The geographical distributions of Mediterranean fruit fly *Ceratitis capitata* (Wiedeman) (Diptera:Tephritidae) and its management in Iraq.

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Acknowledgement

- Thanks to FAO NE for their support.
- SBPP specialist
- Agricultural directorates in the provinces

Introduction

- The study is:
  - Observing the past actions.
  - Analysis at the present.
  - Planning for future.

Introduction

Cultivation :

- Planted in central Iraq (7 governorates)
- Area :30,000 ha, 90 % sweet orange.

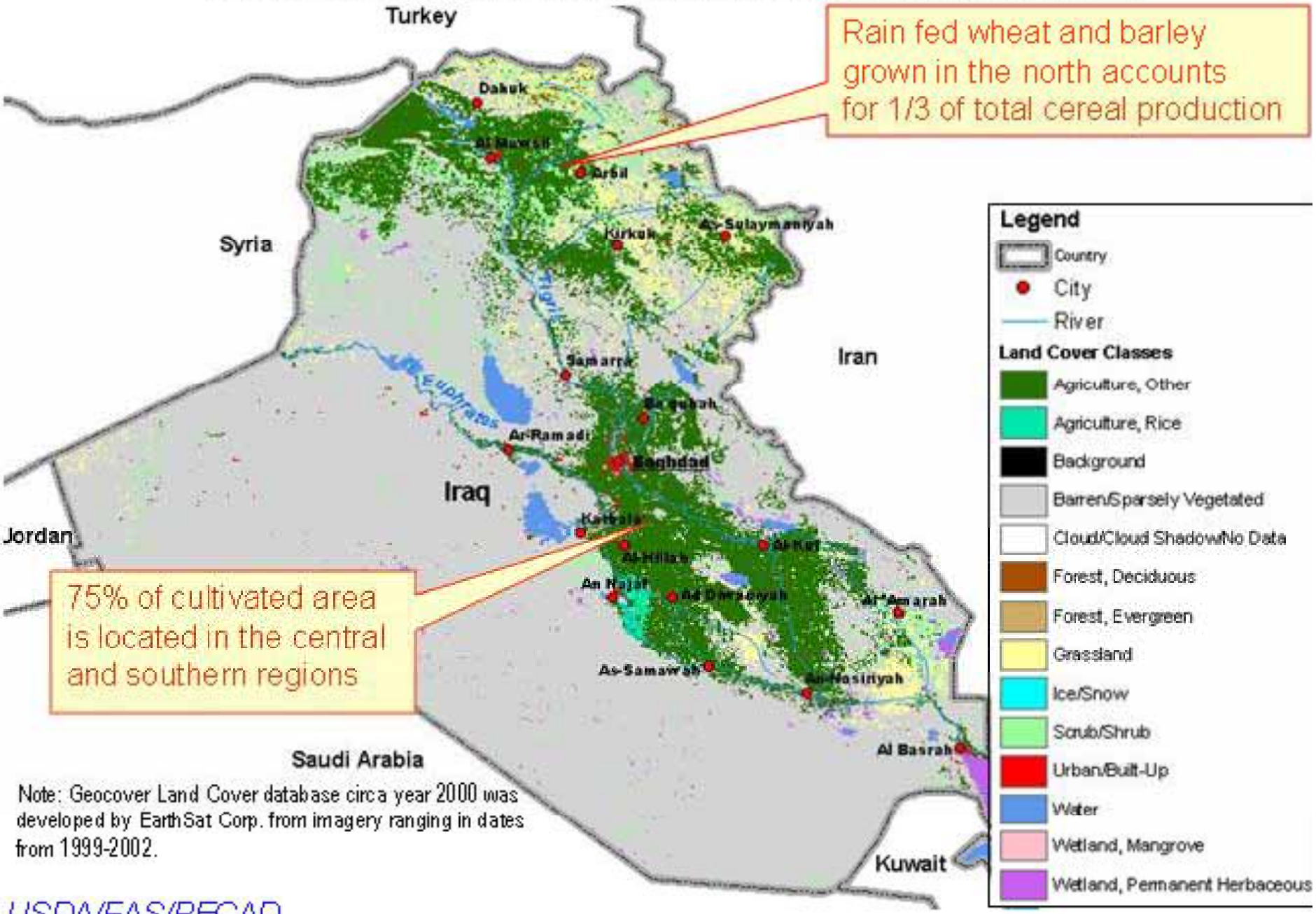
Varieties :

- local Mahali (common)
- Washington navel
- Valencia late sweet oranges
- Eureka and Lisbon lemons
- mandarins, Clementines
- Bitter ornage

Species :

- *Citrus limon (L.) Burm.*
- *Citrus medica L.*
- *Citrus sinensis (L.) Osb.*
- *Citrus aurantium*

Land Cover in Iraq Derived from Landsat Imagery (2000)



Note: Geocover Land Cover database circa year 2000 was developed by EarthSat Corp. from imagery ranging in dates from 1999-2002.

USDA/FAS/PECAD

Phytosanitary problems

Key pest & Diseases:

Insects:

- Fruit fly *Ceratitis capitata (Why?)*
- White fly *Aleurocalva Jasimini*
- Citrus leaf miner, *Phyllocnistis citrella*
- Root rot & phytophthora gummosis, *Phytophthora citropthora*

Nimatodes:

- Citrus root nematode (*Tylenchulus semipenetrans*)

Citrus trees are planted under the date palm trees

Irregular plantation

Background

- *Ceratitis capitata* is consider as most destructive pest on citrus and stone fruits.
- Quality pest: the pest attack the fruit directly.
- In Iraq, first record was been in Dayala 1946.

The pest has been eradicated at that time, thanks to internal quarantine, sanitation measures and unfavorable environment (hot and dry summer?)

Background

- The pest came back in Dayala again 2006.
- *C. capitata* has been identified officially by
  - Iraqi natural history museum and
  - British natural history museum
- This because citrus fruit imported from *C. capitata* infested countries and weak quarantine measures.
- Many studies have conducted about life cycle, optimum conditions for its spread and hosts.

Main goals

Current study conducted to:

- Determine infestation level in deferent cultivated area during 2009-2010.
- Map of infestation
- Pest phonology
- Evaluation study of the effectiveness of traps.

Materials and methods

Study of populatin dynamic of C. capitata in Iraq Provincies

- Survillance has been conducted in 7 provincies (Baghdad, Karbalaa, Dayala, Wasit, Alanbar, Babil and Salahddin).
- The data collect monthly from January 2009-Decemebr 2010
- Jackson traps have been used in 40 donum each province.
- Pheromone (Trimedlure) by Russell IPM
- Two traps/ ha at 1.5-1.8 m height from the terrain.
- Insects recorded weekly.
- Pheromone changed each 5 weeks
- Sticky material changed whenever needed to.

Comparesin between Jackson and Tephri traps

- This study conducted in Karblaa province period from January 2009-December 2010
- Targeted area was 40 donums.
- Pheromone (Trimedlure) by Russell IPM
- DDVP strips (**Dichlorvos** or 2,2-dichlorovinyl dimethyl phosphate)
- One Tephri trap/ ha at 1.5-1.8 m height from the terrain.
- Insects recorded weekly.
- Pheromone changed each 5 weeks
- Sticky material changed whenever needed to.

Occurrence of *C. capitata*

- The study conducted in Anbar province
- Two orchards (20 donum) have been selected (one mono culture and other poly culture)
- The data collect monthly from January 2009-Decemebr 2010
- Pheromone (Trimedlure) by Russell IPM
- Two Jacksons traps/ ha at 1.5-1.8 m height from the terrain.
- Insects recorded weekly.
- Pheromone changed each 5 weeks
- Sticky material changed whenever needed to.

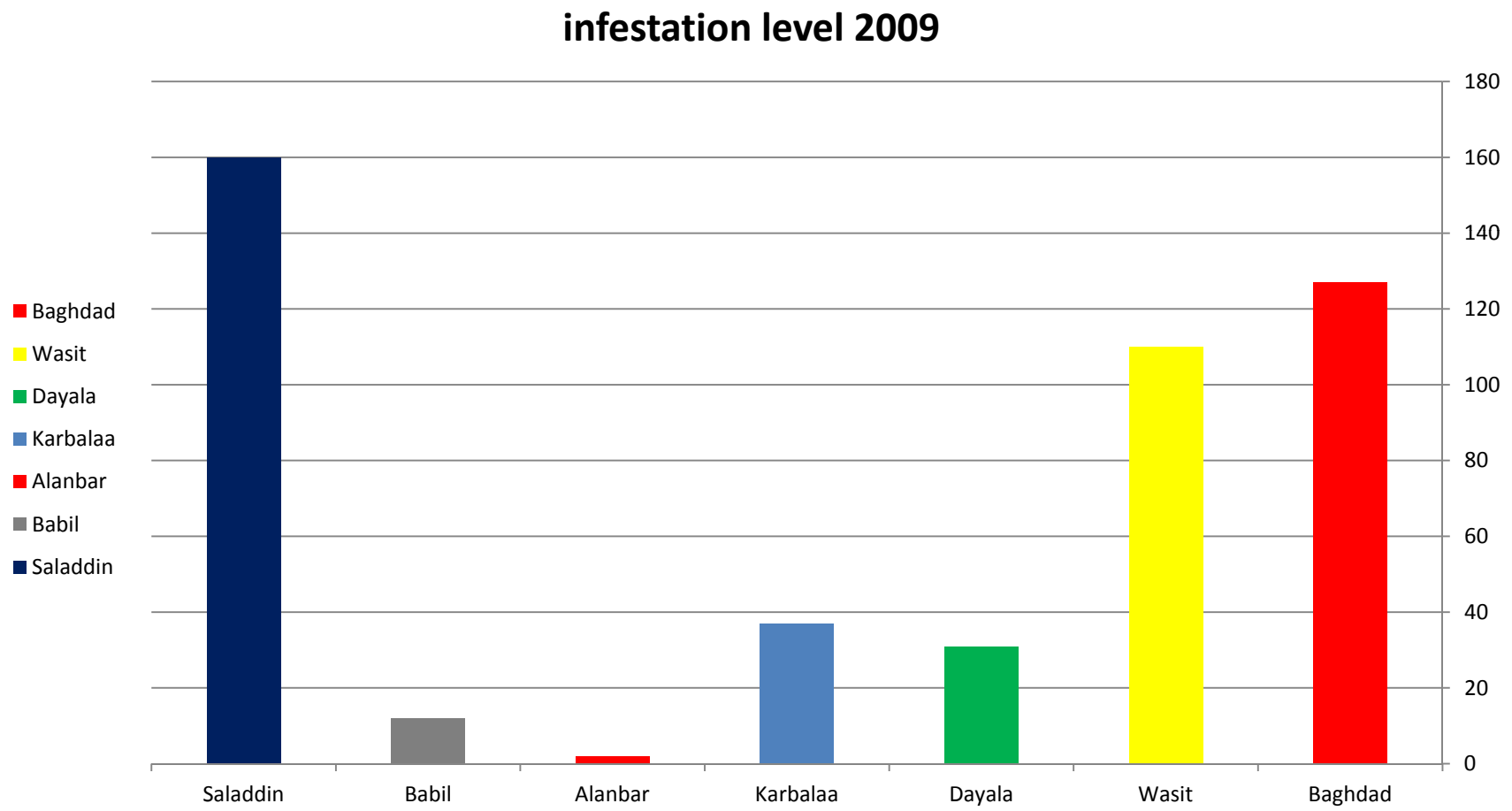

Russell IPM
QLure-CEC
Pheromone attractant for Ceratitis capitata
مادة جاذبة لذبابة البحر الأبيض المتوسط
Batch No.: 68/4151
رقم الدفعة:
Mfg. date: Feb 2008
تاريخ الانتاج:
Exp. date: Feb 2010
تاريخ الإنتهاء:
لصالح وزارة الزراعة العراقية - الشركة العامة للتجهيزات الزراعية
STORE UNDER 50°F / 10°C
إخزن تحت حرارة
DEBRAME FRERES

Results and discussion

Study of populatin dynamic of C. capitata in Iraq Provincies 2009

- Results showed that Saladdin provence high infestation reached 160 insects/trap/week.
- Baghdad was in second level of infestation reached 127 insects/trap/week.
- Wasit infestation level reached 110 insects/trap/week.
- Dayala and karbalaa: 37 insects/trap/week
- Babel : 12 insects/trap/week.

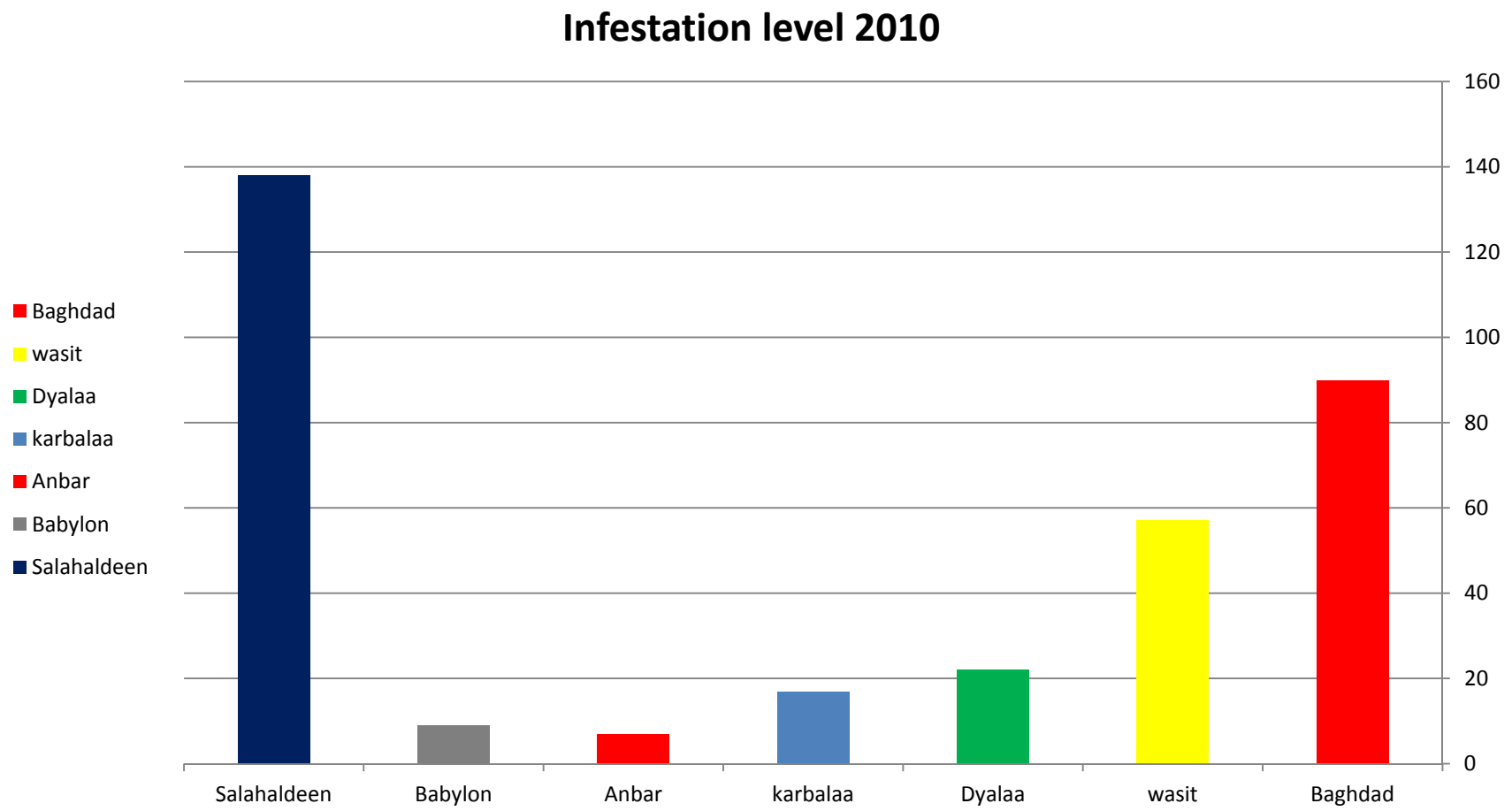
Study of populatin dynamic of C. capitata in Iraq Provincies 2009



Study of populatin dynamic of C. capitata in Iraq Provincies 2010

- Results was similar with 2009.
- Decreasing of infestation was recorded.

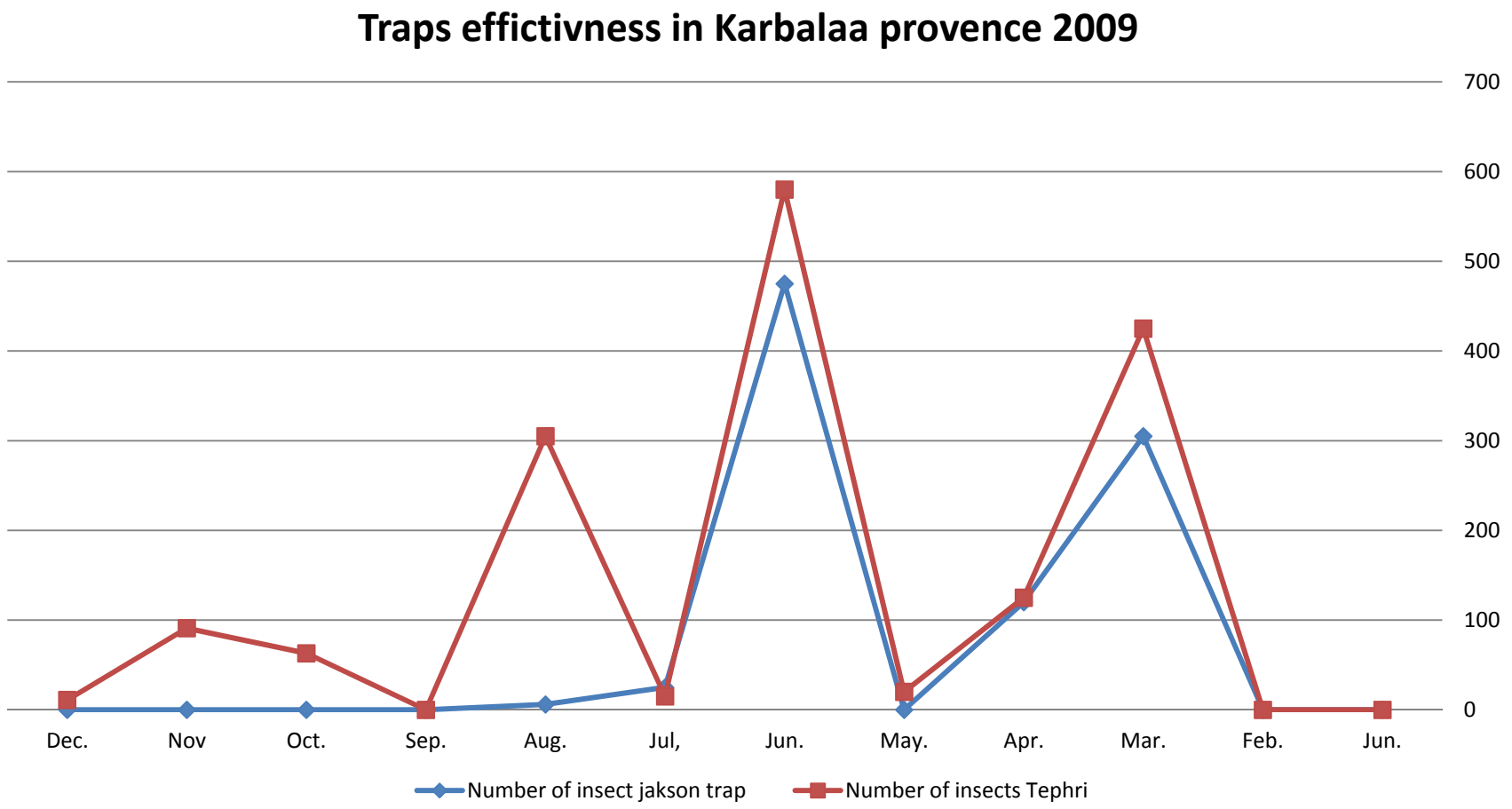
Study of populatin dynamic of C. capitata in Iraq Provincies 2010



Comparison between Jackson and Tephri traps 2009

- The results showed that Tephri traps was more effective than jackson traps.
- Three peaks of adults was recorded in March, June and August.

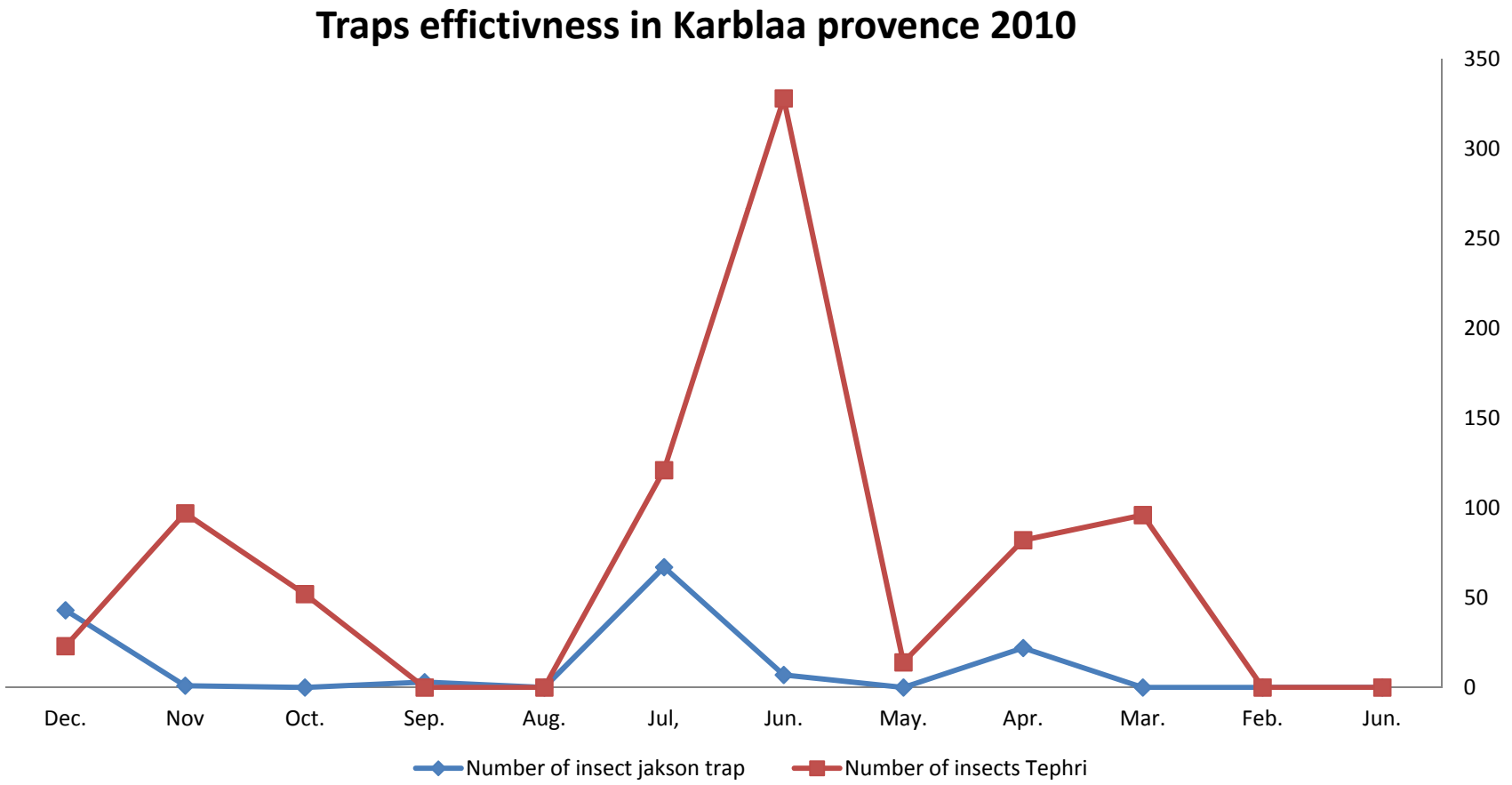
Comparesin between Jackson and Tephri traps 2009



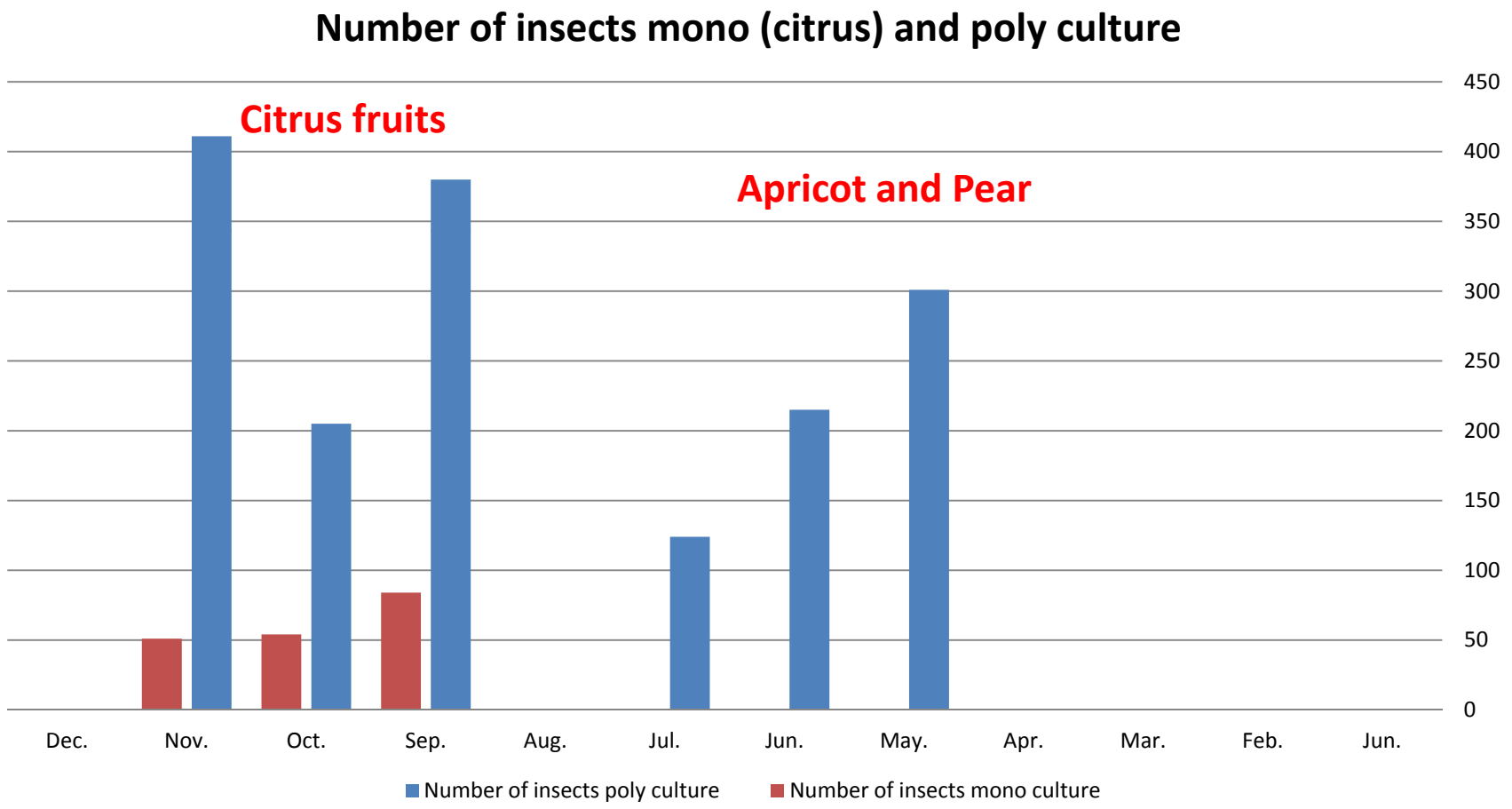
Comparison between Jackson and Tephri traps 2010

- Decreasing of infestation was recorded during 2010.
- Three peaks was recorded in March, June and November.
- Jackson traps affected by climatic condition on the contrary with Tephri traps.
- Tephri was capable for catch more insects make suitable for mass trapping.
- Dust storm affected severely on Jackson traps.

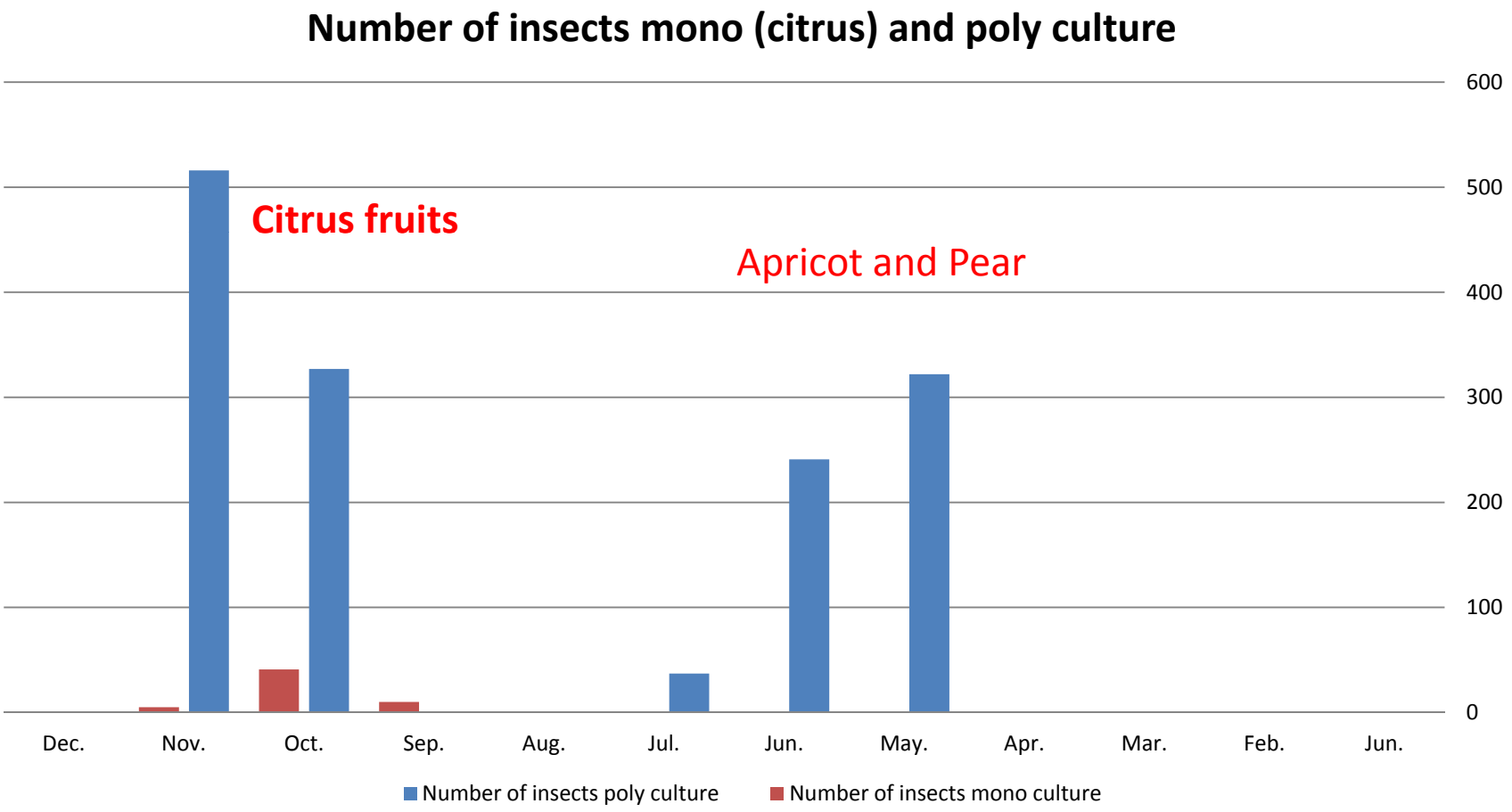
Comparison between Jackson and Tephri traps 2010



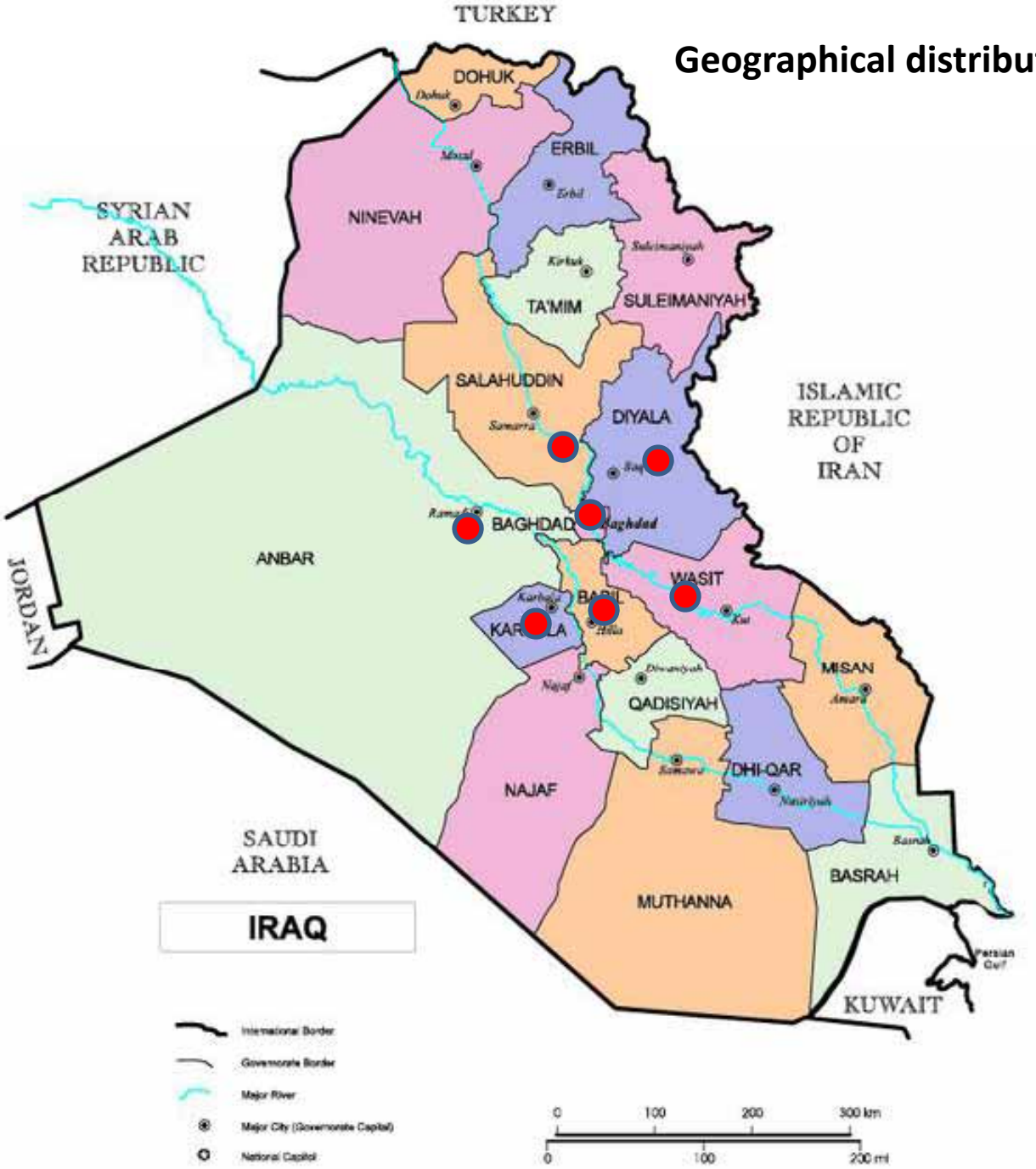
Occurrence of *C. capitata* 2009 Al anbar provence



Occurrence of *C. capitata* 2010 Al anbar province



Geographical distribution of *C. capitata*



Management strategies

- Partial spray by GF-120.
- Mass trapping.
- Horticultural practices.

Conclusion

- *C. capitata* occurre during most of the year.
- Tephri traps proved more effective for mass trapping.
- Deferent population dynamics depending on host mix and climatic condition.
- All orchards were infested with *C. capitata* in all targeted areas.

Recommendations

- Expanding surveillance area.
- More efforts to identify existing species.
- Regional project for effective communication with neighbor countries for phytosanitary measures.
- Capacity building and skill up.
- Using FFS technique to disseminate the awareness.
- To introduce SIT technique as apart of comprehensive IPM programme.

THANK YOU FOR YOUR ATTENTION