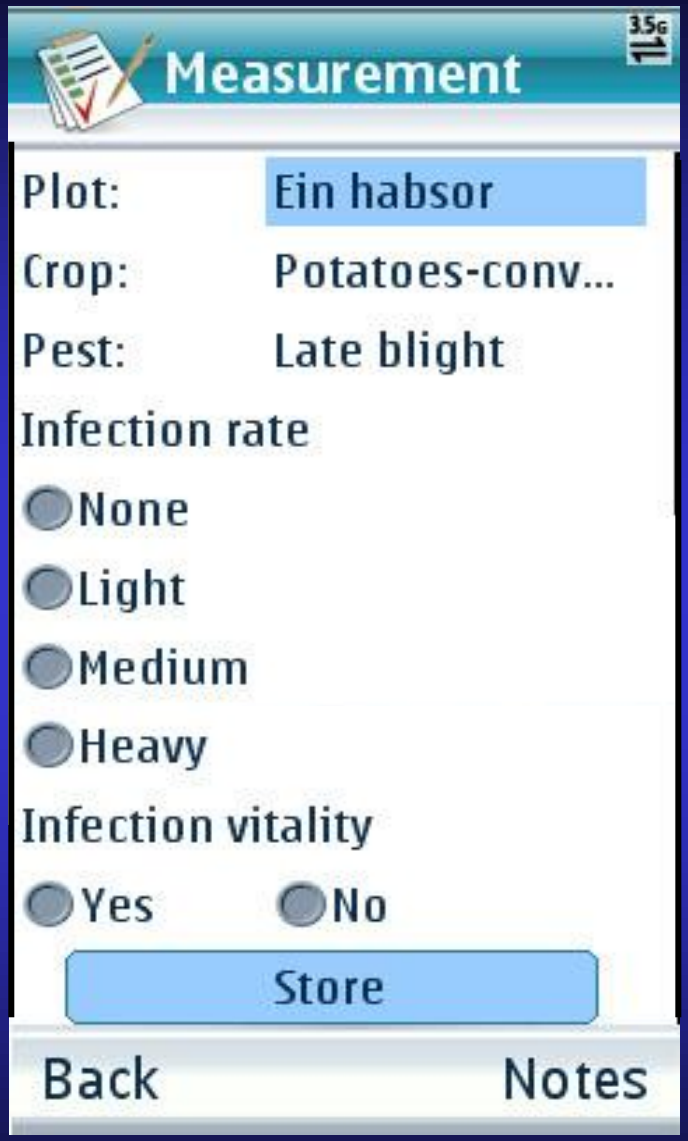
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Crop:
Potatoes-conv...
Pest:
Late blight
Infection rate
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Light
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Heavy
Infection vitality
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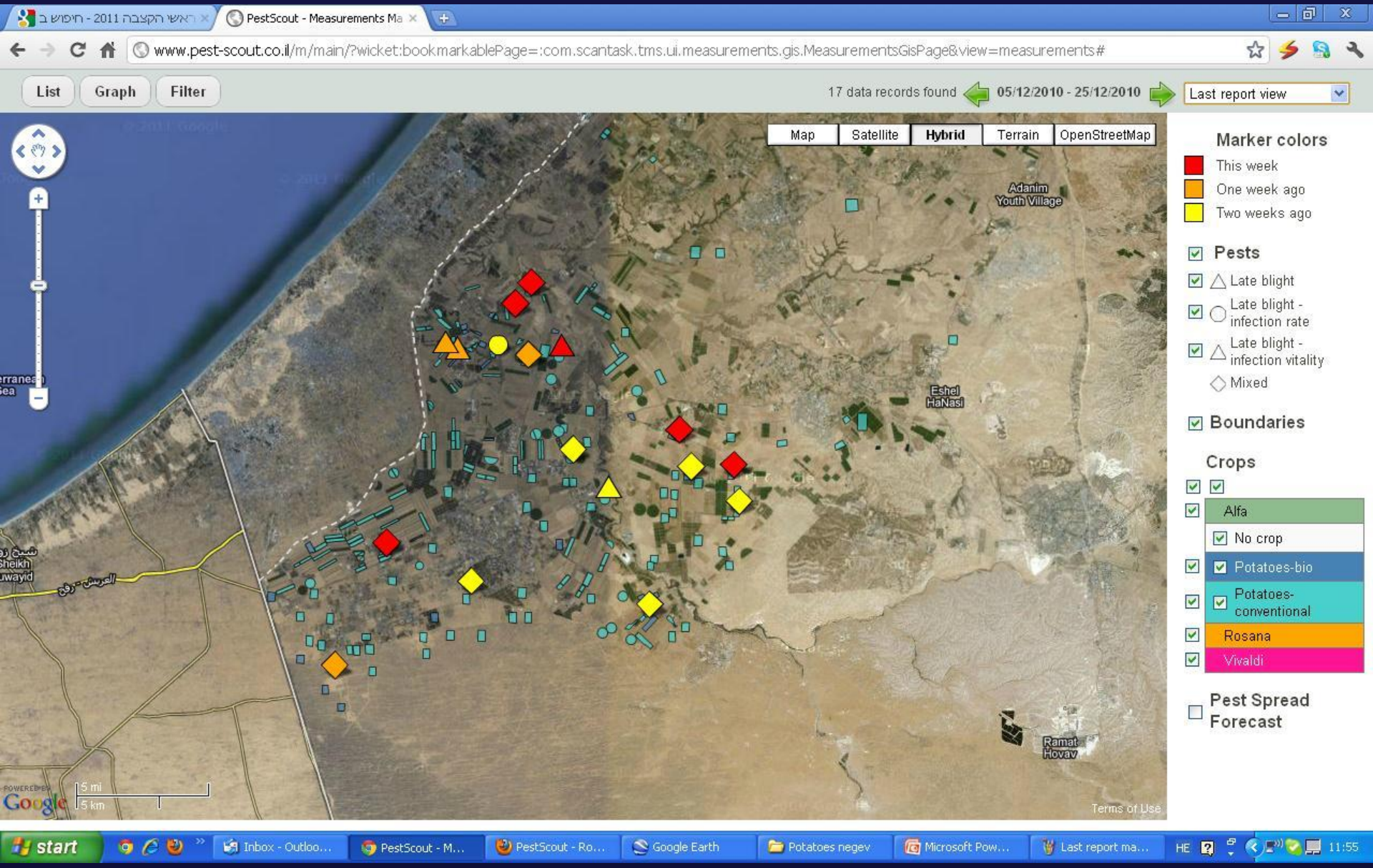
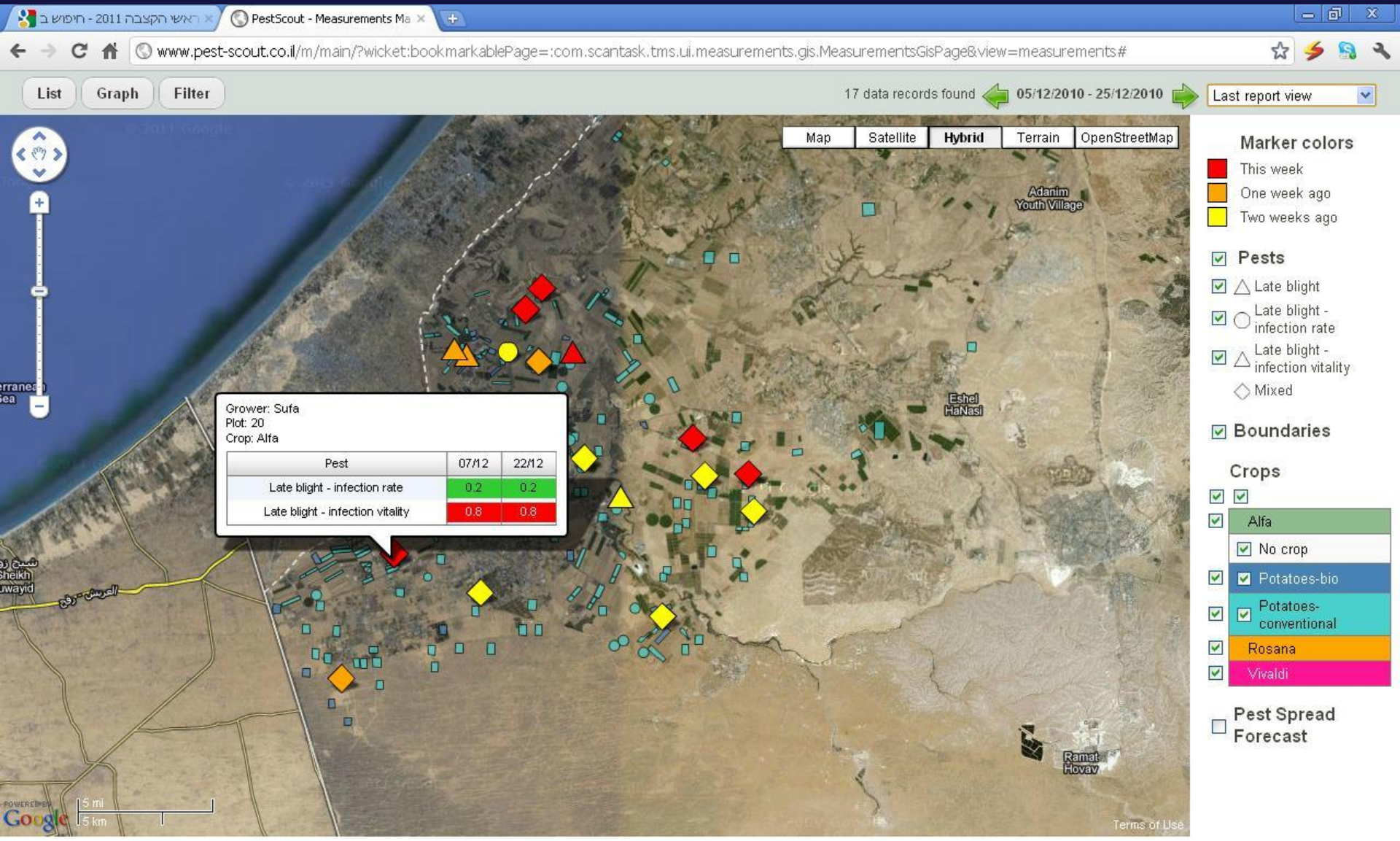
Notes

www.pest-scout.co.il




PestScout - Measurements Ma
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Graph
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17 data records found
05/12/2010 - 25/12/2010
Last report view
Map
Satellite
Hybrid
Terrain
OpenStreetMap
Adanim Youth Village
Eshel HaNasi
Ramat Hovav
Grower: Sufa
Plot: 20
Crop: Alfa
Pest
07/12
22/12
Late blight - infection rate
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0.2
Late blight - infection vitality
0.8
0.8
Marker colors
This week
One week ago
Two weeks ago
Pests
Late blight
Late blight - infection rate
Late blight - infection vitality
Mixed
Boundaries
Crops
Alfa
No crop
Potatoes-bio
Potatoes-conventional
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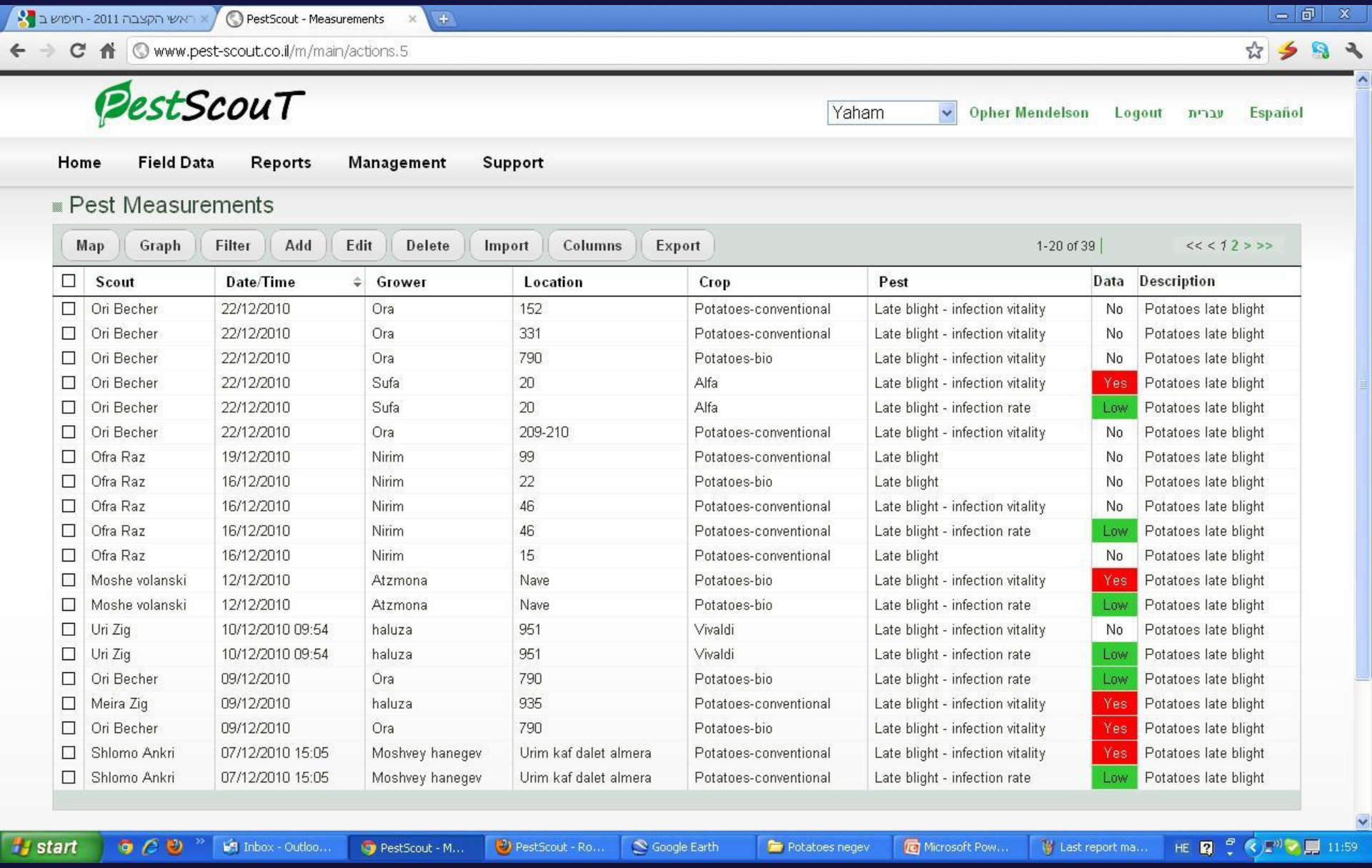
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Home
Field Data
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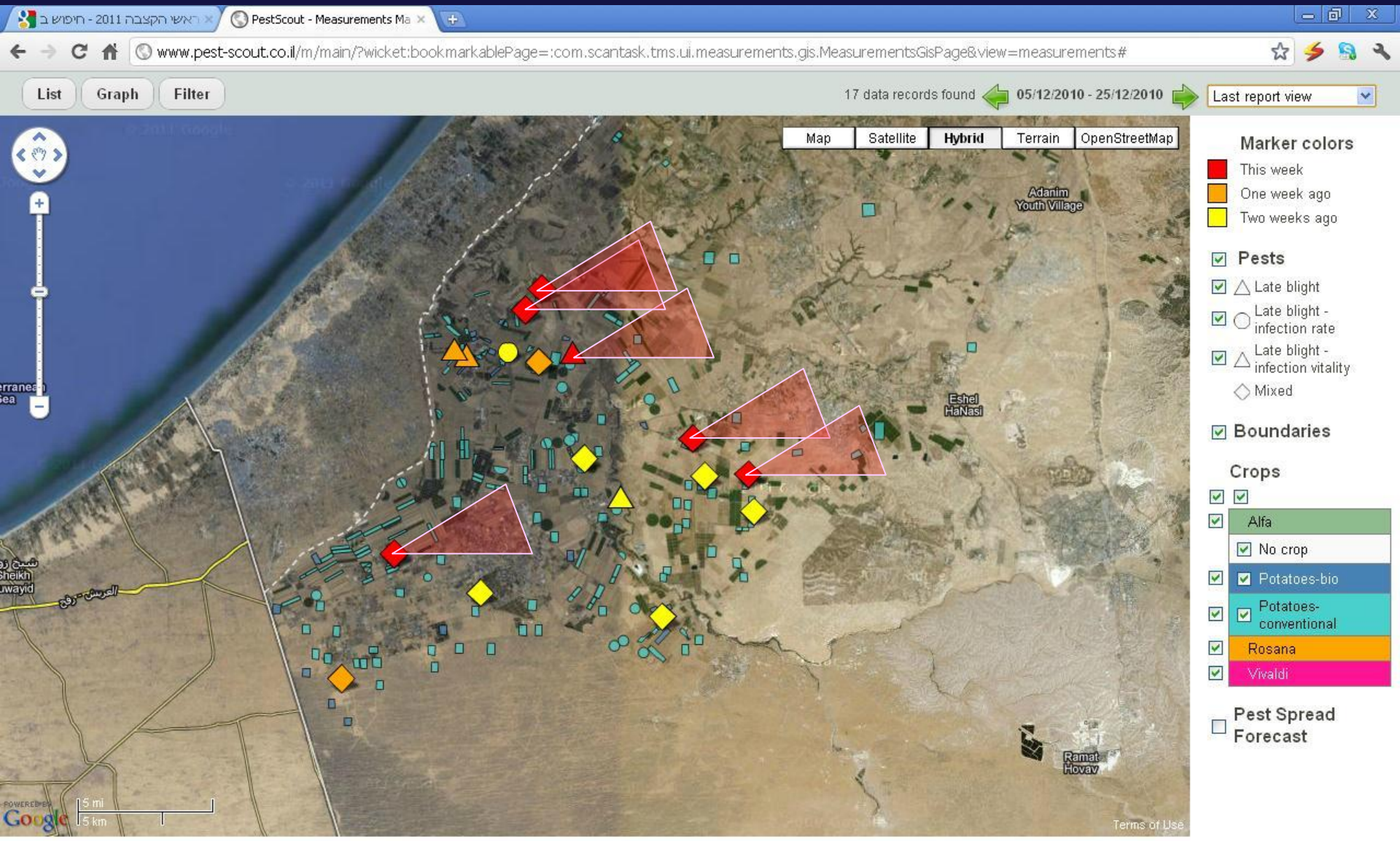
1-20 of 39
<< < 1 2 > >>
Scout
Date/Time
Grower
Location
Crop
Pest
Data
Description
Ori Becher 22/12/2010 Ora 152 Potatoes-conventional Late blight - infection vitality No Potatoes late blight
Ori Becher 22/12/2010 Ora 331 Potatoes-conventional Late blight - infection vitality No Potatoes late blight
Ori Becher 22/12/2010 Ora 790 Potatoes-bio Late blight - infection vitality No Potatoes late blight
Ori Becher 22/12/2010 Sufa 20 Alfa Late blight - infection vitality Yes Potatoes late blight
Ori Becher 22/12/2010 Sufa 20 Alfa Late blight - infection rate Low Potatoes late blight
Ori Becher 22/12/2010 Ora 209-210 Potatoes-conventional Late blight - infection vitality No Potatoes late blight
Ofra Raz 19/12/2010 Nirim 99 Potatoes-conventional Late blight No Potatoes late blight
Ofra Raz 16/12/2010 Nirim 22 Potatoes-bio Late blight No Potatoes late blight
Ofra Raz 16/12/2010 Nirim 46 Potatoes-conventional Late blight - infection vitality No Potatoes late blight
Ofra Raz 16/12/2010 Nirim 46 Potatoes-conventional Late blight - infection rate Low Potatoes late blight
Ofra Raz 16/12/2010 Nirim 15 Potatoes-conventional Late blight No Potatoes late blight
Moshe volanski 12/12/2010 Atzmona Nave Potatoes-bio Late blight - infection vitality Yes Potatoes late blight
Moshe volanski 12/12/2010 Atzmona Nave Potatoes-bio Late blight - infection rate Low Potatoes late blight
Uri Zig 10/12/2010 09:54 haluza 951 Vivaldi Late blight - infection vitality No Potatoes late blight
Uri Zig 10/12/2010 09:54 haluza 951 Vivaldi Late blight - infection rate Low Potatoes late blight
Ori Becher 09/12/2010 Ora 790 Potatoes-bio Late blight - infection rate Low Potatoes late blight
Meira Zig 09/12/2010 haluza 935 Potatoes-conventional Late blight - infection vitality Yes Potatoes late blight
Ori Becher 09/12/2010 Ora 790 Potatoes-bio Late blight - infection vitality Yes Potatoes late blight
Shlomo Ankri 07/12/2010 15:05 Moshvey hanegev Urim kaf dalet almera Potatoes-conventional Late blight - infection vitality Yes Potatoes late blight
Shlomo Ankri 07/12/2010 15:05 Moshvey hanegev Urim kaf dalet almera Potatoes-conventional Late blight - infection rate Low Potatoes late blight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www.pest-scout.co.il/m/main/?wicket:bookmarkablePage=:com.scantask.tms.ui.measurements.gis.MeasurementsGisPage&view=measurements#
List
Graph
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17 data records found
05/12/2010 - 25/12/2010
Last report view
Map
Satellite
Hybrid
Terrain
OpenStreetMap
Adanim Youth Village
Eshel HaNasi
Ramat Hovav
Marker colors
This week
One week ago
Two weeks ago
Pests
Late blight
Late blight - infection rate
Late blight - infection vitality
Mixed
Boundaries
Crops
Alfa
No crop
Potatoes-bio
Potatoes-conventional
Rosana
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Pest Spread Forecast
5 mi
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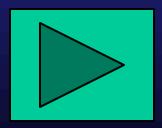
Disease spread: summery and conclusions

- In the northern Negev, late blight spreads mainly in east-northern direction.
- Most potato growers are willing to share information about late blight detection in their fields; tomato growers are not!
- The updated information about late blight detection in the area was valued by the potato growers. They used the information for updating their scouting routines and for choosing the appropriate fungicide for spraying.

The next step….

Incorporating the spatial information in a weather-based decision support system

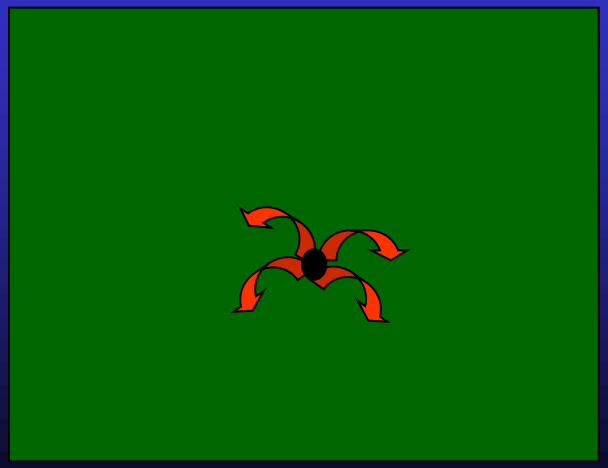


Possible sources of initial inoculum

What are the sources of initial inoculum?

The disease may be originated within the field

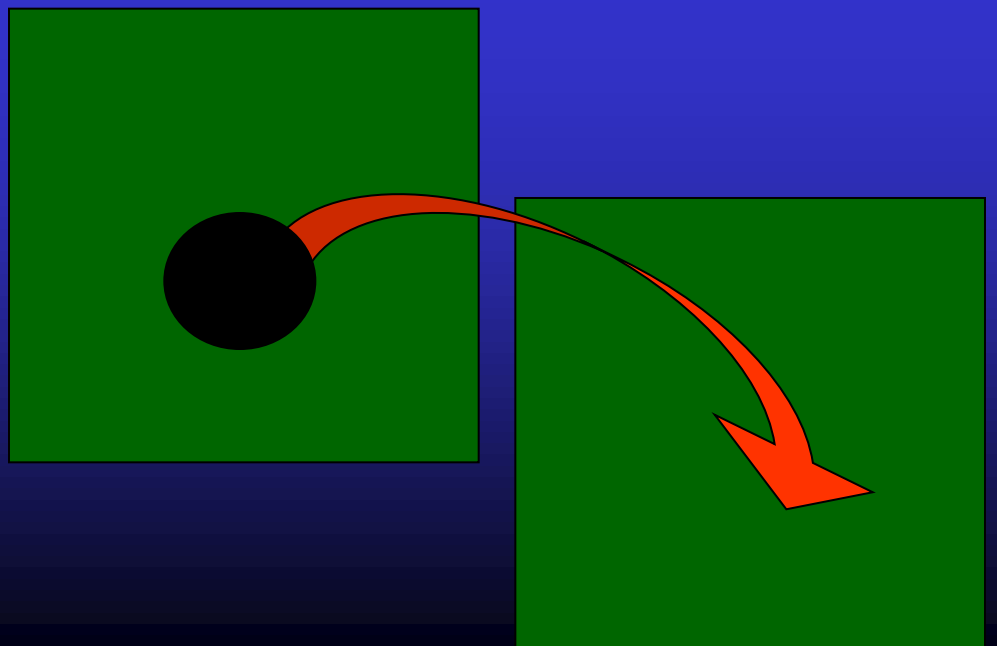
- Infested seed tubers
- Volunteer potato plants
- Oospores

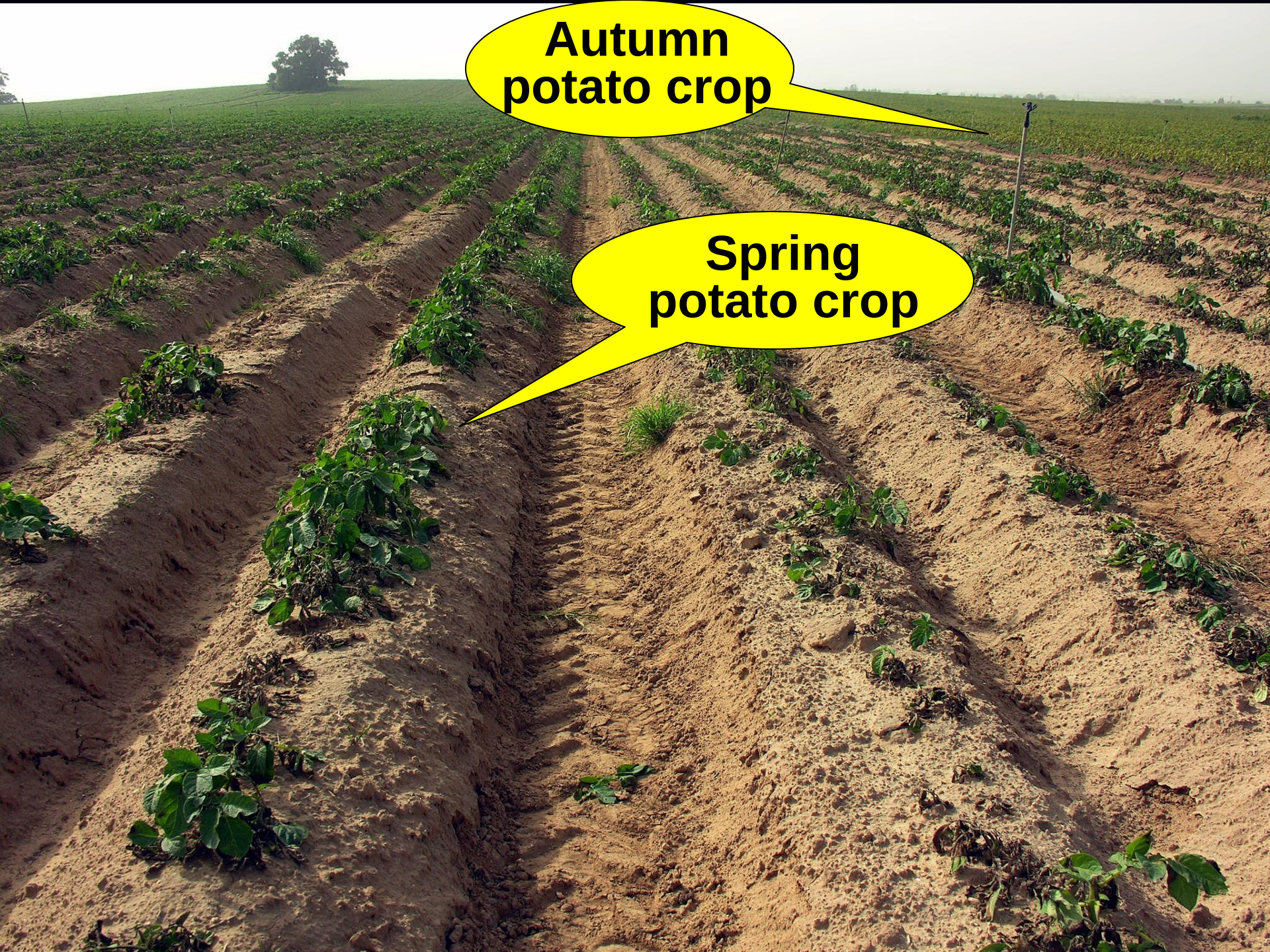


What are the sources of initial inoculum?

The disease may be originated from external sources

- Adjacent potato fields or tomato greenhouses



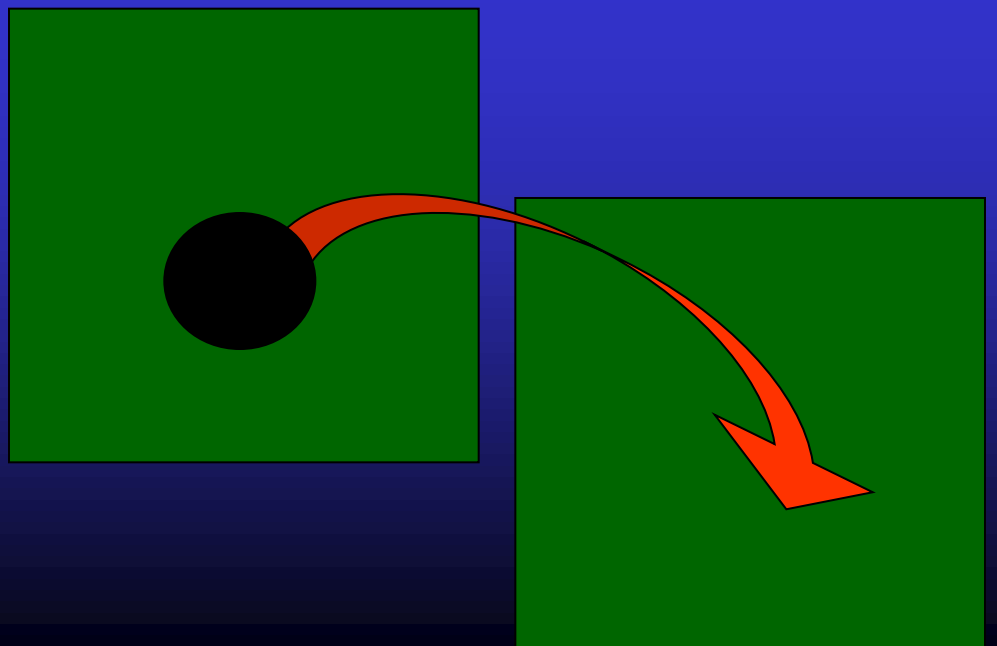

Autumn potato crop
Spring potato crop

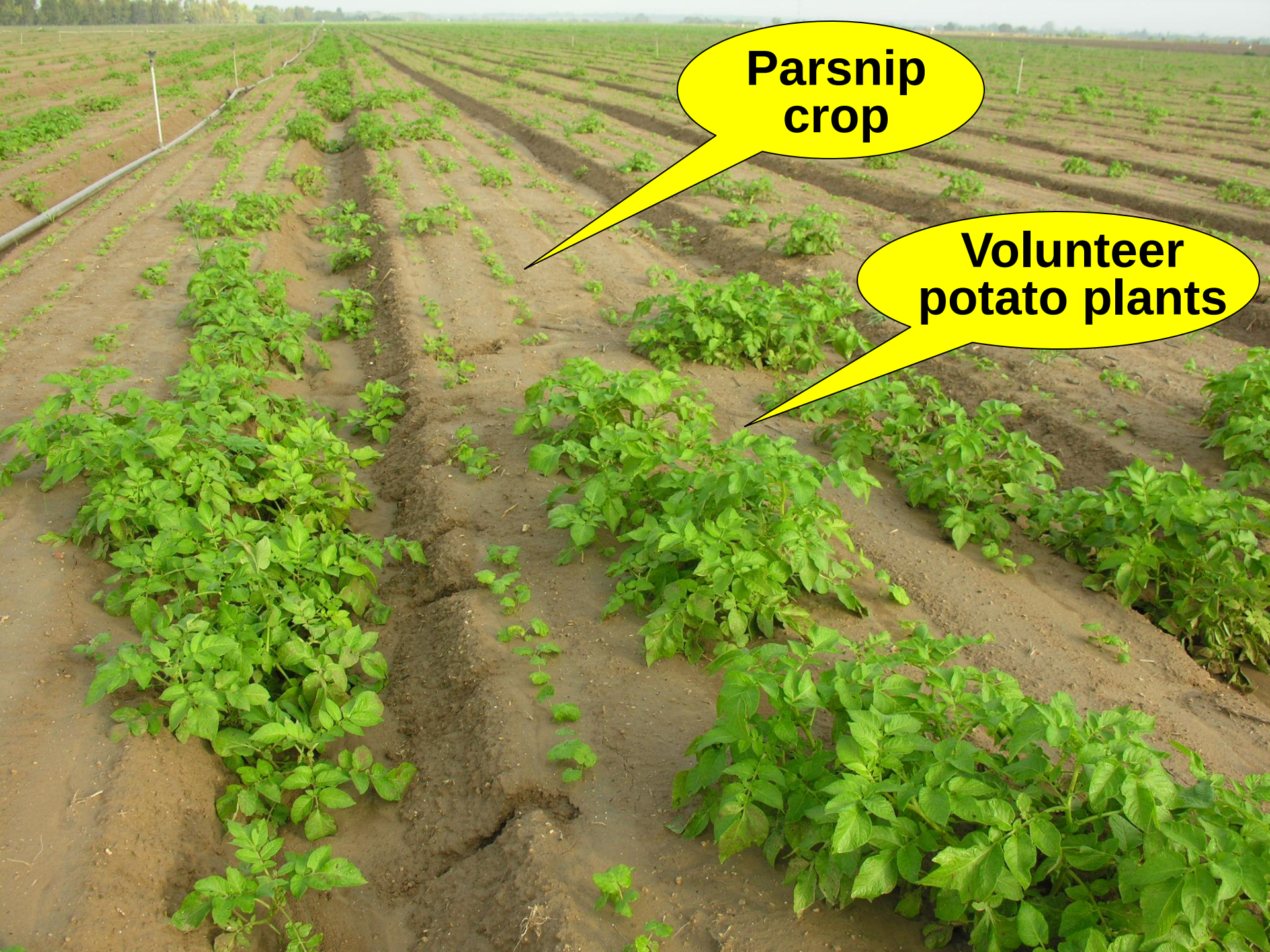
Late blight infected tomato net-house

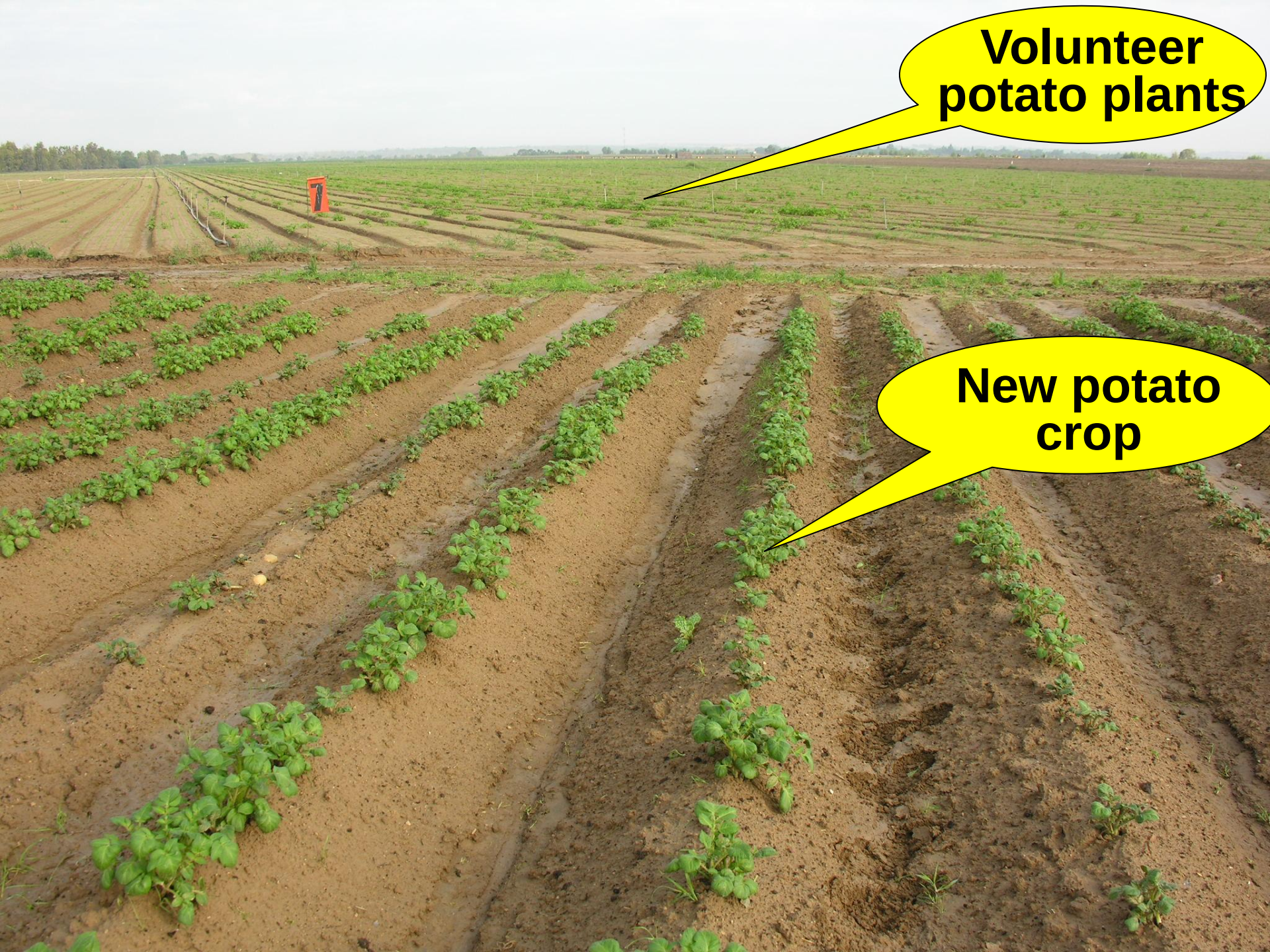
What are the sources of initial inoculum?

The disease may be originated from external sources

- Adjacent potato fields or tomato greenhouses
- Volunteer plants growing in adjacent fields



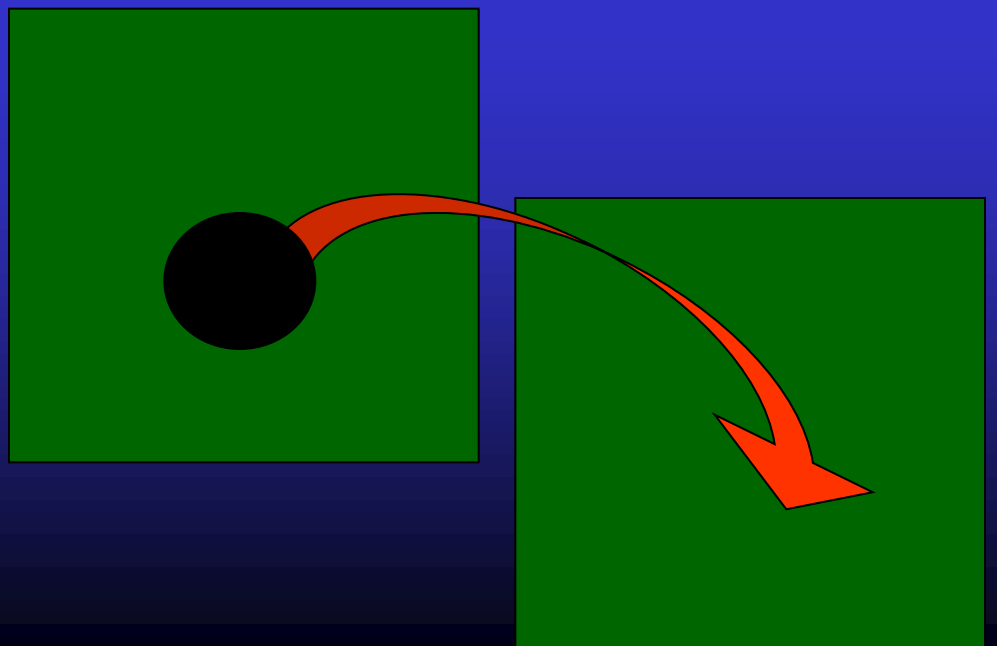

Parsnip crop
Volunteer potato plants


Volunteer potato plants
New potato crop

What are the sources of initial inoculum?

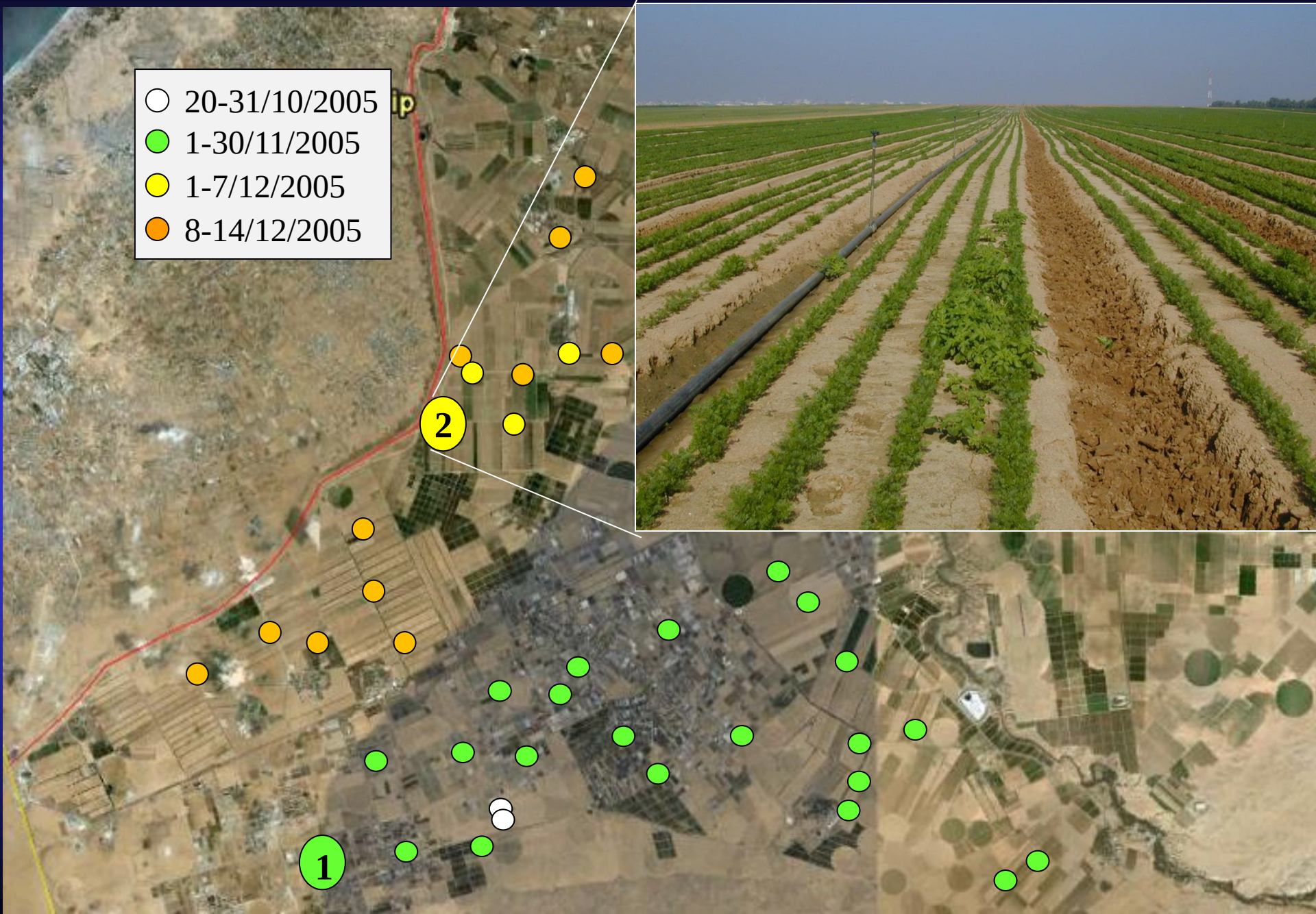
The disease may be originated from external sources

- Adjacent potato fields or tomato greenhouses
- Volunteer plants growing in adjacent fields
- Dump sites

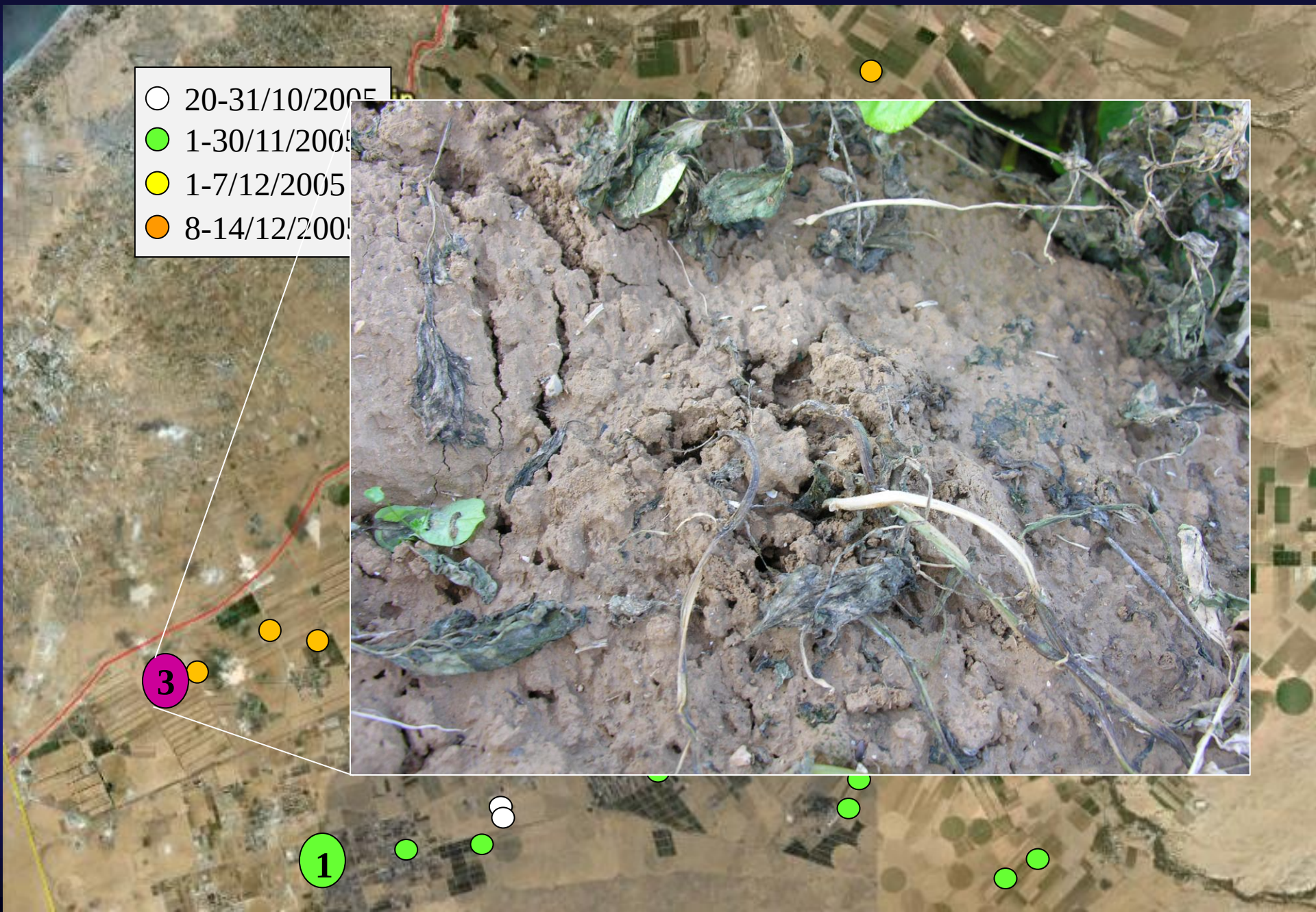


Tomato debris in a dumping site

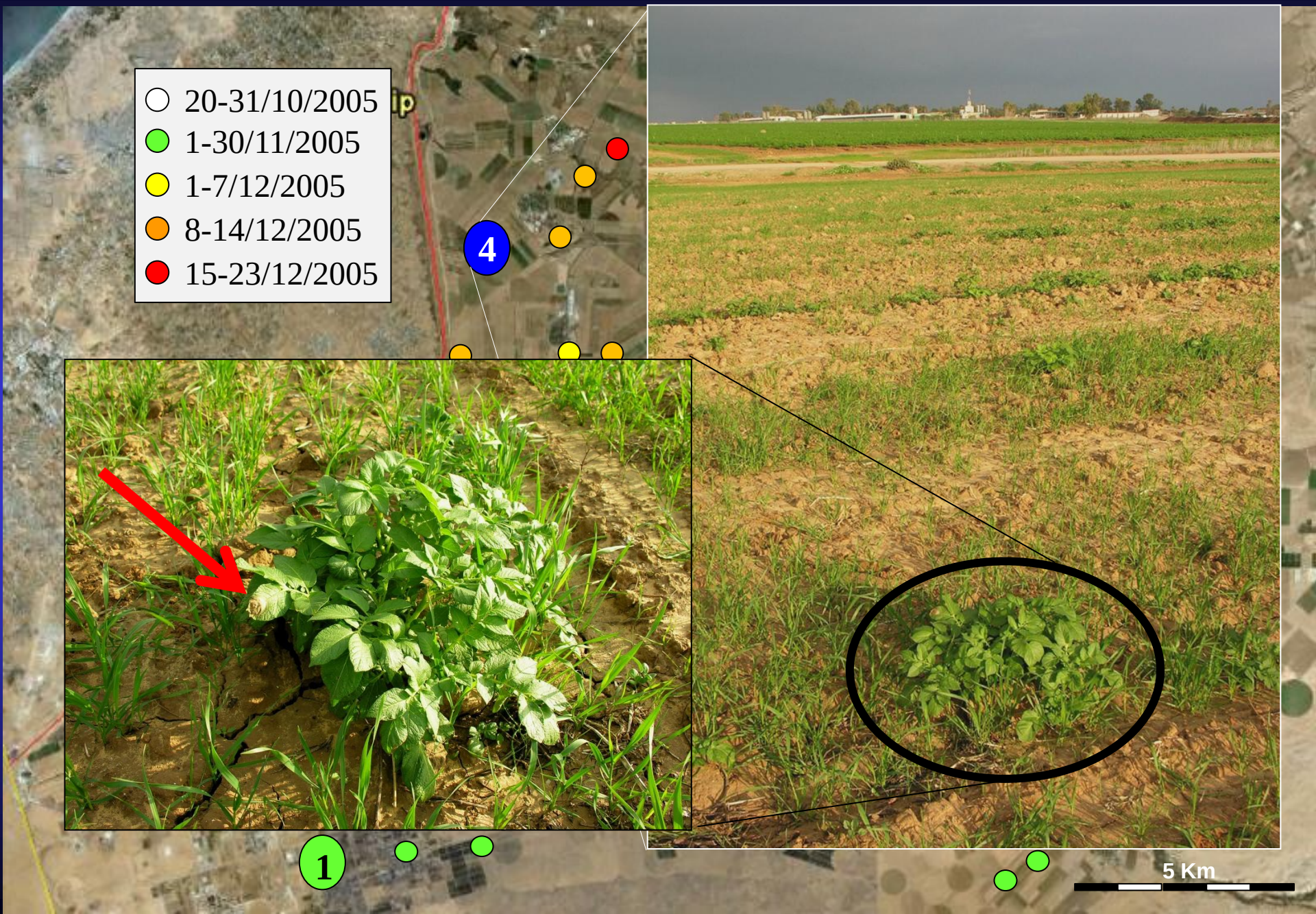
Autumn season 2005-6



Autumn season 2005-6



Autumn season 2005-6



Sources of initial inoculum

Thank you !

danish@volcani.agri.gov.il