Ragweed (*Ambrosia artemisiifolia*) invasion and management

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National Delegate and Management Committee Member of the COST ACTION SMARTER
(Sustainable Management of *Ambrosia artemisiifolia* in Europe)
Coordinator of the Italian Monitoring Network in Aerobiology

Brussels, 2015 March 5th

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Index

• Diffusion and management in different European Countries: Italy, France, Germany, Hungary, Switzerland

• International Ragweed Society (I.R.S.)

• COST SMARTER (Sustainable Management of Ambrosia artemisiifolia in Europe)
Background

Ambrosia artemisiifolia

• The North-Western area of the Milan Province has been colonized by Ambrosia artemisiifolia since the **1940s**\(^1\)

• Clinical manifestations of ragweed allergy were frequently observed in allergy clinics located in this area **only** starting from the middle of the **1980s** \(^2\)

\(^1\)Stucchi C. L'ambrosia elatior. Nuovo Giorn Bot Ital , 1942

North-Western Milan area:
- zone most infested by ragweed in Italy, together the nearby Southern Varese area (Lombardy Region)
- one of the zones most infested by ragweed in Europe

First measures: Regional President’s Ordinance

3 consecutive mowings prior to blossom:
- Last ten days of June
- Last ten days of July
- Second ten days of August

Functions of the Local Health Authority
- consulting and collaboration to the Mayor
- inform and sensitize the population
- control the Ordinance application

Ultimate goal
- to protect citizens’ health
ASL Mi1 Management Strategy: development and improvement

CONTROL of the TERRITORY
- Aerobiological Monitoring
- Surveillance and monitoring of infested area
- Town planning

INFORMATION and EDUCATION
- Public Authority
- Population

Ragweed management and its measuring:
primary prevention actions
ASL Mi1 (LHA Mi1)

STUDIES on METHODS to limit the ragweed spreading
- 1°: 2005-2008
- 2°: 2014-2016 (COST SMARTER-UNIV. FRIBOURG)

EPIDEMIOLOGICAL STUDY
- Collaboration with Allergological Services of the Hospitals

ASSESSMENT of DIRECT HEALTH COST
Epidemiological studies: the evidences of ragweed allergy

### Results of the epidemiological regional studies

<table>
<thead>
<tr>
<th>Place/Town</th>
<th>Prevalence %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1997</td>
</tr>
<tr>
<td>Bergamo</td>
<td>0</td>
</tr>
<tr>
<td>Brescia</td>
<td>0</td>
</tr>
<tr>
<td>Busto Arsizio</td>
<td>8.75</td>
</tr>
<tr>
<td>Castellanza</td>
<td>#</td>
</tr>
<tr>
<td>Garbagnate</td>
<td>#</td>
</tr>
<tr>
<td>Legnano</td>
<td>4.30</td>
</tr>
<tr>
<td>Magenta – Abbiategrasso</td>
<td>2.37</td>
</tr>
<tr>
<td>Rho</td>
<td>3.60</td>
</tr>
<tr>
<td>Pavia</td>
<td>#</td>
</tr>
<tr>
<td>Somma L. - Gallarate</td>
<td>4.73</td>
</tr>
<tr>
<td>Sondrio</td>
<td>0</td>
</tr>
<tr>
<td>Vallecamonica</td>
<td>0</td>
</tr>
</tbody>
</table>

### Epidemiological studies

<table>
<thead>
<tr>
<th>Year</th>
<th>Prev.%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osp.Magenta; sample health-care population</td>
<td>1996</td>
</tr>
<tr>
<td>ASL Milano 1-Osp.Magenta; sample health-care population</td>
<td>2005</td>
</tr>
<tr>
<td>ASL Milano 1- Preliminary results; Sample: population of the Sedriano town</td>
<td>2012</td>
</tr>
</tbody>
</table>

### Epidemiological studies: tools

- **Quantify** the impact on **health** due to ragweed
- **Necessity** to adopt a **management strategy** preventive measures
- **Monitor** the **efficiency** of the management strategy
- **Necessity** to improve the management strategy
**Epidemiological study 2012**
(population of the Sedriano town)

<table>
<thead>
<tr>
<th></th>
<th>CONJ UNTVITIS</th>
<th>RHINITIS</th>
<th>ASTHMA</th>
<th>CONJUNTV+ RHINITIS</th>
<th>CONJUNTV+ASTHMA</th>
<th>RHINITIS + ASTHMA</th>
<th>CONJUNTV + RHINITIS + ASTHMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>10</td>
<td>58</td>
<td>18</td>
<td>87</td>
<td>2</td>
<td>25</td>
<td>56</td>
</tr>
<tr>
<td>MALES</td>
<td>5</td>
<td>30</td>
<td>9</td>
<td>41</td>
<td>1</td>
<td>13</td>
<td>25</td>
</tr>
<tr>
<td>FEMALES</td>
<td>5</td>
<td>28</td>
<td>9</td>
<td>46</td>
<td>1</td>
<td>12</td>
<td>31</td>
</tr>
<tr>
<td>TOTAL %</td>
<td>3.9%</td>
<td>22.6%</td>
<td>7.0%</td>
<td>34.0%</td>
<td>0.8%</td>
<td>9.8%</td>
<td>21.9%</td>
</tr>
<tr>
<td>MALES %</td>
<td>50%</td>
<td>51.7%</td>
<td>50%</td>
<td>47.1%</td>
<td>50%</td>
<td>52%</td>
<td>44.6%</td>
</tr>
<tr>
<td>FEMALES %</td>
<td>50%</td>
<td>48.3%</td>
<td>50%</td>
<td>52.9%</td>
<td>50%</td>
<td>48%</td>
<td>55.4%</td>
</tr>
</tbody>
</table>

The aggressive allergic behavior of ragweed pollen was confirmed

**PATIENTS WITH ASTHMA 39.5 %; RHINITIS 88.3%; CONJUNCTIVITIS 60.6%**
Epidemiological study 2012
(population of the Sedriano town)

Features of short ragweed allergy in North Western Milan Area:
preliminary results (4)

• No association between sexes and ragweed allergy
• Relations between ragweed allergy and some social demographic
  parameters: age, level of education, occupation

<table>
<thead>
<tr>
<th>Features</th>
<th>Odds Ratio</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46-65 years</td>
<td>1.48</td>
<td>Age: risk factor</td>
</tr>
<tr>
<td>66-80 years</td>
<td>0.43</td>
<td>Age: protective factor</td>
</tr>
<tr>
<td>&gt;80 years</td>
<td>0.069</td>
<td>Age: protective factor</td>
</tr>
<tr>
<td>Level of education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school graduates</td>
<td>1.67</td>
<td>Higher educated people show a 1.67 times the risk to allergy</td>
</tr>
<tr>
<td>University graduates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees</td>
<td>1.57</td>
<td>Employees present a risk 1.57 times to develop ragweed allergy</td>
</tr>
<tr>
<td>Retired people</td>
<td>0.53</td>
<td>Retired people show 0.53 times the risk of developing ragweed allergy</td>
</tr>
</tbody>
</table>

Epidemiological study 2012
ASL Mi1 and Magenta Hospital

• A study, carried out during 2008-2010 in the Allergy Service of the Magenta Hospital, located in this area, showed that 71% of the new patients suffering from pollinosis were allergic to ragweed (5).

• Moreover, many cases of poly-sensitization were observed, mainly with winter and spring pollens, prolonging the exposure to pollen allergens, with a major risk of asthma and heavily weighing related sanitary costs

Data on allergic diseases in general (respiratory, food, etc)

- not registered in a data base easily accessible
- not mandatory to be forwarded to the Health Department (National and Local)
## Assessment of direct health cost due to ragweed

<table>
<thead>
<tr>
<th>Year</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>First examination (€)</td>
<td>83.013</td>
<td>82.810</td>
<td>94.019</td>
<td>104.398</td>
<td>129.123</td>
<td>128.639</td>
<td>121.920</td>
<td>147.206</td>
<td>146.483</td>
<td>152.939</td>
<td>180.599</td>
</tr>
<tr>
<td>Control examination SIT patients (€)</td>
<td>114.435</td>
<td>68.216</td>
<td>86.464</td>
<td>73.884</td>
<td>95.361</td>
<td>112.459</td>
<td>112.876</td>
<td>81.663</td>
<td>91.783</td>
<td>84.819</td>
<td>76.403</td>
</tr>
<tr>
<td>Allergenic extracts (€)</td>
<td>191.319</td>
<td>141.264</td>
<td>194.064</td>
<td>177.521</td>
<td>223.636</td>
<td>263.734</td>
<td>274.456</td>
<td>275.470</td>
<td>335.256</td>
<td>378.369</td>
<td>333.731</td>
</tr>
<tr>
<td>Precription Drugs (€)</td>
<td>1.251.182</td>
<td>1.084.631</td>
<td>639.527</td>
<td>981.656</td>
<td>1.145.266</td>
<td>1.426.646</td>
<td>1.143.661</td>
<td>1.389.622</td>
<td>1.115.623</td>
<td>1.105.310</td>
<td>1.216.590</td>
</tr>
<tr>
<td>Total costs (€)</td>
<td>1.672.014</td>
<td>1.390.417</td>
<td>1.032.783</td>
<td>1.348.737</td>
<td>1.610.884</td>
<td>1.958.760</td>
<td>1.666.585</td>
<td>1.918.283</td>
<td>1.705.893</td>
<td>1.742.285</td>
<td>1.831.450</td>
</tr>
</tbody>
</table>

### 2006 – Study: Drugs sold in 4 municipality pharmacy

<table>
<thead>
<tr>
<th></th>
<th>May vs monthly average (% difference) p=0.00007</th>
<th>Aug vs monthly average (% difference) p=0.00679</th>
<th>Sept vs monthly average (% difference) p=0.00006</th>
<th>Aug + Sept vs monthly average (% difference) p=0.00003</th>
<th>May vs Aug + Sept (% difference) p=0.01</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Difference average</td>
<td>190.70</td>
<td>71.18</td>
<td>194.63</td>
<td>343.48</td>
<td>-21.53</td>
</tr>
</tbody>
</table>

The **total amount of medicine** sold in **August and September** records a **difference of 343.48%** respect to the per month average.

An increase in the average sales for all drugs was recorded for **May**, **August** and **September**.
Studies on methods to limit the ragweed spreading
(2005-2008; ASL Milan 1, Lombardy Region: DG Health - DG Agriculture, Province of Milan)

• **Observation** of the **epidemiological data** (2005 study): **decision** to carry out the following studies

• **Different methods** can be **useful** to limit ragweed spreading and pollen production:
  – **Mowings** one or two times, **grounds covered by vegetation**, ground ploughing, disk harrowing, chemical control
  – **Mowings**: good efficacy; it is possible to **diminish** the **number** of the interventions and in the same time to obtain a diminution of the inflorescences

• **Objective**: to reach a **wide application** of the **containing methods**

• Results at the root of the **actual regional indications**
Conventions
Training and update courses
Target: Local Health Authority and Town Administration

Azienda Sanitaria Locale (A.S.L.) della Provincia di Milano n° 1
Corso di aggiornamento
Il riconoscimento della specie Ambrosia per il miglioramento degli interventi di prevenzione

13 giugno 2001
ore 9.00
Dipartimento di Prevenzione
Parabiago, via Spagliardi 19- aula verde

Evento Formativo
PREVENZIONE DELLE POLLINOSI
Legnano, via Savonarola n. 3
(Si comunica che il corso non si terrà a Parabiago come precedentemente indicato)
26 NOVEMBRE 2003
N. totale dei partecipanti: 50
Destinatari: Medici, Biologi e Tecnici della prevenzione della A.S.L. Provincia di Milano n. 1

Programma

Corso di aggiornamento
Controllo di Ambrosia artemisiifolia

25 giugno 2008
1^ Edizione ore 9.00 - 12.30
2^ Edizione ore 14.00 - 17.30
Dipartimento di Prevenzione Medica
Parabiago, Via Spagliardi 19
Aula Verde
Information to the Mayor

Annual Guide Lines

Annual reports

Aim of annual report

• Define the situation
• Summarize different kinds of problem solving
• Obtain uniform level of knowledge
Information-Education

Target: citizens and patients

Bil-boards and posters

Brochures

Special Gadgets: Annual “Pollen Calendar”

• Historical facts on the plant spreading in the area
• Habitat
• Botanical and biological characteristics
• Way to recognize ragweed in different phenological phases
• Way to compare it with similar plants
• Methods to fight the plant spreading
• Allergy symptoms
• Behavioural recommendations for patients
• How to point out the presence of the plant to institutions
Special gadgets: educative board game for children *Aller-giocando*

**Objectives**
- know pollinosis
- educate to: comprehension of environmental processes and their impact on human health

- Primary schools
- Pediatric outpatient’s allergy departments
Control of the territory
Surveillance of grow over stands

• Decline of the ragweed infested areas

• The **continuous surveillance** is an important tool to **measure** the success of our **management strategy**!
Critical points

- non executed preventive measures
- insufficient sensibility by Local Administrations
- difficulty to adopt annual ASL indications
- Mayors can bring modifications or non transposing ASL indications
Control of the territory
Aerobiological Monitoring

Legnano
pollen station

- Published on web-site: www.aslmi1.mi.it
- Send by e-mail:
  - Allergy services
  - Doctors Associations
  - Chemist’s shops
  - Town council
The exotic oligophagous leaf beetle *Ophraella communia* LeSage, 1986 (Coleoptera: Chrysomelidae) was observed feeding on *Ambrosia artemisiifolia* L (common ragweed) plants in northwest of the Province of Milan (NW Milan) in Northern Italy, with an impressive “like herbicide” effect.
• Routine pollen-monitoring stations recorded less *Ambrosia* pollen in 2013 than in the previous decade

• A **statistically significant negative trend** in Annual Ragweed Pollen (ARP) in the North-West of the Province of Milan (average of all stations) from 2000 to 2013 (*p* = 0.037)

• Statistically significant trends **were not achieved** if earlier periods were considered (i.e. 2000-2011 or 2000 -2012)
Legnano: Ambrosia pollen level

-2013: impressive decrease of ragweed airborne pollen levels detected (AAP=664)

-2014: slightly increased (AAP=782)
Rho: Ambrosia pollen level

- 2013: impressive decrease of ragweed airborne pollen levels detected (AAP=817)

- 2014: slightly increased (AAP=939)
Magenta: Ambrosia pollen level

- 2013: impressive decrease of ragweed airborne pollen levels detected (AAP=620)

- 2014: increase (AAP=1808)
Impact of *Ophraella* on health?

• The skin prick tests (SPT) and **consistent diagnosis** of *hay-fever* of the period *September-December* of the years 2010, 2011, 2012, and 2013 from the medical records of the *Magenta* allergy outpatient’s clinic were critically revised.

• **Diagnosis** of short *ragweed pollinosis** was **compared** with the **total** of diagnosis of *pollinosis*

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual Ambrosia pollen</th>
<th>Daily maxima pollen/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>6597</td>
<td>767</td>
</tr>
<tr>
<td>2011</td>
<td>6915</td>
<td>1001</td>
</tr>
<tr>
<td>2012</td>
<td>3647</td>
<td>413</td>
</tr>
<tr>
<td>2013</td>
<td>620</td>
<td>65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>New patients with pollinosis (N°)</th>
<th>New ragweed allergic patients (N°)</th>
<th>New ragweed allergic patients (%)</th>
<th>P value vs. 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>120</td>
<td>62</td>
<td>51.7</td>
<td>0.00022</td>
</tr>
<tr>
<td>2011</td>
<td>133</td>
<td>76</td>
<td>57.1</td>
<td>0.00001</td>
</tr>
<tr>
<td>2012</td>
<td>111</td>
<td>78</td>
<td>70.3</td>
<td>0.000000001</td>
</tr>
<tr>
<td>2013</td>
<td>88</td>
<td>23</td>
<td>26.1</td>
<td>#</td>
</tr>
</tbody>
</table>

Reduction of new ragweed allergic patients!
Aerobiological study
COST SMARTER Team

AIM

• Determine whether this observed decrease in airborne Ambrosia pollen concentrations can be explained by environmental factors such as meteorology

• or whether there is evidence to support the hypothesis that the decrease was related to the presence of large numbers of Ophraella commun in the area

RESULTS

• The regression analysis support the hypothesis that the observed decrease in airborne Ambrosia pollen maybe indeed be related to the presence of large numbers of Ophraella commun in the Milan area,
• as the drastic decrease in airborne Ambrosia pollen in 2013 cannot be explained by meteorology alone

FUTURE WORK

Further study of the long-term effects of O. commun on concentrations of airborne Ambrosia pollen will be conducted during the next months, among the COST SMARTER
Conclusions - Italy

• Some **tools** we used (i.e. epidemiological studies, pollen levels, control of the mainly infested areas) have given us **clear indications** of the **efficiency** of our **management strategy** and **when** it was necessary to **improve** it.

• Some critical points still remain, indicating that this management strategy can be perfected:
  - It’s necessary to implement a **mandatory system** of the **allergy diseases data** in all of Europe, similar to the one used for the infectious diseases.
  - This system should **include** information on the prescribed **drugs**.
Conclusions - Italy

• We have reached this management success thanks to collaboration at local and international levels.

• Therefore it’s important to pursue this international collaboration!

• To reach the management success it’s fundamental a good communication, education and awareness strategy.

Without this communication strategy, there cannot exist management success!
Ragweed in France
Michel Thibaudon
Maira Bonini
Samuel Monnier
Gilles Oliver
Introduction of ragweed in France

- 1860: in a field of Allier (French department) with seeds of red clover from North America
- First World War
- Then spreading along roadsides and river banks (Rhône, Loire)
Ragweed in France in 2014

Number of ragweed observations by 10x10 km

Main infested area: Rhone-Alpes region

• **3 highly affected areas:** North Isère, Southeast Lyon, Rhone corridor (Roussillon, Valence) but also in recent years the plain of Ain, eastern Ardèche, the center of the Drôme.

RouterModule

**Objective:** Reduce the presence of ambrosia to reduce allergy

![France map of ragweed pollens](image)

- **Infested**
- **Partially infested**
- **Not infested**

France map of ragweed pollens
Health impact of ragweed pollens

- around 1970, role of ragweed highlighted in pollinosis cases in Lyon
- nowadays, 6 to 12% of French population is allergic to ragweed, especially in Rhone-Alps region

- rhinitis 90%
- conjunctivitis 75%
- tracheitis, asthma 50%
- sneezing
- tingle
- itch
- cough
Pollen index of ragweed - 2014

Allergy risk:
- depends on allergy potency and concentration of pollens
- scale: from 0 (null) to 5 (very high)
- Allergy risk = 3 → all allergy sufferers show symptoms

Map key

<table>
<thead>
<tr>
<th>Yearly pollen index</th>
<th>Days with allergy risk ≥ 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 5 days</td>
</tr>
<tr>
<td>From 5 to 10 days</td>
<td>From 5 to 10 days</td>
</tr>
<tr>
<td>From 11 to 20 days</td>
<td>From 11 to 20 days</td>
</tr>
<tr>
<td>&gt; 20 days</td>
<td>&gt; 20 days</td>
</tr>
</tbody>
</table>
*Ambrosia* pollination in France

Total ambrosia pollen catch July-September in France

\[ y = 17,699x + 837,27 \]

\[ R^2 = 0,0835 \]
Comparison pollen index 2004-2013 with 2014

Ragweed pollen index Lyon

Ragweed pollen index Valence

Ragweed pollen index Bourgoin-Jailleu

Ragweed pollen index Roussillon
Measures adopted and future actions:
National level

National Health and Environment Plan 3 (PNSE3) in action 11 that just came out:

전문
Regarding ambrosia, invasive species with highly allergenic pollen, it continues to expand all over the territory, resulting in a global increase in the number of allergy sufferers. The regional agency Rhône-Alpes Health estimated that in 2013, nearly 200 000 people have used care related to ragweed allergy in Rhône-Alpes, corresponding to health costs approximately 15 million Euros.

Control actions against ragweed are coordinated by the Observatory of ragweed.
Measures adopted and future actions: Regional level

PRSE 2 Rhône-Alpes: Fighting against pollen allergies

Action 10: Organize the fight against ragweed

Measure 22: Find the commitment of government departments and agencies in each department

Measure 23: Establish ambrosia referent and organize their training and inform them

Measure 24: Establish steering committees in each department and a regional steering committee
Creation of a new regional platform Reporting-Ambrosia

With 4 different ways to report and inform:

An integrated tool to fight against ragweed
Pollen count 2014
Mean of all traps

Germany

http://www.pollenflug-nord.de/

www.pollenflug-nord.de
Pollen count in East German traps

http://www.pollenflug-nord.de/
## Control measures: Germany

<table>
<thead>
<tr>
<th>Habitat</th>
<th>Herbicide</th>
<th>Herbicide types</th>
<th>Cutting/mowing</th>
<th>Pulling out</th>
<th>Other (e.g. crop rotation, sowing competitive vegetation):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop fields</td>
<td>sometimes</td>
<td>crop selective and ragweed effective herbicides</td>
<td>sometimes</td>
<td>No/hardly</td>
<td></td>
</tr>
<tr>
<td>Road sides</td>
<td>rarely</td>
<td>?</td>
<td>often</td>
<td>sometimes</td>
<td></td>
</tr>
<tr>
<td>Natural areas</td>
<td>No</td>
<td></td>
<td>often</td>
<td>often</td>
<td></td>
</tr>
<tr>
<td>River banks</td>
<td>no</td>
<td></td>
<td>sometimes</td>
<td>often</td>
<td></td>
</tr>
<tr>
<td>Private persons</td>
<td>no</td>
<td></td>
<td>often</td>
<td>often</td>
<td></td>
</tr>
</tbody>
</table>
Legislation and control: Germany

- **No** special legislation with regard to ragweed

- **Interdisciplinary Working Group** Ambrosia recommends control, monitoring, prevention of spread and import (WG consists in experts from botany, ecology, plant protection, allergology, aerobiology etc. It is organised on the national level with some participation from neighbouring germanspeaking countries, e.g., Switzerland, Luxemburg, Austria, Netherlands)

- **Public awareness** campaigns (started in 2005 but were most active around 2006 and 2007)

- Regional and local authorities have **different policies**, some (e.g. Bavaria, Berlin) have active control programs ongoing
Hungary
Pollen levels and impact on health

Average pollen data from all the 19 monitoring stations of the Hungarian Aerobiological Network:

2014: increase of ragweed airborne pollen levels detected both vs 2013 and ten previous years

Impact on health (i.e. data on new ragweed sensitization, or prevalence of ragweed allergy in the population): there is no uniform country wide data collection in Hungary.
Hungary

Measures adopted against ragweed (1)

Report on Short- and Medium Range Control Action Plan Against Ragweed”
Government Decision 1230/2012 (VII.6.):

In order to reduce exposure of the population against ragweed and ragweed pollen

1) to develop simpler and more efficient procedures for localization of areas covered by ragweed and sanctions
2) to embed remote sensing into detecting infected areas
3) to incorporate remote sensing procedures into official detection system
4) suggestion for cooperation between Hungary and Croatia regarding cross-border ragweed and ragweed pollen information system;
5) more reliable assessment of country-wide pollen distribution;
Hungary
Measures adopted against ragweed (2)

Report on Short- and Medium Range Control Action Plan Against Ragweed”
Government Decision 1230/2012 (VII.6.):

In order to reduce exposure of the population against ragweed and ragweed pollen

6) More efficient operation of alarm system
7) Further development of the system in order to make it possible using for international purposes;
8) Organizing continuous ragweed control under the auspices of local authorities;
9) Training on crop production, technological, ragweed control and prevention knowledge for farmers;
10) Ragweed control along railways, roads, highways and expressways;
Switzerland

Pollen concentration ragweed: Genève (380 m)
01.07.2014 - 30.09.2014

Pollen concentration ragweed: Lugano (273 m)
01.07.2014 - 30.09.2014

2014 vs 2004-2013

Ambrosia (Ambrosia): Genève (380 m)
2014

Ambrosia (Ambrosia): Lugano (273 m)
2014

Data source: MeteoSwiss
Switzerland

• Common ragweed is listed in the Ordinance of Plant Protection as dangerous weed and is under the obligation to strict control (eradication).
• The control is in the responsibility of the cantons.

• Problems to control on roadsides
• The number of small foci in house gardens declined by 80-90% over the past few years
• And the number of announcements to town services and individuals declined in parallel.

• Ambrosia abundance apparently remains stable in Switzerland. Exceptions are observed in the Cantons VD and GE.
• The situation in army exercise fields and other highly disturbed areas remains worrying.
Switzerland
Legislation

- **National law** (ordinance of plant protection) – introduced by the federal office for agriculture (*Systematische Rechtssammlung: SR 916.20 „Verordnung über Pflanzenschutz“ (PSV), „Ordonnance sur la protection des végétaux“, „Ordinanza sulla protezione dei vegetali (OPV)“), since **2006**

- **Aim** of the law: **controlling existing** Ambrosia populations and **preventing** spread

- **Summary** of the law: the keeping/growing, multiplication and distribution of *A. artemisiifolia* is **not allowed**. There is a general obligation to report locations where Ambrosia plants occur (foci) to the cantonal authorities and to control Ambrosia at these sites

- **Information** on the law: website and obligatory meetings for farmers
<table>
<thead>
<tr>
<th>Habitat</th>
<th>Herbicide</th>
<th>Herbicide types</th>
<th>Cutting/mowing</th>
<th>Pulling out</th>
<th>Other (e.g. crop rotation, sowing competitive vegetation):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop fields</td>
<td>often</td>
<td>Crop selective and ragweed effective herbicides</td>
<td>sometimes</td>
<td>sometimes</td>
<td>Competitive vegetation is sown within the crop rotation: cash crop, cover crop</td>
</tr>
<tr>
<td>Road sides</td>
<td>sometimes</td>
<td>Lontrel (Clopyralid)</td>
<td>often</td>
<td>sometimes</td>
<td></td>
</tr>
<tr>
<td>Natural areas</td>
<td>sometimes</td>
<td>Non-selective herbicides (glyphosate)</td>
<td>often</td>
<td>often</td>
<td></td>
</tr>
<tr>
<td>River banks</td>
<td>sometimes</td>
<td>Non-selective herbicides (glyphosate)</td>
<td>sometimes</td>
<td>often</td>
<td></td>
</tr>
<tr>
<td>Private persons</td>
<td></td>
<td></td>
<td>often</td>
<td>often</td>
<td></td>
</tr>
<tr>
<td>Military training ground</td>
<td>sometimes</td>
<td></td>
<td>often</td>
<td>often</td>
<td></td>
</tr>
</tbody>
</table>
The idea of creating an international association for ragweed was discussed in 2008 by the founders after the First International Ragweed Conference in Budapest and after the Colloque européen “Ambroisie: de la connaissance à l’action” in Aix-les-Bains.

Funded in Nyon (Switzerland), October 2nd 2009:
- Christian BOHREN, Bernard CLOT, Levente KISS, Tamas KOMIVES, Michel THIBAUDON

First President: Tamas KOMIVES (2009-2014)
Second President: Maira BONINI (2014-2018)
Aims

• *promote* the *knowledge* concerning ragweed (*Ambrosia L.*)
• *facilitate* collaboration, research, education, information, technical development, practical applications and *laws* concerning ragweed and its direct and indirect *impacts*, as well as *fight* against that plant;
• create a *platform* for the persons, associations, societies and institutions with an interest in ragweed;
• elect the *bodies responsible* for organizing the *International Ragweed Conferences*;
• encourage *collaboration* with other areas related to *environmental* and *health* issues.
The Association shall be entitled to carry out any activity in accordance with these aims, such as organizing courses or developing educational programmes, coordinating or supporting projects, suggesting quality standards and quality controls, encouraging young researchers, developing fighting actions, managing data bases, etc.

Recently, the Quality Control Program in Aerobiology, organized by the EAS in the frame of the COST ACTION SMARTER, was strengthened
International Ragweed Conferences

- Second International Ragweed Conference, Lyon, France – March 28-29, 2012
- Third International Ragweed Conference, Rho (Milan), Italy, April 3-4, 2014
Sustainable management of *Ambrosia artemisiifolia* in Europe (SMARTER)

FA1203

Start date: 19/11/2012
End date: 18/11/2016

Heinz Müller-Schärer (Chair)
University of Fribourg / Switzerland
The potential distribution of *A. artemisiifolia* under current and future (2100) climate

In Europe: Great potential to further expand north and east

Essl et al, in review
Objectives

reduce (i) human exposure to the highly allergenic pollen, (ii) crop and (iii) biodiversity losses caused by ragweed

serve as a template for trans-national and trans-sectoral cooperation in establishing and implementing control measures against IAS

Present participation

> 200 researchers from 33 COST/NN countries, plus China, Iran (AUS, USA, Japan, CAN)

Start: Nov. 2012 for 4 yrs
SMATER Meeting January 2015

The next SMATER Core Group and Management Committee meetings as well as Stakeholder Workshops will take place at the COST Office in Brussels, 20-22 January 2015. The final program has now been published and includes:

- 20-21 January: Internal SMATER Meetings
- 21-22 January: Conference & Workshops: SMATER and stakeholders exchange on “Invasive plants management success & regulation”

Program & Outline Brussels Invasive plants management success & regulation
Acknoledgments

IRS board members, IRS members and COST chair
who contributed to this presentation
Thanks for your attention!