Pollen allergy potency for the main urban plants

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INTRODUCTION

The pollen grains of anemophilous species are transported by wind; these species produce very large quantities of pollen grains so that the fertilization of female flowers has a greater chance of being effective. The majority of allergenic species are anemophilous.

In France, 30% of adults and 20% of children are allergic to pollen (ANSES source). Allergic symptoms manifest in different forms: rhinitis, conjunctivitis, eczema, persistent cough and even asthma for the most severe cases.

AIM

Pollen allergy depends on several parameters such as the amount of pollen in the air, the sensitivity of people and the allergy potency of the pollen of each plant species.

The Scientific Council of RNSA was asked to update the allergy potency (AP) of plant species that can be established in urban areas.

To update the allergy potency of plant species, the RNSA used scientific work on the subject, and also the opinions of allergists and botanists.

The pollen allergy potency for the main urban plants helps to formulate recommendations in order to protect allergic patients and write a guide with advices for species to avoid and species to plant in green areas.

The allergy potency is specific to a pollen grain whatever the location while **the allergy risk** is a measure of health impact and depends on several factors such as the amount of pollen, the weather, the phenology, the symptoms observed by doctors…

METHOD

The allergy potency of a plant species is the ability of its pollen to cause an allergy to a significant part of the population.

The allergy potency can be:

- **Low or negligible** :This means that a very large amount of pollen is needed to trigger an allergy and this applies only to the most sensitive people
- **Moderate** :These species may be present locally to bring diversity into plantations, but they should not represent the majority of planted species
- **High** :A few number of pollen is enough to cause an allergic reaction

RESULTS

TREES

Species	Family	Allergy potency
maple*	Aceraceae	Moderate
alder*	Betulaceae	high
birch*		high
hornbeam*		high
Charm-hops		Low or negligible
hazel*		High
baccharis	Asteraceae	Moderate
cade	Cupressaceae	High
common cypress		High
Arizona cypress		High
juniper		Low or negligible
thuja*		Low or negligible
locust*	Fabaceae	Low or negligible
chestnut-tree	Fagaceae	Low or negligible
oak*		Moderate
beech*		Moderate
walnut*	Juglandaceae	Low or negligible
paper mulberry	Moraceae	High
white mulberry		Low or negligible
ash*	Oleaceae	High
olive-tree		High
privet*		Moderate
pine*	Pinaceae	Low or negligible
plane-tree**	Platanaceae	Moderate **
poplar*	Salicaceae	Low or negligible
willow*		Moderate
yew	Taxaceae	Low or negligible
Japanese red-cedar	Taxodiaceae	High
linden*	Tiliaceae	Moderate
elm*	Ulmaceae	Low or negligible

* several species
** The pollen of the plane trees is weakly allergenic. On the other hand, the microneedles contained in the waders resulting from the degradation of the female heads of the previous year are very irritating.

SPONTANEOUS GRASSES

Species	Family	Allergy potency
chenopod*	Chenopodiaceae	Moderate
Burned soda *(prickly saltwort)*		Moderate
ragweed*	Asteraceae	High
mugwort*		High
daisy*		Low or negligible
dandelion*		Low or negligible
mercury*	Euphorbiaceae	Moderate
plantain*	Plantaginaceae	Moderate
grasses*	Poaceae	High
sorrel* (*Rumex*)	Polygonaceae	Moderate
neettle*	Urticaceae	Low or negligible
pellitory*		High

*several species

ORNAMENTAL GRASSES

Species	Family	Allergy potency
reed canary-grass	Poaceae	High
reed grass		Moderate
tufted hairgrass		High
sand ryegrass		Moderate
fescue*		High
oatgrass		High
hare's-tail		Moderate
giant feather grass		Moderate

*many species

Birch Grasses Ragweed

CONCLUSIONS

For a same species (for example ragweed) the allergy potency is high at Lyon and Lille but the allergy risk is different in these two cities (high in Lyon but low in Lille). It's important to well differentiate these 2 aspects and well understand that people are not allergic (to ragweed in Lille for example) because they are not sensitized. We need to avoid the local pollen sensitization by stopping planting allergenic species with a high allergy potency in green areas.

Species or genus with a **high** allergy potency should be labeled as "Not to be planted in habitation or residence area ", those with **moderate** allergy potency should be labeled as "Not to be planted in big quantities in habitation or residence area". Other species with **low or negligible** allergy potency may not be affected by public information.

With these results, a guide has been done with advices for species to avoid and species to plant in the green areas and parks. The guide is available on the website: http://www.vegetation-en-ville.org/que-faire/le-potentiel-allergisant/

We need to better take into account the health impact in the choice of vegetal species to implant in green areas and their maintenance.

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We declare that there is no conflict of interest in relation to this presentation