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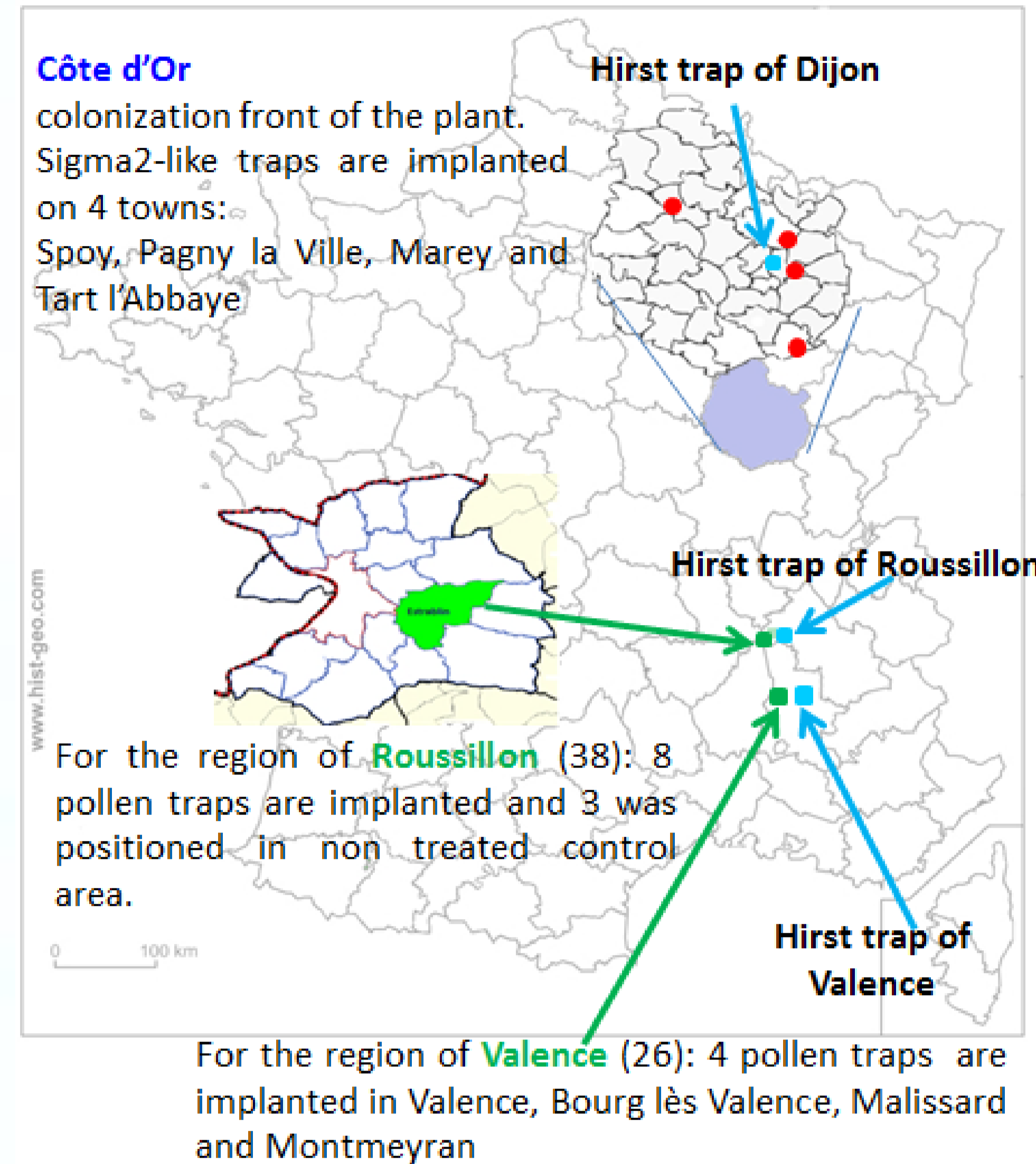
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## Introduction :

Common ragweed pollen (*Ambrosia artemisiifolia*) is known for its allergenicity causing hay fever, rhinoconjunctivitis and asthma to patients living in infested areas. The dispersion of ragweed plant is anthropogenic, and because it's an invasive plant, a number of control procedures have been implemented whose effectiveness was measured, in position of proximity, by the emission of ragweed pollens which was compared between the different areas. A first experiment was made in 2012 with significant results, a second experiment was set up in 2013 with 8 more traps in order to confirm the validity of the Sigma2-like traps, compared with pollen database obtained with Hirst type pollen traps.

## Materials and methods

### 3 areas of study : Côte d'Or, Roussillon, Valence



### o Sigma2-like traps (SLT): passive pollen trap



- SLT is composed on one hand of a transfer zone of air flow (high part) and on the other hand of a reception zone of particles by sedimentation (low part). Air flow goes through the trap in central zone, particles sediment and come on a coated slide disposed in the lower part of the trap
- The slides are changed every week
- 10 weeks of sampling
- Then the slides are analyzed with an optical microscope to obtain ragweed and total pollen counts (number of pollen grains by unit of time).

### o Hirst pollen trap: volumetric spore traps with continuous aspiration



- The ambient air is sucked with a flow rate of 10l/min. Particules are deposited by impaction on coated tape moving in front of the orifice of the trap (2mm/hour) in a continuous way.
- The tape is cut into 24h sections and prepared for microscopical observation.
- The sampling surface is examined by optical microscopy with a x400 magnification, by using criteria of the determination key of pollens established by the RNSA, and provide qualitative and quantitative data (grains per m<sup>3</sup> of air by time unit).



Inflorescence of male flowers

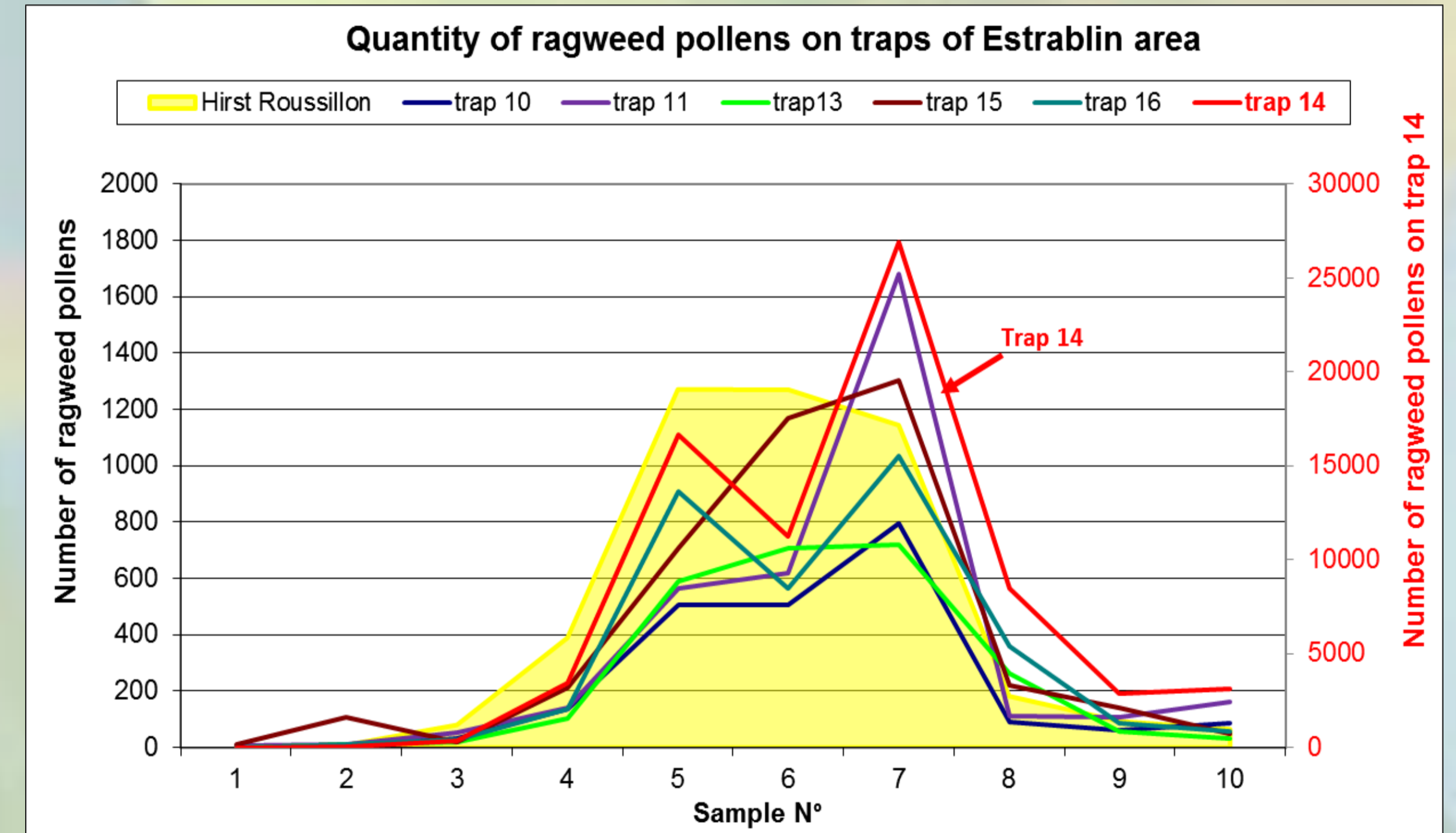
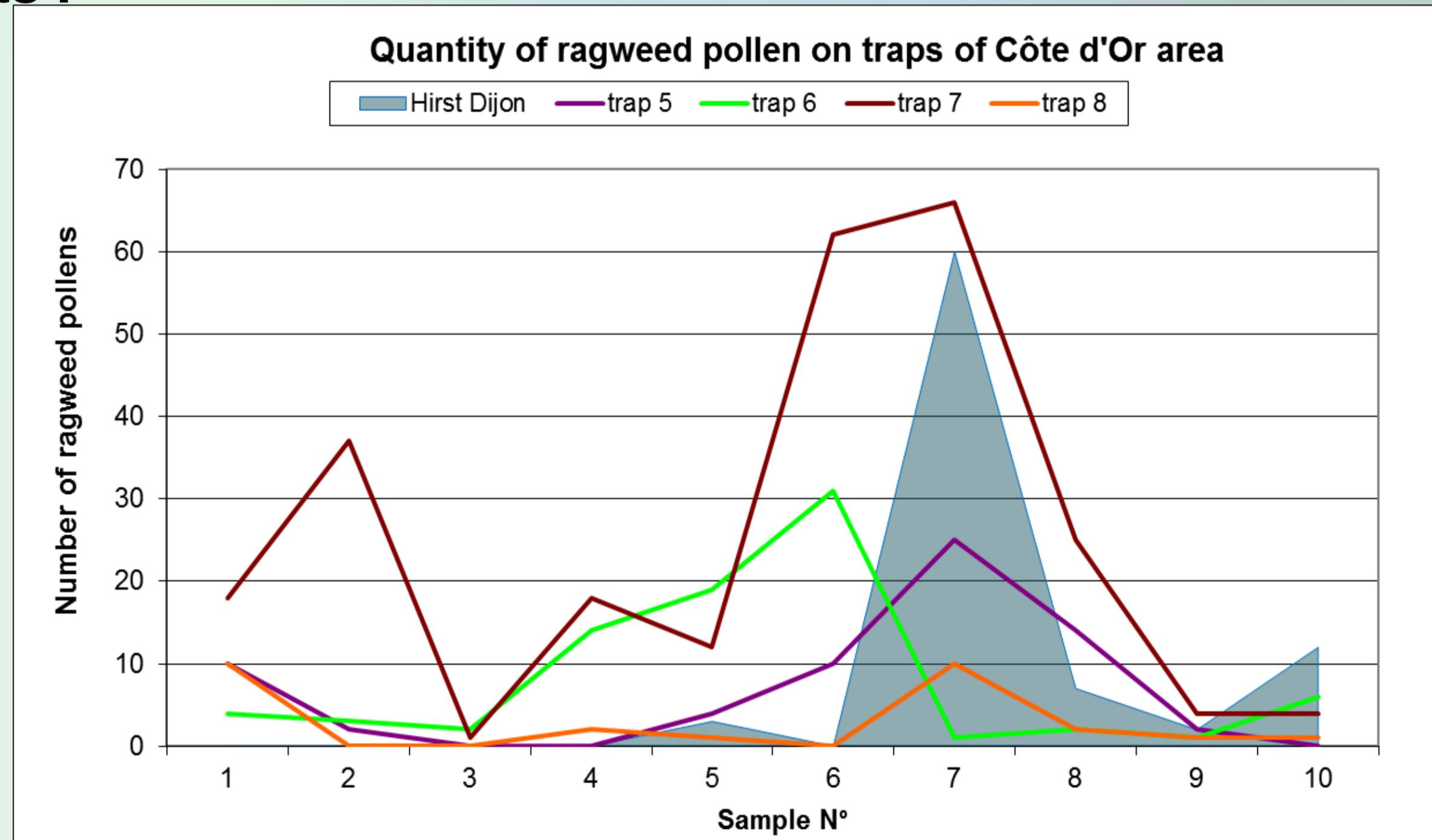


Ragweed infestation in a sunflower field



SLT

## Results :



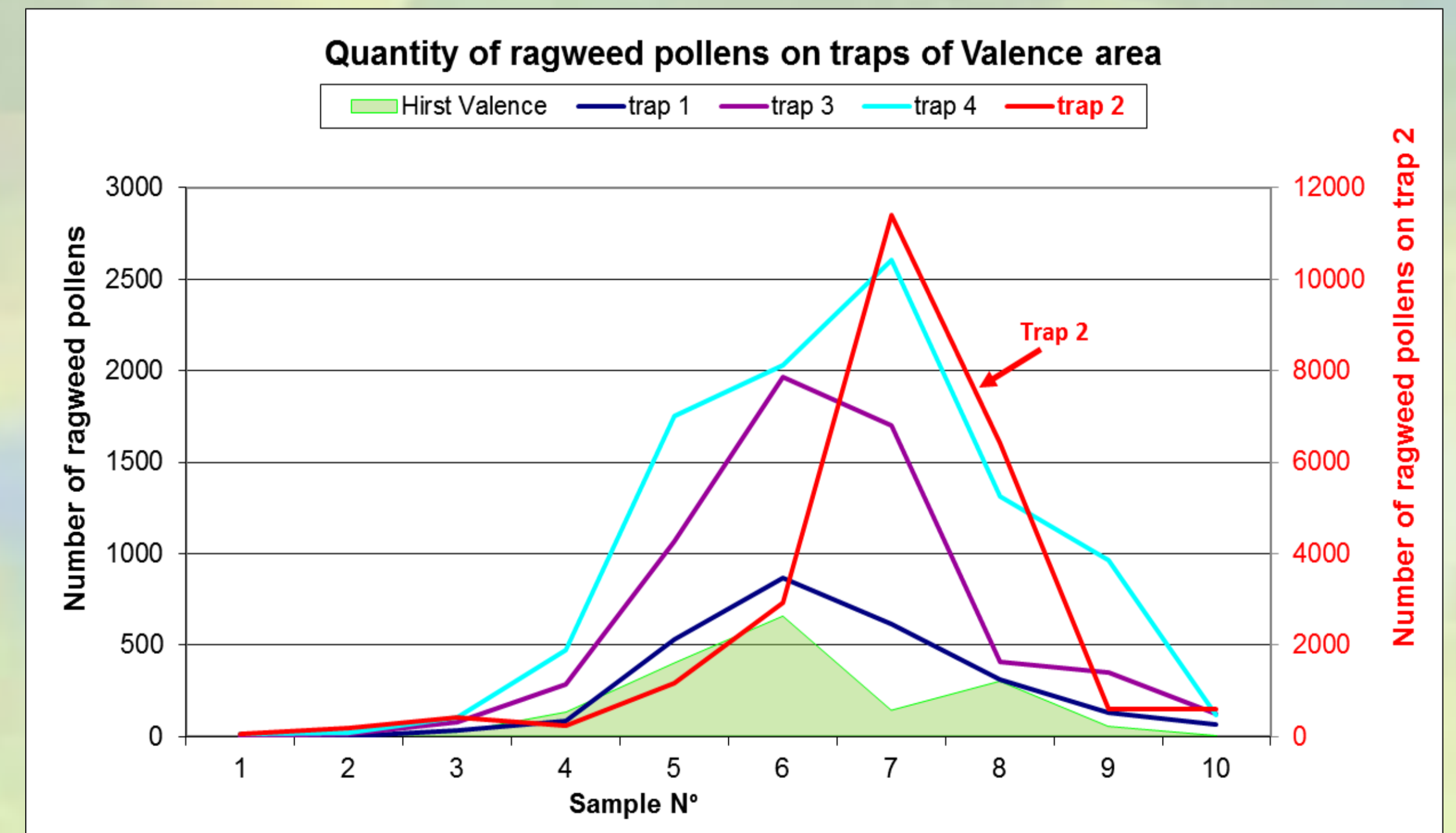
The amount of ragweed pollen grains for the trap 14 are very high compared to the other traps in the same area of Estrablin. This two traps are implanted in non treated area this is why the amount of ragweed pollen is so high.

For example, It goes from 800 ragweed grains on average for week 7 for the traps 13, 15 and 16 which are in a treated area to a peak over 26 000 pollen grains for the same week for the trap 14 which is in a non treated area infested with ragweed.

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The different graphics show the temporal coincidence between SLT and with the Hirst traps both in the border area of colonization and in the area of infestation. In Côte d'Or, amounts of ragweed pollens are lower than in the area of Estrablin or Valence. On the graphic of infested area, pollens quantities are around 1000 pollen grains whereas those located in non-infested area are around 0 to 70 pollen grains per week.

- Ragweed pollen amounts collected from treated areas and non-treated areas are different, with a maximum of a few hundred of pollen grains for treated areas against a few to tens of thousands for the non-treated areas.
- On the area not really infested, the quantities of pollen are limited to low tens of ragweed pollen grains.
- Periods of heavy pollination of ragweed pollens are the same for SLT traps and for Hirst pollen traps.



## Conclusion :

In the 2013 experimental conditions, SLT allow to measure variations of pollen quantities between areas and inside the zones of study. SLT meet objectives and confirms the results of 2012. There is a difference between where pollen management has been achieved and the neighboring towns where no management is done. Even if the amounts of pollen collected from the treated areas infestations are still high, they are significantly less important than the amounts present on non-treated areas. The set-up of management practices enable to locally reduce the pollen pressure but only a generalized fight will actually enable to relieve people aware.

In relation to this presentation, I declare that there are no conflicts of interest.