

Spreading of the Invasive Species *Ambrosia artemisiifolia* L. a Quarantine Weed in Southern and South-Eastern Romania

Nicolae HODISAN¹, Gavrilă MORAR²

¹University of Oradea, str. Universitatii nr. 1, 410087 Romania, (e-mail: hodisann@yahoo.com)

²Agricultural and Veterinary University, Cluj-Napoca, Romania

Abstract

Ambrosia artemisiifolia L. is an herbaceous plant annually producing seed (terophytes), with late germination, identified in the north-west and western of Romania, on large areas since 1991. As a consequence of the invasive character of the species and the spread along the roads, *Ambrosia artemisiifolia* L. species spread out towards the South and the centre of Romania and continues to spread. This paper presents the evolution of the species spreading in the South and the South-eastern of Romania in the last years.

Key words: *Ambrosia artemisiifolia* L, allergy, quarantine, spreading, the south and the south-eastern of Romania

Introduction

Biological invasion are known as a part of global changes. They are major threats for local bio-diversities, for the good function of ecosystems, of agriculture, fishing and last but not least of public health (Vitousek et al. 1997).

Human activities are the ones which facilitate the bio-invasion as efficient intermediary of dispersion, making it easy for new species to appear or develop, changing the native habitats and thus making them easier to be invaded (Williamson 1996).

Ambrosia artemisiifolia L (ragweed) is a quarantined weed, with ruderal and segetal spread, terophyte and mezotrophile with luxurious growth (Anghel 1972).

The success of invading species could depend on their capacity to develop themselves, as a response to their new surroundings. Some hypotheses referring to the adaptability of these new introduced species see the advantage of the lack of natural enemies which facilitate the monopolizing of new territories using, then the saved resources for defending, developing and reproduction. (Blossey and Nötzolt 1995; Müller-Scharer et al. 2004; Genton et al. 2005)

The specie *Ambrosia artemisiifolia* L (ragweed) has its origin in Sonora, situated in the north-west part of California, as shown by Szigetvári Cs. (2002). We have the first descriptions of this specie from Palliser from 1863, quoted by (Béres 1981).

When the fruits are mature, the plants have between 80-150 cm height, and some could reach up to 180 and even 200 cm while others may have fruits at even 20 cm being easy to be recognized both because of the multitude of male inflorescence and because of its form of a feather. The male inflorescences are displayed at the end of each branch (Hodisan et al. 2007).

Studies made in Europe and North America show that aprox. 10% of the population is sensitive to the pollen of this kind of plant and about a quarter of these can have asthmatic reactions (Taramacaz et al. 2005).

Allergic affections appeared in France, Germany and Switzerland since 1970 but not taken into account. Only after 1950, when the harmful effect of this pollen became more evident studies started to be made on the causing factors. Between 1960 and 1970 the allergies produced by *Ambrosia artemisiifolia* L. caused real

health problems in central and western European countries. In 2004 in Rhone-Alps region over 100000 persons suffered because of these problems, a wide spread phenomenon in countries like Italy and Hungary. The *Ambrosia* pollen has a high rate of causing affections like *hay-fever* (Bohren et al. 2006).

In 1863 the species were first identified in Europe, Germany in the Branderburg and Pfaffendorf region. And this is where it was studied for the first time in 1965. Then it appeared in other parts of Western Europe but it didn't spread in spontaneous flora because of its weak acclimation. The cold and wet conditions of above mentioned regions didn't permit the maturation of the seeds. (Béres et al. 2006).

In Romania it appeared in Cluj region at Sodorît on the gravel of Somes river swamp, in Banat region at Orsova in 1910 on Danube banks and among cereals. (Flora Romaniae Exicata 1921-1947). Later it appeared in Moldavia, at Ungheni (Borza and Arvat 1935), and in Sighet region (Topa Em. and Boscaiu N. 1965), at Husi and Barlad (Mititelu D. 1970) and in Muntenia at Ploiesti, (Negrean G. 1971) quoted by (Anghel 1972).

The results of last years studied confirm that the ragweed is now a permanent presence in Romanian flora conquering each year new territories, spreading towards west, center and southern part of the country. (Ardelean and Karacsony 2002, Hodisan et al. 2003, Hodisan and Morar 2005, 2007a, 2007b, Farcasescu and Lauer 2007).

Material and method

In order to study the spreading and expansion of *Ambrosia artemisiifolia* L. in the south and south-eastern part of the country we took into account the counties: Gorj, Mehedinți, Vâlcea, Dolj, Argeș, Olt, Dâmbovița, Teleorman, Prahova, Ilfov, Giurgiu, Buzău, Ialomița, Călărași, Brăila, Tulcea and Constanța.

The examinations about the spreading of *Ambrosia artemisiifolia* L. (ragweed) took place in public regions of the cities (Parks, gardens, public places) but also in surrounding areas (forests and plots), in industrial regions (building sites and quarries) and also along roads (village roads, county and national roads, and also railways).

The determinations were made in the period 2006-2007 and in blooming stage (VIII-IX) when the ragweed plants can be identified easier as unique individuals or grouped in compact populations.

We tracked on the map the locations which contain one or more individuals of *Ambrosia artemisiifolia* L. (ragweed) and they were later marked around the nearest place.

Results and discussion

The first maps about the existence and spreading of this species in western and north-western counties were made between 2003-2006. The results of these studies brought the conclusion that in these zones ragweed is a widely spread species.

After recent observations made in 17 counties in the south and south-eastern Romania new places were identified where the ragweed is spread (picture 1).

The spreading of the species is presented as it follows:

- In Gorj County the species was reported in the locations: Târgu-Jiu, Bumbești-Jiu, Motru, Bengești, Târgu Cărbunești.
- In Mehedinți County, in the locations: Drobeta Turnu-Severin, Orșova, Ilovița, Căzănești, Malovăț, Pungina, Vânju Mare, Șimian, Fața Cermenii, Strehăia, Butoiești, Vânători, Scalia.
- In Dolj County, in the locations: Filiași, Brădești, Craiova, Cetate, Calafat, Poiana Mare, Băilești, Segarcea, Bistreț, Măceșu de Jos, Plosca, Ostroveni, Bechet, Dăbuleni.
- In Olt County, in the locations: Ianca, Corabia, Balș, Drăgănești Olt, Caracal, Brâncoveni, Piatra Olt.
- In Vâlcea County, in the locations: Prund, Bujoreni, Băile Govora.
- In Teleorman County, in the locations: Roșiori de Vede.
- In Argeș County, in the locations: Pitești, Drăganu Olteni.
- In Dâmbovița County, in the locations: Găiești, Titu, Brezoale.
- In Ilfov County, in the locations: Ciolpani, Tunari, Brănești, Bragadiru, Buftea, Jilava, Chitila, Pantelimon, Berceni, Glina, Otopeni, Cernica.

- In Călărași County, in the locations: Fundulea, Lehliu Gară, Dragalina, Perișoru.
- In Ialomița County, in the locations: Fetești, Țândărei, Slobozia, Andrașești, Balaciu, Urziceni, Armășești.
- In Prahova County, in the locations: Albești Paleologu, Ploiești, Băicoi, Câmpina, Breaza, Comarnic, Gorgota.
- In Giurgiu, Buzău, Brăila, Tulcea and Constanța Counties, the species was not reported.



Figure 1. The spreading of *Ambrosia artemisiifolia* L species (ragweed), in the south and south-eastern Romania, 2007

Conclusions

The ragweed (*Ambrosia artemisiifolia* L.) is an invasive species spread on considerable surfaces on the south of Romania. The presence of this was reported in localities from the south of Romania, in the gardens of the households or recreation areas as well as in industrial areas, but especially out of localities, in agricultural cultures or in abandoned lands.

The borders of the roads represent a specific spreading area where the species is frequently found, due to systematic seed dissemination, favoured by transports that cross territories where the species adapted, forms populations, settles and then passes in the agricultural cultures as therophyte, annual, with late germination weed.

New measures to control and fight back the invasion of this species should be considered in order not to appear in the south-eastern Romania where its presence was not signaled yet.

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