

## SOME ASPECTS REGARDING FLOWER'S MORPHOLOGY ON SEVERAL LOCAL POPULATION OF *PRUNUS DOMESTICA* L. FROM PĂTÂRLAGELE (BUZĂU COUNTY)

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### Abstract

According to the literature, a number of morphometric values of flower from varieties of *Prunus domestica* may be correlated with their degree of fertility. We chose four local populations of plums from Pătârlagele area, Buzau County, to measure the floral components - sepals (length), petals (length), stamens (number and length), carpel (length) and to compare them with the literature. The results of our observations shows the presence of a local variability regarding the perianth, the average number of stamens, the average length of the carpel and the ratio between the number of stamens and the length of the carpel; for the T3 and T4 populations there are slight differences from literature on the average length of petals. The ratio of average number of stamens and carpel length shows low values for the four populations (range 1.35 to 1.63) compared with the data from literature, indicating the possible presence of self-incompatibility among the four local populations of *Prunus*.

**Key words:** *Prunus domestica* L., flower components, self-incompatibility, local populations.

### INTRODUCTION

Research on the variability of infraspecific characters of the *Prunus domestica* was aimed primarily towards fruit morphology (Buia, 1956), biology of flowering (Branîște, 1994), morphology, viability and pollen germination (Gilani et al., 2010; Calicut et al., 2013) or degree of fertility of varieties (Ionita, 1956; Boredianu et al., 1965; Cociu, Bumbac, 1985). The differences in the morphology of the flower are fairly low compared to the general characterization of higher taxa; Flora RPR, 1956 shows the following characters for *P. domestica* flower: sepals' length 2.5-5 mm; petals' length 7-12 mm.

In a comparative analysis of variation of the morphological characters of the flower to 23 plum varieties, Mădălina Butac (2003) shows that they have been grouped into 12 classes according to the diameter of the flower, in 9 groups depending on the average length of the pistil, respectively in 9 groups after ratio between the number stamens and pistil length. Analysing these characters in relation to the fertility of the varieties it has been observed that the self-fertile and partly self-fertile varieties have the flower's diameter, the length of the pistil, the number of stamens and the

ratio of the number of stamens and length pistil have much higher values and significantly different from those with self-incompatibility.

### MATERIALS AND METHODS

Pătârlagele city is located in the north - west of Buzau County, at 45 ° 19 ' north latitude and 26 ° 21' east longitude, at a distance of 56 km from the city of Buzau. The city is located in the Pătârlagele Basin from the Curvature Subcarpathians, on the Buzau River, at an altitude of about 400 meters, dominant landscape of the area consisting of hills.

It were selected 4 local populations, denoted T1, T2, T3 and T4, located in plantations set in the village. Populations of T1, T3, and T4 are in independent plantations, while T2 population is planted alongside other local varieties. The land with plantations made by T2, T3, T4 populations has north exposure while the T1 population is on a land with south exposure.

For the morphological characterization of the flower (Figure 1) the following indicators were chosen: the average length of the sepals, the average length of the petals and the ratio between them, the average number and length of the stamens, the average length of the carpel, the ratio between the length of the carpel and of

the petals and the ratio between the number of stamens and length of carpel. From each population were taken twenty five flowers into flowering phenophase. Results were used for comparative analysis of the four populations.

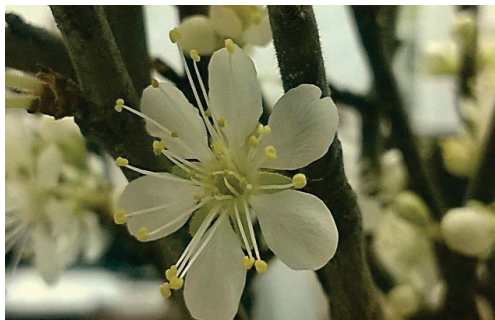


Figure 1. Flower of *Prunus domestica* population T3

## RESULTS AND DISCUSSIONS

The morphometric measurements on T1 flowers variety (Table 1) shows that the petals have an average length of 9.16 mm and are about 2.14 times longer than sepals; average number of stamens is 19 and the carpel's average length is 12.90 mm; it exceeds the flower perianth of 1.41 times; the ratio between the average number of stamens and carpel average length is equal to 1.41.

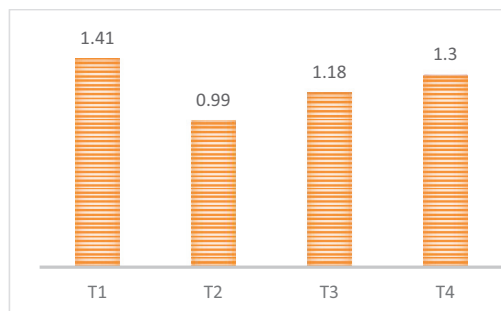


Figure 2. The ratio between the average length of the carpel and of the petals

The values of the floral components of the T2 population (Table 1) are close to the followings floral indicators of T1 population: sepals' average length (4.13 mm), average number of stamens (19.5) and average carpel length (12 mm); the size of the petals is obviously higher (12.16 mm) while the ratio between them and the average size of the carpel is lower (0.99).

The ratio between the average number of stamens and the average length of the carpel is 1.63 (Figure 3) is the highest value recorded for the 4 populations.

In the group of the four populations, the flowers from the T3 population (Table 1) shows the highest values to the average length of sepals (4.79 mm), petals (12.80 mm), carpels (15.10 mm) and average number of stamens (22); the value of the ratio between the average length of petals and carpel (Figure 2) is the smallest of the observed populations series; also, the ratio between the number of stamens and the average length of carpels - 1.46, is at the middle of the series of values for the 4 populations (Figure 3).

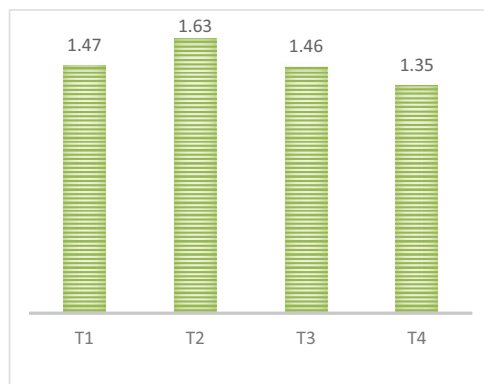


Figure 3. The ratio between the average number of stamens and the average length of carpel

The lowest values for the used indicators are found to the morphometric measurements of floral components of T4 population (Table 1), except the average length of the carpel (12.20 mm) and the ratio between the average length of carpel and the petals (Figure 2).

Comparing the results obtained with literature data it is observed that:

- The length floral perianth components fall within the values indicated in the description of the *Prunus domestica* flower (Romanian Flora, 1956), except populations T2 and T3 which the average length of petals slightly exceeds data from literature.

- For the T3 population there are values of floral components that exceeding the data in the literature like the average length of the carpel, while the remaining variants fall between the average values of the literature (Butac M., 2003).

- The ratio of average number of stamens and carpel length set shows low values for the four populations (range 1.35 to 1.63) compared with

the data from literature (range 1.42 to 2.33) (Butac M., 2003).

Table 1. Morphometric characters of the floral components of *Prunus domestica* populations from the area Pătărlagele (Buzau County)

Population	Sepals - average length (mm)	Petals - average length (mm)	Petals/sepals - average length ratio	Stamens - average number	Stamens - average length (mm)	Carpel - average length (mm)	Carpel/petals - average length ratio	Stamens average number / carpel average length
T1 (Prun roșu)	4.28	9.16	2.14	19	7.99	12.90	1.41	1.47
T2 (Gras)	4.13	12.16	2.94	19.5	9.95	12	0.99	1.63
T3 (Gras CB)	4.79	12.80	2.67	22	8.96	15.10	1.18	1.46
T4 (Ciorăsc)	3.63	9.38	2.58	16.50	6.59	12.20	1.30	1.35

## CONCLUSIONS

The four local populations of *Prunus domestica* examined in terms of the morphology of the floral components shows some differences with the data in the literature, and that indicated the existence of local variability on the flower's level.

The size of the flower's perianth and the ratio between the average number of stamens and length of carpel indicate that in the analysed populations, self-incompatibility and self-sterility may be present.

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