SOME EXPERIENCES OF THE OBLACHINSKA SOUR CHERRY CROWN TRAINING

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Structure of agricultural sector in R. Macedonia

<table>
<thead>
<tr>
<th>Area</th>
<th>Arable land</th>
<th>Orchards</th>
<th>Vineyards</th>
<th>Meadows</th>
</tr>
</thead>
<tbody>
<tr>
<td>000 ha</td>
<td>414</td>
<td>15</td>
<td>21</td>
<td>60</td>
</tr>
<tr>
<td>%</td>
<td>81.2</td>
<td>2.9</td>
<td>4.1</td>
<td>11.8</td>
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</tbody>
</table>

- **Arable land**: 81.2%
- **Orchards**: 2.9%
- **Vineyards**: 4.1%
- **Meadows**: 11.8%
Structure of orchards per species, %

- Apples: 33.7%
- Sour cherries: 12.5%
- Peaches: 12.3%
- Plums: 20.4%
- Pears: 3.1%
- Apricots: 2.1%
- Sweet cherries: 2.2%
- Walnuts: 5.2%
- Almonds: 5.2%
- Strawberries: 1.2%
- Others: 2.1%
Specifics of sour cherry production in Macedonia

The production of sour cherry is situated all over the country. The production is mainly organized on large plantages and 70% ownership is on agricultural enterprises.

Oblachinska sour cherry variety is almost unique. Total area under sour cherry orchards is more than 1500 ha, most of them (about 400 ha) are young orchards. Average annual production is approximately to 10000 t. Almost all of the production is dedicated to processing (frozen fruit, in alcohol, pasteurized, compote, juices etc.)

Fresh fruits and processings are realized mainly by exporting. Despite very variable prices of the fresh fruits, the sour cherry is one of the most perspective fruit species in Macedonian fruit sector.
Some biological characteristics of Oblachinska

Oblachinska belongs to the group of steppe sour cherries, is characterized with low vigrousness, (spur types). In floral buds 3-5 blossom are formed. Differentiation of floral buds is abundantly on more types of fruiting branches (may bouquets, short branches, long slender branches and mixed branches).

Oblachinska is characterized with low, spread and well branched crown, which without pruning interventions reaches height to 4 m.

It is suitable for density orchards. Fruiting branches are overgrown with floral buds for a long period and there is not tending to enforce bearing area to crown periphery.

There is well regeneration capability and with appropriate training and pruning it is very easy to manage.

One of the most negative attribute of this variety is suckering.
The oblachinska sour cherry trees are characterized with precocity (3 leafs), the flowers are auto fertility, with high genetically potential for formation of floral buds and high percentage of fruit set. There is no tendency for alternative fruiting; it has regular high and stable productivity. In full productivity enters after 4-5 leafs.

Because of the low crown it is suitable for hand harvesting.

**In production orchards the trees are grown on own roots and grafted on mahaleb.**

Self rooted trees can be harvested by hand or combine, while at the trees grafted on mahaleb the harvest can be conducted by hand and mechanically by shaking or by combine.
Quality of the nursery trees – is the key element for appropriate and good survival of the plants in orchard, vegetative growth and precocity.

The trees should have good root system at least 5 scaffold roots, 20 cm long. Height of the trees should be more than 120 cm with diameter up to 10 mm. Over all the length it has to be overgrown with buds or with featheres.

Lower part of the seedlings should be clean because this part will be put in soil at planting.

This kind of seedlings can be formed by desirable training system. Some measures should be implemented in the nursery for producing such quality seedlings.

Suckers, 30 cm long, are planted on minimum 80 X 15 cm distance. The depth of planting is 15 cm. At the start of the vegetation from all developed shoots only one is left. The rest is move in the base.

During the middle of the vegetation (July-August) feathers are starting to grow on the left shoot. On the 20-70 cm height, feathers are pinched on 2-3 leaves. In next 20 cm feathers are left to grow until the end of the vegetaion. This zone is for formation of the crown. The formed feathers up to 90 cm are also left to grow.
Leader

Scaffold branches

Trunk

Free growth

Pinching or remove V-VII

Future underground stem

10 cm cleaning of the branches

Underground stem

40 cm

20 cm

50 cm

15-20 cm

15 cm
Training of the crown- The trees of oblachinska are trained in 2 different systems: free spindle bush and free vase.

Free spindle bush system is recommended for high productivity and easy to manage self rooted trees. This training system is also suitable for trees grafted on mahaleb, but established on coarse, poorly soils.

Planting distance 3.5-4 X 2-2.5 m.

The trees have just one scaffold branch-leader, overgrown by semi scaffold branches all over the length.

The height of the trunk is 50 cm and the total height of the crown is 2-2.2 m. The lower branches of the crown are longer, for better lightening.

The maximum length of the branches can not be extended 1 m in between rows because of free space for mechanization.
Training of the free spindle bush
Procedure in the first year-

After the planting the tree is cut on 70 cm above the soil, above well developed bud. If this zone are feathers, upper feather is cut on one bud and next one on 2 buds.

From this buds strong shoots will grow, from which the best pointed will be chosen for leader. The rest are pinched or removed.

Other feathers in this zone are shortened 15-20 cm. More semiscafold branches will be developed from these feathers.

In the lower part of the seedlings (up to 20 cm) all feathers are cut in base, while in the zone from 20-50 cm the feathers are cut on 1-2 buds. The new shoots from these buds in may – june are pinching, and in july are removed.

In may-june concurrent shoots on the leader are pinched. The leader grow vigorously and overgrown with new shoots with desirable angle.

Regularly, one monthly inspection and intervention are conducted for appropriate training of the crown.
crown

Trunk 50 cm

Removing after planting

Underground stem

pinching V-VI removal VII

pinching V-VI removal VII

removed-III
II Year

4-5 well pointed branches (with appropriate angle) are chosen in the zone of the crown (from 50-70 cm). The chosen semi scaffold branches are shortened for $1/4$-$1/3$ of its length. The leader is cut for $\frac{1}{4}$ of length and higher than the semi scaffold branches. In the summer a few pomotechnical measures are done for pinching and removing the shoots.
III year

Tinning of shadowed branches, removing or shortening of some vigorous branches are conducted during the winter pruning. Also all concurrents of the leader are removed or cut on two buds. The leader is also cut above 1/3 or higher than semi scaffold branches.

In the upper part new semi scaffold branches are chosen. Pinching and removal of unnecessary branches are conducted during the vegetation. To the end of third vegetation the crown reaches appropriate height.
III Year
IV<sup>th</sup> year - Cutting of leader on 2-2.2 m on side branch. All competitors of the leader are removed. Tinning of shadowed branches, removing or shortening of some vigorous branches are conducted during the winter pruning. In the upper part of the crown new semi scaffold branches (third floor) are formed.

In this year the trees enter in fruiting and give 8-10 kg fruits.
In the practices, nurserimen usually remove feathers all over the length of seedlings up to base. The seedlings are 1.5 - 2 m high, without buds or feathers, up to 0.7 - 1 m. These seedlings are not appropriate because oblachinska sour cherry on nodies does not have lateral buds.

These kind of seedlings do not have buds or feathers in zone where the formation of the semi scaffold branches should be. New shoots do not grow after planting, or usually new shoots grow under zone of crown (bellow 50 cm or at top of the seedlings).
Procedures for training of the trees
1. After planting the trees are cut 70 cm above soil.
2. From the new shoots which grown under zone of crown (bellow 50 cm) one is chosen for leader and it is left to grow without any intervention.

The formation of these trees in the second year can be done on two ways:
1. With cutting of shoots on 70 cm - training of the crown is the same as previously described with the prolongation of one year.
2. Formation free spindle bush from one shoot.
Underground stem

20 cm crown

50 cm trunk

20 cm Underground stem

15 cm

The strong leader overgrown with feathers

1-2 reserve shoots are pinched and after that removed

Disbudding
Formation free spindle bush from one shoot

During the first year one shoot is chosen and arrowed upright. This shoot is left free to grow without any kind of intervention.

At the start of the second year this shoot is cut on 55 cm. All buds bellow 50 cm are disbudded. Couple of shoots are inforced from the left buds from which one is chosen for leader (in may-june) and the rest of them are pinched on 2-3 leaves. After 2-3 weeks pinched shoots are pinching again or removed.

This procedure leads to all nutritions to concentrate in one shoot which by natural way starts to branch with well pointed feathers and with diserable angle. Without intervention to the end of second year leader reaches 2 m and it is well overgrown.

So, on natural way free spindle bush is formed and with intervention in the next years it is completely formed.
Free spindle bush can not be used for the trees grafted on mahaleb established on fertile soil. Managing of these trees is more difficult because of high vigour.

*Free vase* training system for such orchards is recommended.

**Planting density is 4X3 m (833 trees/ha).**

In this case three scaffold branches are formed as a separate leader like spindle bush with one leader.

Height of crown reaches 2-2.2 m.
Procedure for training

First year- established trees are cut on 70 cm. If the seedlings are with feathers in the zone 50-70 cm, 3-4 branches with good angle, on distance 5-10 cm is chosen for scaffold branches. The chosen branches are cut on 15-20 cm. If the seedlings are without feathers, established trees are cut on 70 cm. During the vegetation in the zone 50-70 cm, 3-4 branches are chosen for scaffold branches.

In the second and the third year the procedures are similar as at free spindle bush for each scaffold branch.

One of the disadvantages of this system is easier crouching of scaffold branches if they grow from the same spot.
In nursery
At planting
I year
Il year
III Year
IV Year