

MONITORING OF THE ALLERGENIC POLLEN FROM THE AIRPLANCTON IN 2000

NICOLETA IANOVICI, A. FAUR

West University of Timișoara, Chemistry, Biology & Geography Faculty
Department of Biology

ABSTRACT (online version)

*This study is intended to determine the annual dissemination means of the pollen grains in the Timișoara's atmosphere for the year 2000. In this study we present a pollenic calendar for the mentioned region. In the investigated area, the season with maximum pollen concentration was late summer-fall (August). In the first months of the monitoring period, prevailed the pollen coming from anemophile trees and in the last months the pollen coming from anemophile herbaceous plants. *Ambrosia*, *Poaceae*, *Urtica* and *Artemisia* gave the highest pollen quantities identified in the airplancton. During the studied year, there were identified 23 pollen types. The most important anemophile taxa were: wooden magnoliate (14), herbaceous magnoliate (6), liliates (1) and pinnates (2). The monitoring supplied us with valuable information regarding the dissemination of some anthropophile species (*Ambrosia*) whose pollen is known as a strong allergen.*

KEY WORDS: airplancton, pollen grain/m³ (PG/m³), pollen types

INTRODUCTION

One of the factors significantly influencing the sensitizing to allergens is the pollen concentration (Popescu, 1998; Faur et al, 2001a; Faur et al, 2001b; Faur et al, 2001c; Faur et al, 2001d; Faur & Ianovici, 2002). The aim of this study is that to emphasize the incidence of the allergenic pollen types in the W of Romania.

MATERIALS AND METHODS

Volumetric observations were done in 2000, using the pollen collecting device VPPS Lanzoni 2000.

RESULTS AND DISCUSSIONS

Air bioparticles reaching a certain concentration may trigger important allergic reactions of the pollinoses type. The most important bioparticles are the pollen grains coming from the anemophile plants. The monitored period in the year 2000 was between February 28th and October 8th. During **February** we identified two types of pollen: *Corylus* and *Alnus*. During **March** we identified 9 pollen types. Among the anemophile magnoliate, the highest quantity was represented by the *Populus* pollen, with 26.8%, and the smallest by that of *Salix*, with 0.67% of month's total. In March, *Betula*, *Carpinus*, *Fraxinus* and *Ulmus* blooming started. Pinnates

were present in the airplancton through the *Taxaceae/Cupressaceae* pollen type, giving 33.44% of month's total.

In **April** we identified 14 pollen types (figure 3). The highest quantity was given by *Carpinus*, with 26.07%, and the smallest by *Ulmus*, with 0.23%. Pinnates (*Pinus*, *Taxaceae/Cupressaceae*) gave 3.03% of month's total. The only herbaceous plants starting their anthesis are the *Poaceae*. *Acer*, *Juglans*, *Morus*, *Platanus* and *Quercus* have also bloomed.

In **May** we identified 10 pollen types (figure 4). *Poaceae* reached the highest pollen quantity of their whole blooming phenophase, representing 48.22% of month's total. *Pinaceae* reached their maximum of pollination, giving 20.64% of month's total. Anemophile wooden magnoliates (*Carpinus*, *Juglans*, *Quercus*, *Morus*) were towards the final of their anthesis and *Tilia* was at the beginning of it. Herbaceous plants (*Urtica*, *Plantago*, *Rumex*) represented in the pollenic spectrum of the month 14.67%.

In **June** we identified 9 pollen types (figure 5). *Pinus* finalized its blooming phenophase. *Tilia* was the only species in the maximum pollination phase (11.01% of month's total). Of the herbaceous plants, *Chenopodiaceae/Amarantaceae*, *Artemisia* and *Ambrosia* started their anthesis. The pollenic spectrum is dominated by *Urtica*, with 27.43%, *Rumex*, with 26.71% and *Poaceae*, with 24.24%.

Of **July's** total PG (figure 6), *Urtica* holds 35.41%. Besides this pollen type, we have also identified another 6 ones (*Ambrosia*, *Artemisia*, *Plantago*, *Rumex*, *Chenopodiaceae/Amaranthaceae*, *Poaceae*).

In **August** (fig. 7) PG number reaches the quantitative peak of the year. *Ambrosia* gave almost half of month's total (38.26%). *Plantago* (0.95%) was at its anthesis final. We identified another 4 pollen types coming from herbaceous plants: *Poaceae* (14.29%), *Chenopodiaceae/Amaranthaceae* (9.14%), *Urtica* (10.07%) and *Rumex* (3.96%). *Artemisia* reached the quantitative peak with 23.29%. On the tapes collected in September (fig. 8), among the 6 pollen types was prevailing PG of *Ambrosia*. PG produced by *Ambrosia* in this month represented 11.4% of year's total. *Urtica* and *Rumex* were at the end of their blooming period. The anthesis prolonged in October (fig. 9) for *Ambrosia*, *Artemisia*, *Chenopodiaceae/Amaranthaceae* and *Poaceae*.

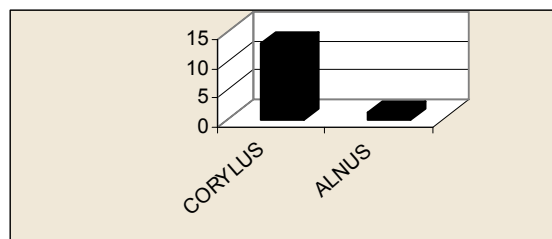


FIG. 1. Pollen quantity in February 2000

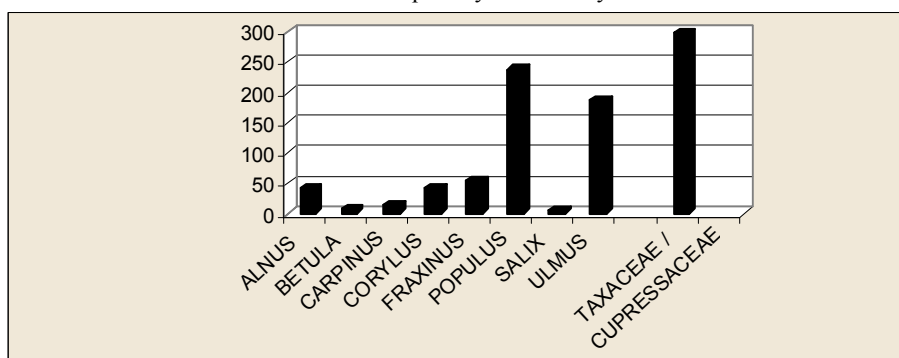


FIG. 2. Pollen quantity in March 2000

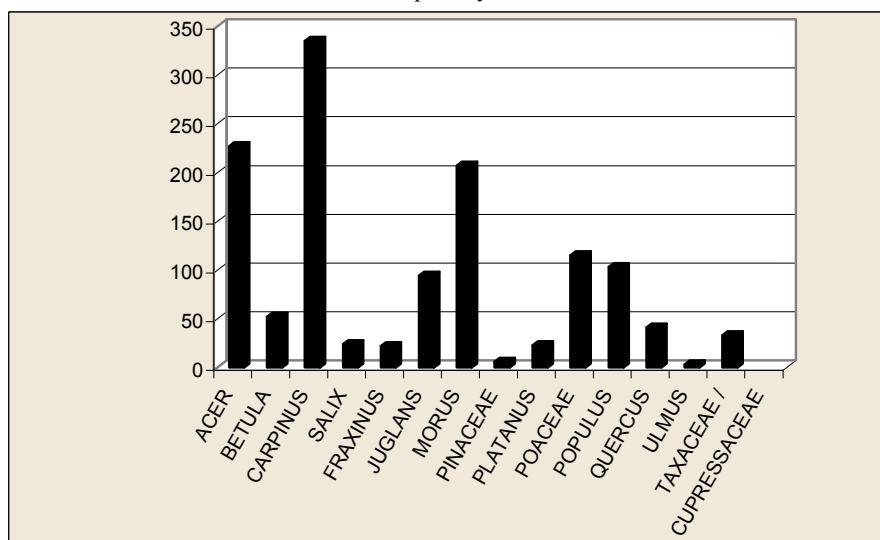


FIG. 3. Pollen quantity in April 2000

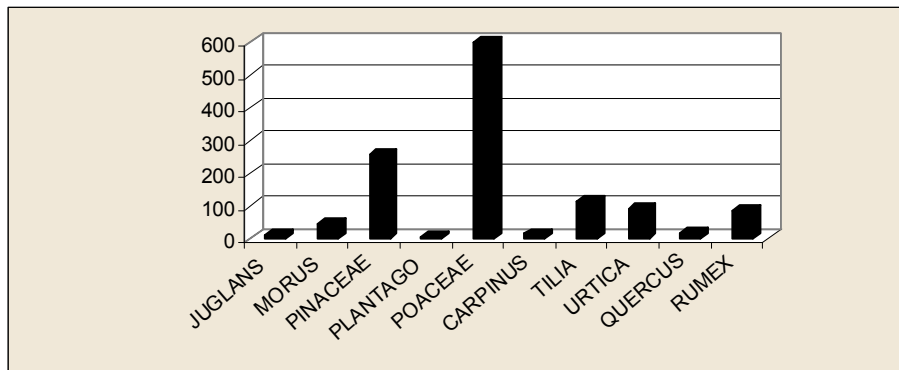


FIG. 4. Pollen quantity in May 2000

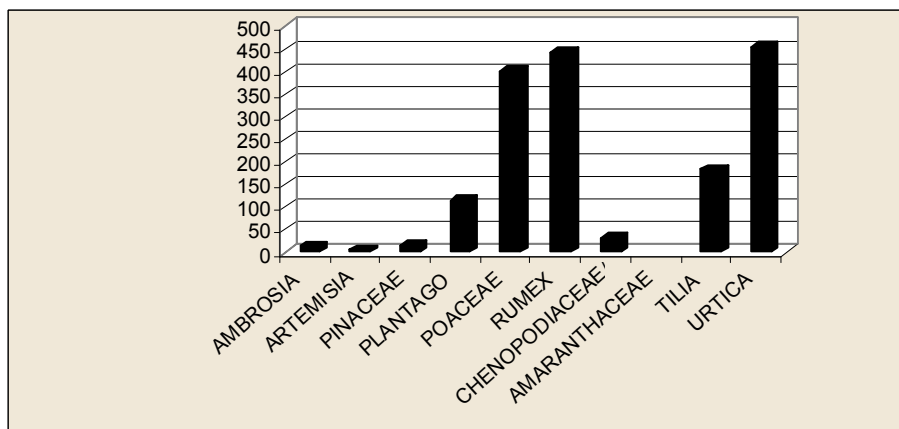


FIG.5. Pollen quantity in June 2000

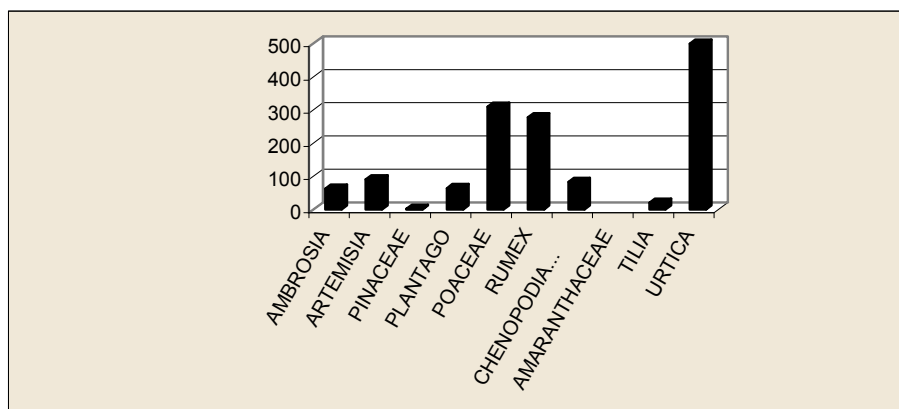


FIG.6. Pollen quantity in July 2000

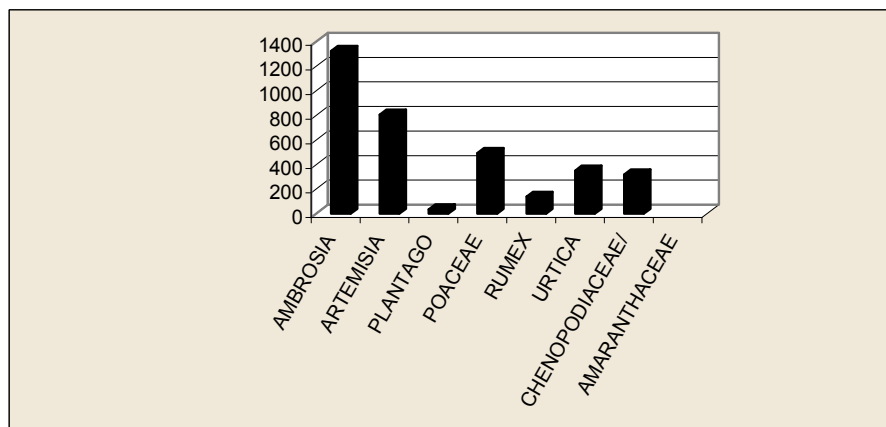


FIG. 7. Pollen quantity in August 2000

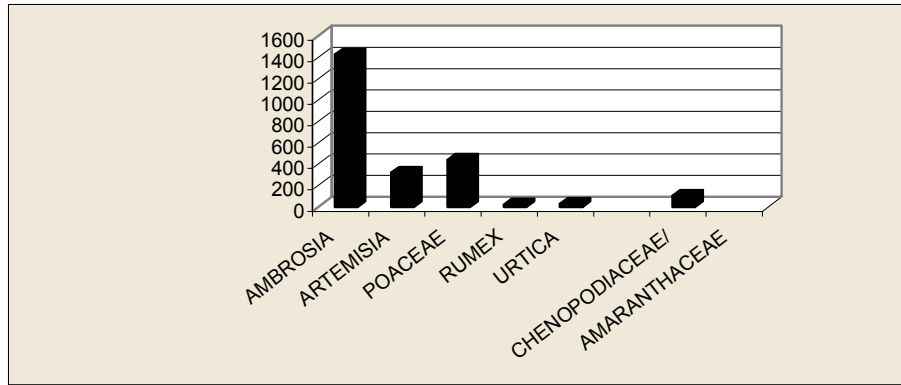


FIG. 8. Pollen quantity in September 2000

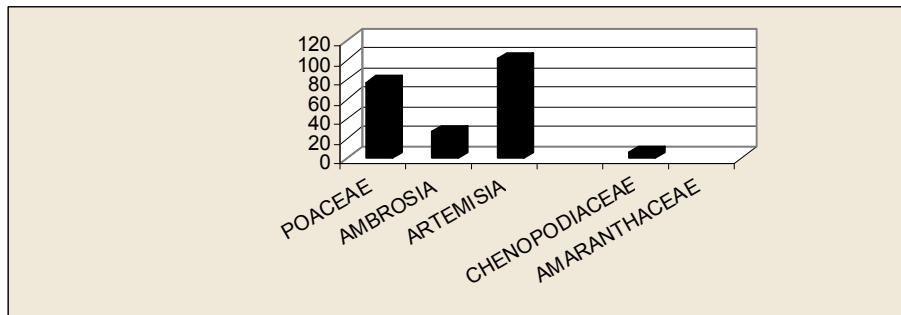


FIG. 9. Pollen quantity in October 2000

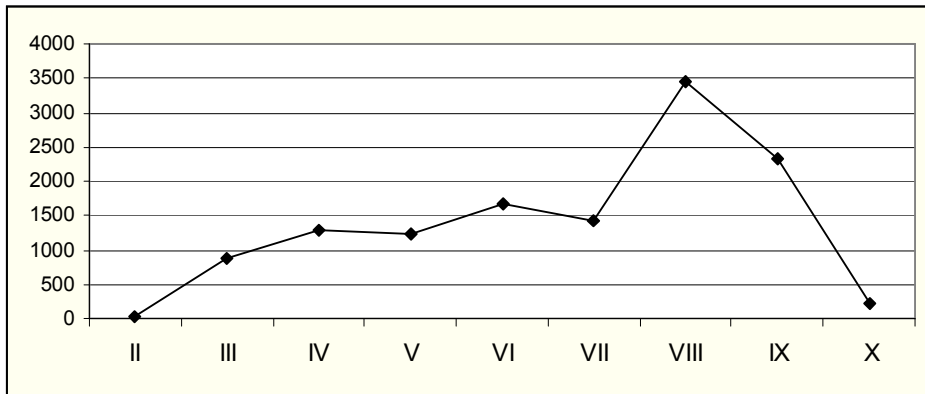


FIG. 10. Month totals during 2000

Table 1. Qualitative interpretation of the airpollen identified during 2000

PG/m ³	Interpretation	Nr. days
>0-5	low	10
5-20	moderate	22
20-200	high	191
>200	very high	1

On 191 days of the year, high pollen quantities were recorded. Quantities over 200 pollen grains/m³ were recorded during one day: September 1st with 202 PG/m³ of which 84.15% was given by *Ambrosia* pollen.

Table 2. Flowering phenophase duration for the anemophile plants – 2000

	GENUS	FLOWERING PHENOPHASE		PERCENT OF THE YEAR'S TOTAL
		BEGINNING	END	
1.	ACER	1 IV	22 IV	1,81
2.	ALNUS	29 II	18 III	0,33
3.	CORYLUS	28 II	24 III	0,43
4.	POPULUS	27 III	10IV	2,72
5.	SALIX	27III	7 IV	0,23
6.	TAXUS	2 III	16 IV	2,63
7.	ULMUS	8 III	9 IV	1,51
8.	CARPINUS	28 III	6 V	2,91
9.	BETULA	27 III	15 IV	0,48
10.	JUGLANS	12 IV	15 V	0,84
11.	PLATANUS	18 IV	28 IV	0,18
12.	QUERCUS	12 IV	16 V	0,47
13.	FRAXINUS	22 III	10 IV	0,6
14.	MORUS	17 IV	9 V	2,01
15.	PINUS	11 IV	2 VII	2,23
16.	POACEAE	13 IV	8 X	19,48
17.	RUMEX	16 V	17 IX	7,72
18.	PLANTAGO	29 V	25 VIII	1,72
19.	TILIA	11 V	23 VII	2,55
20.	URTICA	16 V	16 IX	11,37
21.	ARTEMISIA	28 VI	8 X	10,56
22.	CHENOPODIACEAE/ AMARANTHACEAE	8 VI	8 X	4,3
23.	AMBROSIA	19 VI	8 X	22,8

Data collected from monitoring was used to create a pollenic calendar (figure 11). This emphasizes the weekly dynamics of species pollen recorded on the collector tapes.

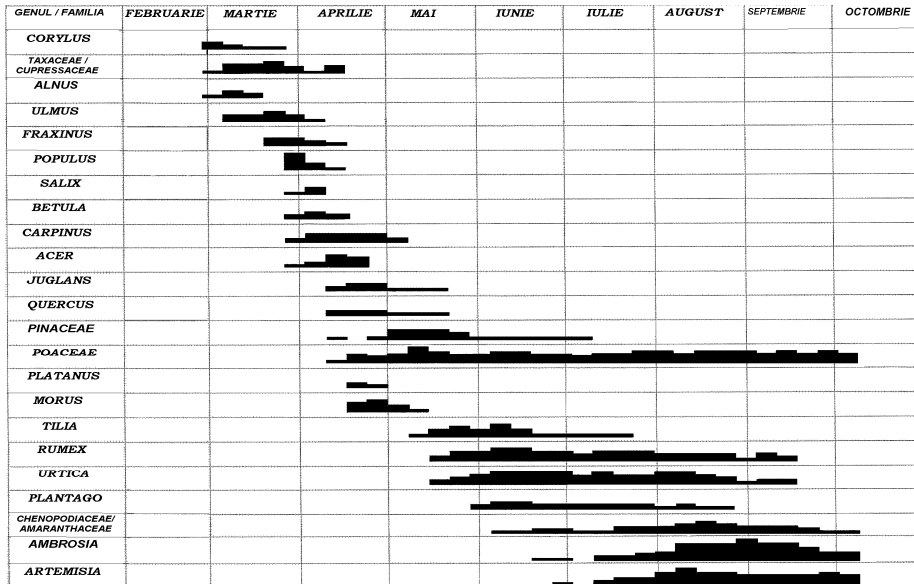


Fig. 11. Pollinic calendar of 2000

CONCLUSIONS

- During year 2000 we identified 23 pollen types coming from anemophile taxa: 2 pinnates, 1 liliate, 6 herbaceous magnoliate and 14 wooden magnoliate;
- The quantitative maximum was recorded in August;
- Only on one day the total pollen quantity exceeded 200 PG/m³;
- The pollen produced by *Ambrosia*, with 22.8% and *Poaceae*, with 19.48% quantitatively dominated the airplancton.

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