ANALELE UNIVERSITATII DIN ORADEA
FASCICULA: ECOTOXICOLOGIE, ZOOTEHNIE SI TEHNOLOGII DE INDUSTRIE ALIMENTARA, VOL. VII, ANUL 7, 2008

GRAPE QUALITY AMELIORATION ASPECTS IN ASPECTS IN VINE PLANTATION

Gh. Sarca, V. Cheregi*

*University of Oradea, Faculty of Environmental Protection, 26 Gen. Magheru St., 410048 Oradea; Romania, e-mail: sarcagheorghe@yahoo.com

Abstract

In a given ecosystem's resource potentials with minimum to outside inputs it need to plan spacing and management practices so as to ensure a maximum vine performance and crop quality through the exploration of natural energy supplies.

The experiment developed on the teaching field of Oradea, between 2004 – 2008, on a plot of Riesling grafted on Riparia Kobber 5 BB, halfhigh training, bilateral spur cordon with 1,0 m , 1,3 m and 0,6 m wide intrarow spacing and 3,0 m interrow spacing. The medium vine spacing, postulated in physiological balance with the environment conditions, outperforms the others as vegetative and yield ratios, leading to both optimum yield per row meter and grape quality. The chief factor in establishing total crop is the interrow spacing, indicating yield and vine number/hectare, but is not the absolute concept in enhancing quality.

Key words*:* grape, vine plantation

INTRODUCTION

In the speciality literature it is mentioned the fact that high quality grapes for food crops can be obtained by applying in vine plantations the modern concept concerning "physiological equilibrium" equilibrium that depends on the environment who involves a field plantation with variable distance.

The superior quality of the grapes crops is necessary to obtain wines with controlled origin names (DOC), preferred of consumers at the actual hour in the world market.

The experience made in vine plantation had the objective to make evident the influence of distances of plantation between vines in special ecological conditions on grape quality.

MATERIAL AND METHOD

The experience was mounted in the climatic and pedological conditions of the Oradea farm in the period 2004 – 2008. The plantation with the wine grapes kind named Riesling, engrafted on the port engrafts Berlandieri x Riparia Kober 5 BB was in full period maturity. The distance between rows was of 2,5 m with an average number maturity. The distance between rows was of 2,5 m with an average number of 3333 vines/ha. The vines were conducted on semi high form, speroned bilateral rows.

The influence of distance between vines on row was studied at vines placed at 1,1m, 1,5 m and 0 ,7 m of distance on row. At a distance between fruitful spurs

of 10 cm on row, the load was 11 spurs on vine (22 buds/vine) and 10 spurs on line metre (20 buds/ml) at the first variant, 15 spurs on vine (30 buds on vine) at the second variant and 7 spurs on vine (14 buds on vine) at the third variant.

In the experience it was shown the start on vegetation and the vigour vegetative drawings, the quality on wood thrower out at pruning, productive on vine, sugar quality and crop acidity.

RESULTS AND DISCUSSION

In the experiment plantation with vine emplacement at the average distance of 1,0 m on row, it was found an adequate space for the yearly vegetation by a percent of starting in vegetation 89 – 92%. Young shoots development presented a potential regularity, an essential condition for fruitful young shoots to develop in a superior number comparing with the initial load of buds leaves on prinning by developing the second young shoots and by homogenous maturation of the tissues. This result is the same with those that are in the world specialty literature.

After flowering the vegetative developments had a slower rhythm when the young shoots had 17 – 19 leaves. Growing on young shoots stopped in the moment when the thirty leaf appeared. Young shoots with slower growth emitted a specified number of laterals witch leaves integrated in a positive way in the assimilation capacity of vine, especially at the end of vegetation period.

The competition of buds from summer eyes, witch develops then grapes touched ripening phase and when the average number of leaves on each young shoots and laterals is around 30, generated slow growing of young shoots. In this way the assimilation area of leaves, witch practically fills all the existent space on the permanent row, assure a uniform maturation of grape witch are in ripening phase. The removal of growing ended and maintaining a maximal leaves surface witch assimilates is important for good grapes maturation, growing after ripening being practically zero. In this case of this variant it exist an optimal relation between the total leaves surface and their directly sun exposed surface. This results from average production of 4.2 kg grapes/vine or approximate 3,8 kg/meter row, with accumulations of 196 g/l sugars and a total acidity of 5,3 g/l.

At second variant, with spaces of 1,3 m between vines, in the same environment and agrotechnical conditions, there is a reduction of the number of buds started in vegetation (80%) and also of the vegetative potential of vine, dates witch correspond with those from the specialty literature.

However, owning to the greater length of permanent cordons, in the first year some plants had more young laterals shoots and more grapes than the previous variant. In the following years the number of young shoots and of grapes on linear meter of row reduced, and some cordons were out of trim. The rhythm of vegetative growing was slower and irregular, and at some young shoots growing stopped from vegetative phase of following, reducing leafed surface availed for leaves.

Obtaining a superior grapes quality involved removing grapes witch are on the feble young shoots, fact witch raised production costs and reduced production. Production on vine was of 4.9 kg grapes, being necessary 3.1 kg on meter of row,

comparing with the optimal value of 3,4 kg/meter of row in plantations with distance of 1,2 m on row. Grapes accumulated an average of 183 g/l sugars and an acidity of 5,8 g/l.

Distance between vines on row reduced at 0,6 m in the third variant, had as a consequence an excess of vigor, an increase in the energy of vegetative development, due to a less length of the cordon. In these conditions the number of fruitful young shoots and of grapes on each vine was less comparing with the first experimental variant. But, if it is reported their number on linear meter of the row, they are in a greater number comparing with vines from the first variant.

As a vegetative point of view, vines with less number of eyes presented shoots witch developed more quickly and which by their vigor favored forming a greater number of young lateral shoots. The growing rhythm was a little slower while flowering and recovering constantly till ripening, having a competitional effect on grapes maturation. Resting in the shade leaves which are at grapes developing level was caused of their higher density. It was necessary making interventions in green, to ameliorate conditions of sun radiation end of ventilation in the vine and to assure a good phytosanitary state. Making these works involved supplementary production costs.

The production obtained by vine reduced at 3.5 kg, but it was approximately 4.6 kg/m of row, with a decrease in grapes quality accumulation of 173 g/l sugar and 6,3 g/l acidity.

The viticulture ecosystem potential must be used by maintaining equilibrium between vegetative of outside interventions, having the object to reduce production costs. In this way we can turn to account climate and soil and we can satisfy the exigency that investition and the applied agrotechnique assure the maximal functionality of plant in the environment concerning with natural energy availabilities.

The quality level of grapes obtained in “physiological equilibrium” conditions presents, at its turn, an indicator of culture zone vocation. This is referring at the obtained production characteristic, indicating the productivity limit.

The greatest part of authors indicated the fact that the distance between rows represents the fundamental variable to increase or reduce production on surface unity without modifying grapes quality, with condition of avoiding a reciprocal excessive putting into shade of vegetative walls.

The experiment made on medium fertility fields showed that the interference between rows are annulated at distances which are larger than 2 m, and the relation between vegetal wall high and distance between rows must be over one. In conditions of the studied ecosystem, distance between rows, which corresponded to the analyzed variety Riesling, with vigorouses growing, was of 2,6 m for all the variants.

CONCLUSIONS

1. The medium distance between vines on row, in the conditions of a given viticulture ecosystem were correspondent for the development requests of the variety as a vegetative point of view, with a level of grape production superior as a quantity and quality point view.
2. The experience confirmed the ipothese that distance between vines on row and crop in relation with each linear meter is the main fact which assure grapes quality.
3. Distance between rows represents the main fact to calculate the whole production, the superior crop quality assured by a maximum of sun radiation at the grapes level.
4. We recommend that, depending of the viticulture ecosystem conditions, the density in the new plantations don't exceed 2500/400 vines/ha.

REFERENCES

1. Cheregi V. – "Viticultura", Editura Universitatii din Oradea, 2003
2. Filippeti I. – « Effetti della potatura corta e lunga sulla sincronizzazione fenelogica e sul comportamento vegetativo e produttivo della cv. Sangiovese Vigenevini«, 1991
3. Intrieri C., Poni S. – «Prove di densita di impianto su viti di Trebiano Romagnolo allevante a GDC « , Vigneviti, 1989
4. Intrieri C. – «La densita di impianto e l'equilibrio fisiologico due principi a conformo per la viticoltura del 2000 «, L'Entocnico, 1996
5. Sarca Gheorghe – Materii prime vegetale. Editura Universității din Oradea, 2007.
6. Sarca Gheorghe – Tehnologia materiilor prime vegetale în industria alimentară. Editura Universității din Oradea, 2007.