

ORCHARD PRODUCTIVITY IN FONCTION OF FRUIT THINNING

PRODUCTIVITATEA LIVEZILOR DE MĂR ÎN FUNCȚIE DE RĂRIREA FRUCTELOR

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***Abstract.** This study evaluates the effects of fruitlet thinning for controlling the quality of fruits of two apple varieties (King Jonagold and Champion) grafted on M 9 rootstock and planted a distance of 3,5 x 1,2 m (2380 tree/ha). Data present include the effects of different thinning methods on fruit size, quantity of fruit and their quality.*

***Rezumat.** Cercetările au fost efectuate în livada superintensivă de măr a societății „Alfa-Nistru”. Materialul biologic a fost reprezentat prin soiurile King Jonagold și Cempion altoite pe portaltoiul M9. Densitatea la care sunt plantați pomii luați în studiu este de 2380 pomi/ha (3,5 x 1,2 m). Datele prezintă efectul diferitelor metode de rărire asupra mărimii fructelor, cantității și calității producției.*

***Key words:** apple trees, fruitlet thinning, fruit quality, yield.*

INTRODUCTION

Fruitlet thinning is one of the most efficient and widely used methods of obtaining high quality apples. The intensity of thinning of the reproductive organs must ensure one reserve of flowers for prevent possibly damage cause of spring frost, rain, wind etc.

The fruitlet thinning is effective for enlarge the capacity of utilization of fruitlet what remaining in the crown (1,3).

The hand fruitlet thinning must to be effect in about 40 days after the blossoming of first flowers. After fruitlet thinning the distance between the fruitlet must to be 10-15 cm for the varieties with small fruits and 15-20 cm for the varieties with big fruits.

During the hand fruitlet thinning is necessary to eliminate the fruitlet attacked of the diseases and pests (4,1,2).

MATERIAL AND METHOD

The experiment of fruitlet thinning was found in apple intensive orchard of A.S. „Alfa-Nistru”. The research were performed on apple trees of the cultivars King

Jonagold and Champion grafted on M 9 and planted at a distance of 3,5 x 1,2 m (2380 tree/ha). Each treatment was tested on 8 trees in 3 repetitions.

Trees were chosen from along the rows and were similar in terms of blossoming, fruiting and growth intensity.

The quality of fruit was evaluated as previously described in regulations (CE) NR. 85/2004.

The method of hand fruitlet thinning as follows:

V1 – control – no thinning;

V2 – elimination of 65-75% butts burst;

V3 – suppressing of 100% fruits from 65-75% butts burst;

V4 – fruitlet thinning after the fall of the petals, let 1-2 fruits in each inflorescence;

V5 – fruitlet thinning after the physiological fall of the fruits, let 1-2 fruits in each inflorescence.

RESULTS AND DISCUSSIONS

At the start of the experiment within the fruitlet thinning there was significant difference in the quality and quantity of the fruits comparing to the control (tab. 1).

Table 1

The fruit production in dependence of the variety and of the method of fruitlet thinning

The rootstock M9, the distance of the planting, 3,5x1,2m, the shape of the crown, spindle slender

S. A. "Alfa-Nistru", in medium of the years 2005-2007

The method of thinning	The variety King Jonagold		The variety Champion	
	The fruit production (t/ha)	The medium weight of the fruit (g)	The fruit production (t/ha)	The medium weight of the fruit (g)
V ₁ (c)	35,1	155	32,1	140
V ₂	25,9	200	26,6	181
V ₃	30,9	197	29,0	180
V ₄	29,5	198	26,3	184
V ₅	27,8	193	28,2	170

Thus, if in control variant of varieties King Jonagold and Champion the yield during the period of research was 35,1 t/ha and 32,1 t/ha, then in the variants with hand fruitlet thinning the yield decrease to 25,9-30,9 t/ha for the variety King Jonagold and to 26,3-29,0 t/ha for the variety Champion.

The maximal medium yield (years 2005-2007) was realized in the variant where was suppressing 100% of the fruits from 65-75% butts burst. In that variant

the yield on an average was 30,9 t/ha for the variety King Jonagold and 29,0 t/ha for the variety Champion, that exceed the yield in rest other variant with fruitlet thinning.

Table 2

The quality of fruits in dependence of the variety and the method of fruitlet thinning

The rootstock M9, the distance of the planting, 3,5x1,2m, the shape of the crown, spindle slender

S.A. "Alfa-Nistru", 2007

The method of thinning	The variety King Jonagold				The variety Champion			
	Super	I	II	Fruits for industry	Super	I	II	Fruits for industry
V ₁ (c)	58,0	27,7	10,0	4,3	52,5	27,3	13,4	6,8
V ₂	67,1	22,0	7,4	3,5	55,2	31,5	8,2	5,1
V ₃	70,5	18,4	7,3	3,8	62,1	24,4	8,8	4,7
V ₄	73,5	16,4	6,3	3,8	64,6	22,9	8,0	4,5
V ₅	72,8	16,0	7,2	4,0	62,1	25,7	7,2	5,0
DL _{0,05%}	0,44	1,07	0,58	0,31	1,26	0,68	0,74	0,35

Also, the quality of the fruits was strong influenced of hand fruitlet thinning. The fruit of the variety King Jonagold was more qualitative in all variant comparing to the control variant (tab.2).

At the variety King Jonagold the quantity of the category super increased more till 73,7% in the variant where the fruitlet thinning was effected after the fall of the petals.

The fruits quantity of the category I is inferior (16,0-22,0%) than at the variety Champion.

At the variety Champion the category super of fruit is also more increase (64,6%) in the variant 4.

As a rule hand fruitlet thinning decrease total fruit production but that agricultural work simultaneous increase significant the quality of the fruits.

CONCLUSIONS

Thinning of apple fruitlet is an important technology method for the improvement of fruit quality and for the impulsion of sufficient flower buds formation to prevent biennial bearing.

The cultivars King Jonagold and Champion due to a strong thinning effect from the variant 4 were realized higher quality of the fruits (73,5-64,6%).

Due to high labor cost, hand thinning is neither economical nor practical.

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