

THESIS SUMMARY

Study on fruit bud differentiation at the vine

So far there have been few researches on fruit bud differentiation from the vine. Fruit bud differentiation, rudiment inflorescence formation in the executed study is determined by climatic conditions, variety, bud position on the sprout (factors which were taken into study), as well as other factors listed in documentation chapter on theme taken in study.

Differentiation of fruit buds research to the three species taken in study from Banu Mărăcine Winegrowing was done by harvesting the shoots during the growing season and the repose of the vine.

Sections of buds were aimed to track the process, its debut, onset of training primary inflorescence in bud as well as the period in which takes place the process of forming primary inflorescence, with the tracking of the main benchmark stages crossed by them.

The thesis is structured in the following chapters:

- Chapter I: Study of knowledge on the vines bud;
- Chapter II: Organization experimental study of fruit bud differentiation in varieties to Banu Mărăcine vineyard;
- Chapter III: Own contributions to knowledge of the proceses of differentiation of fruit buds;
- Conclusions;
- Bibliography.

Research objectives are:

- tracking of fruit bud differentiation from the vine (intrabud) at three varieties from Banu Mărcine vineyard;

- determining the moment since when it can be observed the looming of the first rudiments of inflorescence in bud till the date when were observed only foliar rudiments;

- study the formation and differentiation of rudiments inflorescence in bud with the identification of benchmark stages in forming inflorescences;

- follow the development process by dividing the study into six stages; from the moment when the first rudiment of inflorescence appears till stage six is reached by the development of rudiment of inflorescence in bud to all three varieties;

- determine the number of inflorescences that reach stage six (floral button) depending on the varieties taken in study;

- observation moment at which no longer observed changes regarding rudiments of inflorescence in bud formation, as well as reached stages by them;

- identification of inflorescence number formed in bud depending on variety and bud's position on the sprout;

- achieving an average on the sprout of achieved stages by rudiments of inflorescence, difference between varieties, depending on climatic conditions.

Material and method research

In 2007 were taken into study varieties with different potentially biological fertility and productivity, expressly: Fetească neagră, Riesling Italian and Cabernet Sauvignon placed in vineyard area Banu Mărăcine.

To determine the differentiation of fruit buds were harvested sprouts in May (before flowering) till October (after fall leaf) and during the rest. At each stage were harvested, each of the three varieties, three shoots, by different vigor (big=L1, mid =L2, Poor =L3), from different hubs.

Sprouts were shortened to a length of 15 eyes, and fresh cut buds or preserved (tag, fall variety, date of collection). Before conservation are removed some of cataphylls, and preservation in formalin 4%, until the completion of sections.

After formatting foliar rudiments in buds at vine notes the start formatted rudiments of inflorescence.

Process tracing method was used for morpho-anatomical observation consisting of bud development using microscope, using material cut with a blade or microtome.

Longitudinal sections we have achieved with microtome, precision instrument. The system works very precisely advanced samples from 0.5 to 99 μ m (CUT6062), the device is manufactured under license ISO 9001 (quality management system), operating mechanical and partial automatically.

It is designed to handle a variety of materials, not only wax and encased in plastic materials. Quality is increased by cuttings of the microtome automatic withdrawal of 40 μ m during sample cutting, thereby avoiding friction-free blades or knives for microtome. This

prevents the rapid deterioration of free or knife blades.

The sections included in paraffin.

Rapid method for the study is placing the sections on the blade port object into a drop of water or water mixed with glycerol. Apply a slide carefully avoiding formation of bubbles and analyzed under a microscope. Sections made are photographed.

Data on bud differentiation were plotted.

Results and interpretations

Based on results obtained in,, Study on fruit bud differentiation from the vine” in 2007-2009, when the research was conducted on three varieties from Banu Mărăcine vineyard, following conclusions can be drawn:

Process of fruit bud differentiation of the species taken in the study was followed in the vegetation period of years of study and during the rest period from the vine;

The study aimed surprise when there is triggering the differentiation process of fruit bud, identify the main benchmark stages rudiment of inflorescences formation (stage 0- when in the bud it can be observed only leaf rudiments ; stage 1- forming bracte armful; stage 2- individualization of two armfuls of inflorescences; stage 3- formation of secondary and tertiary branches; stage 4- completion of secondary branches; stage 5- tertiary branches are known in stage 6 too, when it can be observed floral buttonholes);

The period of research is conducted on two years, and the results are grouped in 6 stages (stage 1 to 15 June; second stage 15 June-1 July; third stage 1-20 July; forth stage 20 July- 1 August;

fifth stage 1-31 August; sixth stage- 30 September), stages that have been captured differences in the development stages of development (formation) a rudiment of inflorescence and the number rudiments of inflorescence formed in a bud.

Until 15 June are captured only rudiments of leafs in bud, and from this date is observed rudiments of inflorescence which are recording in buds, along the sprout differences by variety, climatic conditions and sprout position on the vine.

Since the beginning of the process of differentiation, it can be observed differences in the development of the bud's differentiation between the two years taken in study, in 2007 having met the conditions better than the year 2008.

At the end of the first stage is observed in the stage 2 the first rudiment of inflorescence in all three species taken in the study, more towards the middle of the sprout;

In stage two the number of rudiments differentiated recorded a weak trend towards earlier stage; it can be observed the second rudiment which reached stage 2 and the first rudiment reaches stage 3 and 4, being observed in the same node as the previous stage.

The third stage is observed the third rudiment of inflorescence in all three varieties, reaching at Riesling Italian variety stage 2 in both years of study to the core 5; at Fetească neagră variety at core 4 stage 1 than in 2007 and at the core 6 stage 2 than at core 5 stage 1 in both years. At Cabernet Suvignon variety the third rudiment reaches only stage 1 at core 4.

In the third stage are observed rudiments of inflorescences to all buds, less at the core 1 at Riesling Italian variety in 2008, and stage of development of inflorescence rudiments from bud are more developed in the buds from the middle of the sprout at all three

varieties.

Maximum stage of development at this stage is 5 at the first rudiment to cores 4-5 at Riesling Italian variety, to core 6 at Fetească neagră variety and at Cabernet Sauvignon variety is reaching only stage 4 in 2007 to cores 4 and 5.

Stage 6 (most evolved stage of development at rudiments of inflorescence-of floral buttons) is observed in stage fourth at first rudiment of inflorescence at Riesling Italian variety in 2007 at core 4,6,7 and 10 and in 2008 at cores 5,10; At Fetească neagră variety in 2007 is observed at cores 3-6, 11-12, and in 2007 at cores 3,5,6; At Cabernet Sauvignon variety is at core 4-5,

The fifth stage is observed in all varieties stage 6 at two rudiments of inflorescence to the middle of the sprout, so at the Riesling Italian variety in 2007 at core 4-5, and in 2008 at core 5; At Fetească neagră variety and Cabernet Sauvignon it can be observed only in 2007 so: to core 5-6 at Fetească neagră and to core 5 at Cabernet Sauvignon. And at this stage there is a greater difference rudiments of inflorescence to the middle of the sprout.

On September 30 are in bud 3 rudiments of inflorescence to cores 4,5,6,7 at Riesling Italian variety, to core 4,5,6 at Fetească neagră variety and to cores 4,5,11 at Cabernet Sauvignon variety, and the maximum stage of development at the end of vegetation (stage 6- Flower Cufflinks) is observed in the respective species studied such:

-At Riesling Italian variety are three rudiments of inflorescences in bud, which reach stage 6 to the end of the growing season, while the other varieties (Fetească neagră and Cabernet Sauvignon only two rudiments);

- At Riesling Italian variety stage 6 is reached at the first rudiment to core 4-7, 10-12, at the second rudiment to core 4-7 (in

2007-2008), and the third rudiment only to core 4, 5 only in 2007;

- At Fetească neagră variety stage 6 is reached at the first rudiment the core 3-6 in 2007-2008 and at cores 11-12 in 2007; the second rudiment to core 4,5 in 2007-2008 and at core 6 in 2007; and the third rudiment didn't reach stage 6;

- At Cabernet sauvignon variety first rudiment of inflorescences reaches stage 6 at cores 3-5 (in 2007-2008), to core 11, 12 in 2007; the second rudiment of inflorescences in 2007-2008 to core 4 and to core 5, 11 in 2007. Third rudiment of inflorescence didn't reach stage 6.

Throughout the research period of fruit bud differentiation is observed a difference in the development process, in 2007 having met the conditions better than the year 2008 and in all 6 stages differentiation is better to sprout the middle.

From one stage to another was observed that each new rudiment appear as rudiment in the bud before moving.

Three rudiments of inflorescence which reach stage 6 are only at Riesling Italian variety to core 4-5 in 2007 and the other varieties are only two rudiments so: at Fetească neagră variety to core 4-5 (in 2007-2008), to core 6 in 2007 and a rudiment to core 3 (2007-2008), to core 11-12 (in 2007) and to core 6 in 2008.

At Cabernet Sauvignon variety stage 6 is reached by two rudiments of inflorescence to core 4 (in 2007-2008); to core 5-11 in 2007; a rudiment to core 3 in 2007-2008, to core 12 in 2007 and to cores 5-6 in 2008.

At the end of achieving average research stages of development on the sprout of each rudiments of inflorescence is observed:

- the end of the vegetation in the variety Riesling Italian first rudiment has an average of 5,12, second 2,79 and the third rudiment

1,21 in 2007 and in 2008 first rudiment 5,21, second 2,29 and the third 1;

-at Feteasc neagră variety first rudiment has an average of 4,93, second 3,14 and third 0,43 in 2007 and in 2008 to first rudiment 4,38, second 2,5 and third 0,43;

-at Cabernet Sauvignon variety in 2007 first rudiment has an average of 4,14, second 2,12, third 0,5 while in 2008 4,14 to first rudiment, 1,93 second and 0,43 rudiment.

Information necessary preparation work have been found in Romanian literature and abroad.