FLORAL BIOLOGY OF FOUR SPECIES OF ROSACEAE

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Résumé

Les Rosacées qui constituent notre sujet d'étude présentent une organisation florale assez constante et des fleurs régulières pentamères : 5 sépales, 5 pétales, nombreuses étamines, un ou plusieurs carpelles.

Dans notre travail nous nous sommes intéressés à quatre espèces cultivées dominantes dans notre région d'étude qui sont : *Amygdalus communis* Batch., *Cydonia oblonga* Mill., *Eriobotrya japonica* Thunb., *Malus domestica* Borkh.

Après la collecte des fleurs et l'extraction des grains de pollen, les observations au binoculaire et au microscope photonique dégagent une certaine diversité matérialisée entre autres dans: la couleur des fleurs ; la présence ou l'absence de duvet ou de poils autour des organes reproducteurs les protégeant des basses températures ; ce qui permet par exemple au néflier et à l'amandier de se reproduire pendant les périodes froides (Décembre-Février).

Mots clés : *, Rosacées, fleurs, grains de pollen, diversité, récolte, extraction.*

Abstract

Rosaceae that constitute our subject of study have a fairly consistent floral organization and regular flower (pentamers): 5 sepals, five petals, stamens numerous, one or more carpels.

In our work we are interested to four cultivated species, dominant in our study area are: *Amygdalus communis* Batch., *Cydonia oblonga* Mill., *Eriobotrya japonica* Thunb., *Malus domestica* Borkh.

After collecting flowers and extraction of pollen grains, observations with binocular and light microscope there emerges a diversity materialized ia in: Flower color ; The presence or absence of duvet or bristles around the reproductive organs protecting them low temperatures; this allows for example medlar and almond tree reproduce during cold periods (December-February).

Keywords: *Rosaceae, flowers, pollen grains, diversity, collecting, extraction.*

ملخص

تظهر الورديات التي تمثل موضوع دراستنا تنظيما زهريا ثابتا نسبيا و أزهارا منتظمة خماسية : 5 سبلات، خمس بتلات، عدة أسدية، كربلة أو أكثر.

اهتممنا في دراستنا هذه بأربعة أنواع ذات الانتشار الواسع في منطقتنا و تتمثل في :
Eriobotrya japonica Thunb., *Cydonia oblonga* Mill., *Amygdalus communis* Batch., *Malus domestica* Borkh.

بعد جمع الأزهار واستخلاص حبوب الطلع, تثبت الملاحظات بالمكبر والمجهر الضوئي بعض التنوع متمثلا فيما يلي :

- لون الأزهار.
- وجود أو غياب زغب أو شعيرات حول الأعضاء التكاثرية تحميها من الحرارة المنخفضة.

هذا ما يسمح لشجرة الزعرور واللوز بالتكاثر خلال الفترات الباردة (ديسمبر- فبراير).

الكلمات المفتاحية : *وردیات، الأزهار، حبوب الطلع، التنوع، جمع، استخراج.*

Several major characteristics associated with sexual reproduction distinguish angiosperms, making this the most advanced subphylum Phanerogams [1].

Reproduction takes place in a complex structure: the flower is only a branch specialized in a reproductive role [2] and usually consists of many appendages, called floral parts, the outermost of which form a protective envelope the perianth, while more are ordinary internal reproductive organs that produce gametes [3].

The present work has a main objective to follow biological diversity in some Rosaceae cultivated in the Constantine region.

EXPERIMENTAL DETAILS

Our work was performed at the Laboratory of Development and Valorisation of phytogénétiques Resources, Faculty of Natural Science and Life at the University of Constantine (Algeria).

Plant Material

We proceeded to the description of some examples of selected plants in the Rosaceae family followed by a study of the morphology of the flowers and the main changes that they can present and especially the anatomy of the flower parts and pollen grains. Species we used in our experiments are shown in table 1.

Table 1 : Species used in our experiments.

species	Center of origin
Almond: *Amygdalus communis* Batsh. **Quince :** *Cydonia oblonga* Mill. **Medlar :** *Eriobotrya japonica* Thunb. **Apple:** *Malus domestica* Borkh.	- Middle East [4]. - West Asia [5]. - Eurasia, cultivated in southern Europe and Asia[6]. - A region extending from the Black Sea to the Caspian Sea, very widespread in France [7].

METHODS

Many methods have been developed for the extraction, identification and germination of pollen grains from different species.

Maintaining the viability of pollen is very delicate. It is important to act quickly during harvesting of inflorescences. There is variation among genotypes and pollen life can sometimes be limited.

Note that the pollen of deciduous species have a lifetime much shorter than those of softwood species. Their resistance to desiccation and humidity is very low.

Harvest Flowers

Harvesting should always be conducted in the absence of precipitation due to the negative impact that may have on pollen viability.

In addition, the rain tends to project the pollen to the ground, which reduces the yield of pollen at the time of harvest [8].

The flowers should be harvested just before dehiscence pollen sacs, that is to say when the pollen grains are mature.

The objective of extraction is to release the pollen in the pollen sacs and divide it into 10 mL glass bottles filled to three-quarters (7 ml) in order to identify it.

Assessment of the viability of pollen samples

If samples are to be used quickly, the in vitro germination test will be conducted on pollen extracted without further treatment [9].

Germination test in vitro

It consists of:
- Sterilization of the glassware used ;
- The preparation of the culture medium and its distribution in Petri dishes 6 cm in diameter ;
- The filing of a small amount of pollen grains to culture in Petri dishes on the surface of the prepared environment ;
- Place the Petri dishes in a growth chamber at 25 ° C for germination time.

RESULTS

The organization of the flower of angiosperms is extremely variable, Rosaceae studied is regular type 5 (pentamer) with 5 sepals forming a cup, 5 petals free, a multiple of 5 stamens united by their base on the cut except the female reproductive organ which divides into two groups :

- The stone species group with a pistil to a carpel.
- The pip species group with five (5) pistils to (5) carpels.

We shall present the different species studied (Figure i)

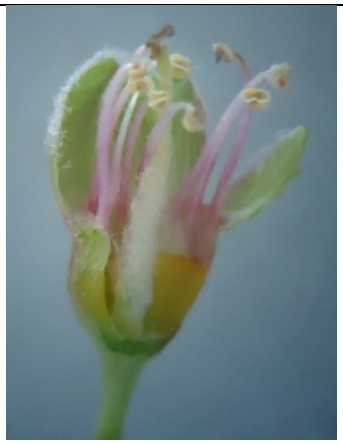
Almond : *Amygdalus communis* Batsh.			
			
Flower: White rosy		Pistil (1)	Stamen (nb :35)

Figure. 1 (a) : Morphology of the flower

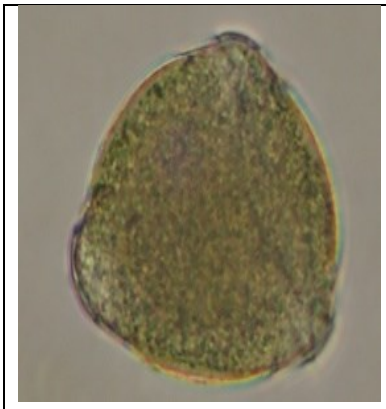
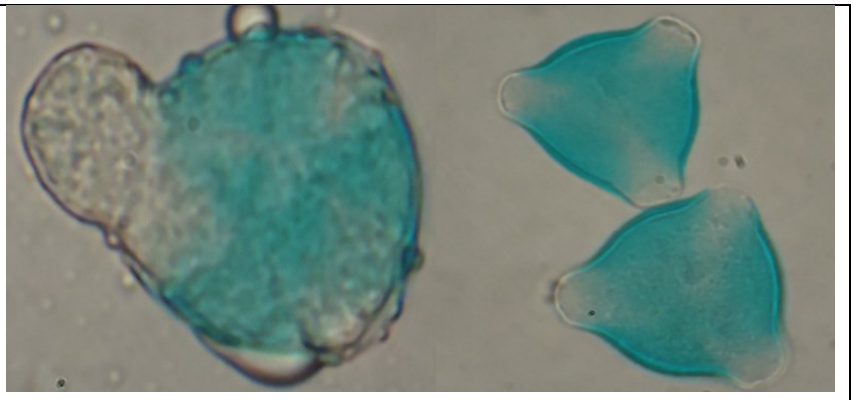
	
without coloration	colorated start of germination of pollen grain

Figure. 1 (b) : Morphology and germination of the pollen grain. The pollen grain is angulaperturé, triporé with Psilate exine.

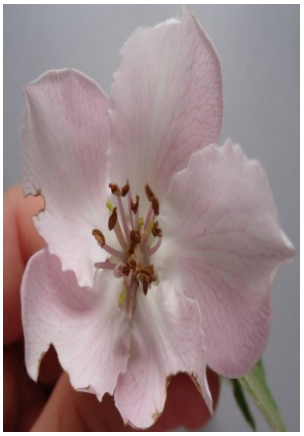
Flower: white,  tinted of pink		 Pistil (5)	 Stamen (nb :20)

Figure 2 (a) : Morphology of the flower

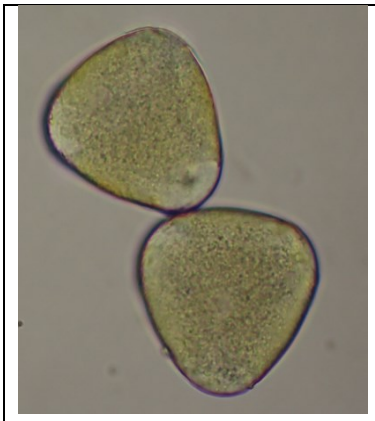
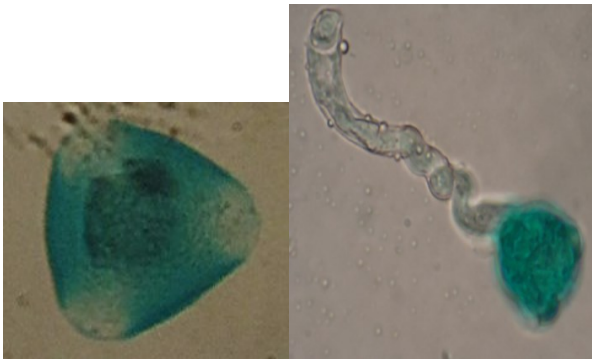
		
without coloration	colorated	Germinated pollen grain

Figure 2 (b) : Morphologie and germination of the pollen grain. The pollen grain is angulaperturé, triporé with Psilate exine.

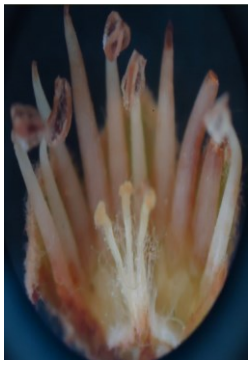
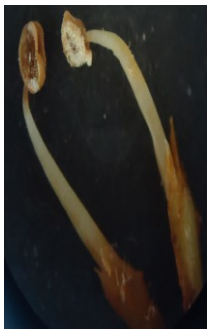
Medlar :*Eriobotrya japonica* Thunb.			
 Flower: Whitish		 Pistil (5)	 Stamen

Figure 3 (a) : Morphology of the flower

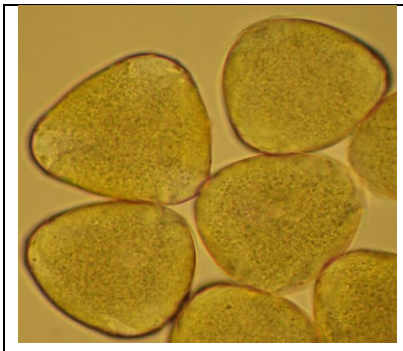
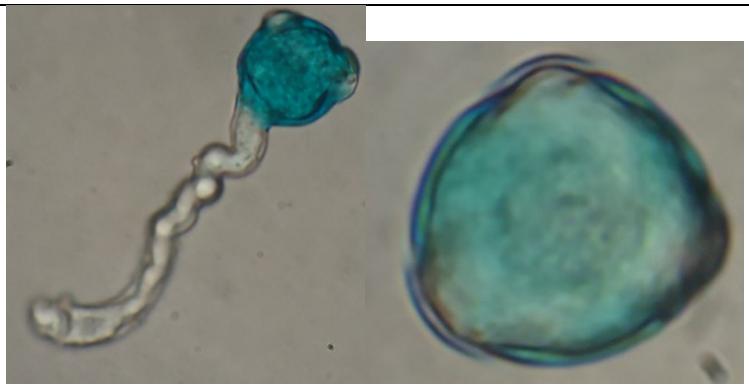
		
without coloration	**colorated**	**Germinated pollen grain**

Figure 3 (b) : Morphologie and germination of the pollen grain. The pollen grain is angulaperturé, triporé with Psilate exine.

Apple: *Malus domestica Borkh*			
 Flower: white, tinted of pink		 carpels (5)	 Stamen : 20

Figure 4 (a) : Morphology of the flower

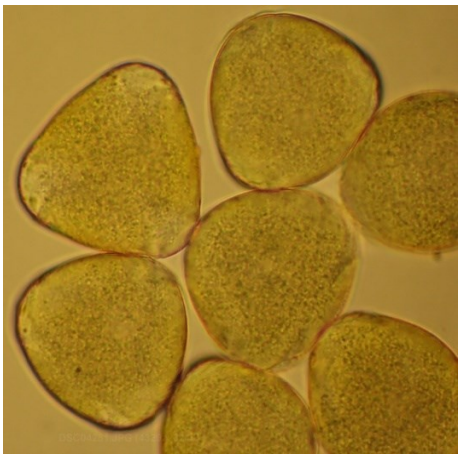
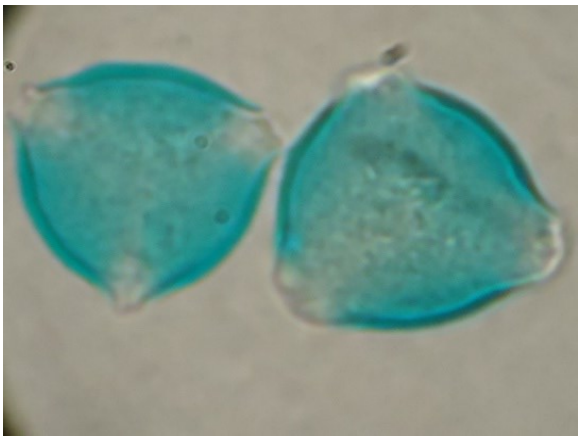
	
without coloration	**colorated**

Figure 4 (b) : Morphologie and germination of the pollen grain. The pollen grain is angulaperturé, triporé with Psilate exine.

DISCUSSION AND CONCLUSION

In conclusion, we can say that the floral biology of the studied Rosaceae is quite homogeneous and regular in the number of flower parts, especially pollen grains angulaperturés triporé with psilate exine.

However, there is some diversity among others materialized in flower color, the presence or absence of hair down or turn the reproductive organs. Indeed, almond, quince and medlar have a duvet much denser than flowering coincides with the cold period.

The big difference is in the number of pistil and the number of carpel that divides the Rosaceae studied in two groups:

- The stone species group with a carpel pistil;
- Pip species group with five (5) pistils and (5) carpels.

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