

**EFFECT OF SHAPING METHOD ON YIELD OF NATURALLY DISTRIBUTED  
HAWTHORN TREES ON WESTERN TIANSHAN MOUNTAIN SLOPES**

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**Abstract:** The article examines the effect of crown shaping on physiological activity, photosynthesis, flowering, and fruit yield in 3–5-year-old hawthorn species in the Korongqul Forest Section of the Burchmulla State Forestry, Tashkent Region. Vase-shaped crown formation increased fruit yield by 33.3% and reduced disease incidence by 44.8%.

**Keywords:** hawthorn, crown shaping, yield, phenological observation, forest enterprise.

**Introduction.** The Western Tien Shan mountain range is characterized by the arid continental climate of Central Asia. The absolute maximum temperature reaches 35–45 °C, while the minimum ranges from –25 to –42 °C. At elevations of 1000–1500 m above sea level, the frost-free period lasts 195–200 days, whereas at 1500–2000 m it lasts 145–150 days. Annual precipitation amounts to 350–550 mm, and relative humidity is around 50–60%. The main portion of precipitation (up to 75%) falls during the winter–spring season, while only 5–7% occurs in summer. As a result, phytocenoses experience moisture deficiency for 100–120 days. Consequently, forest cover becomes sparse on southern and eastern exposures, and vegetation on rocky areas dries up by late spring.

Under these conditions, additional agrotechnical measures are required to intensify the growth of forest trees and increase their productivity. In fruit trees, proper formation of branches and crowns plays an important role in regulating physiological processes, creating favorable conditions for photosynthesis, and preventing diseases. Trees that are correctly pruned and shaped begin bearing fruit earlier, produce higher and better-quality yields, and have greater longevity [3,7,8,9].

**Literature analysis and methods.** Effect of methods of shaping trees on productivity and other characteristics. A.A Dmitriev, G.G. Lapin and T.N. Zaytsev's flock determined based on the formula.

$$\Delta(\%) = \frac{X_2 - X_1}{X_1} \times 100$$

In this case

$\Delta$  (%) — **percentage of difference or change**,

$X_1$  — **control group (unshaped tree) indicator**,

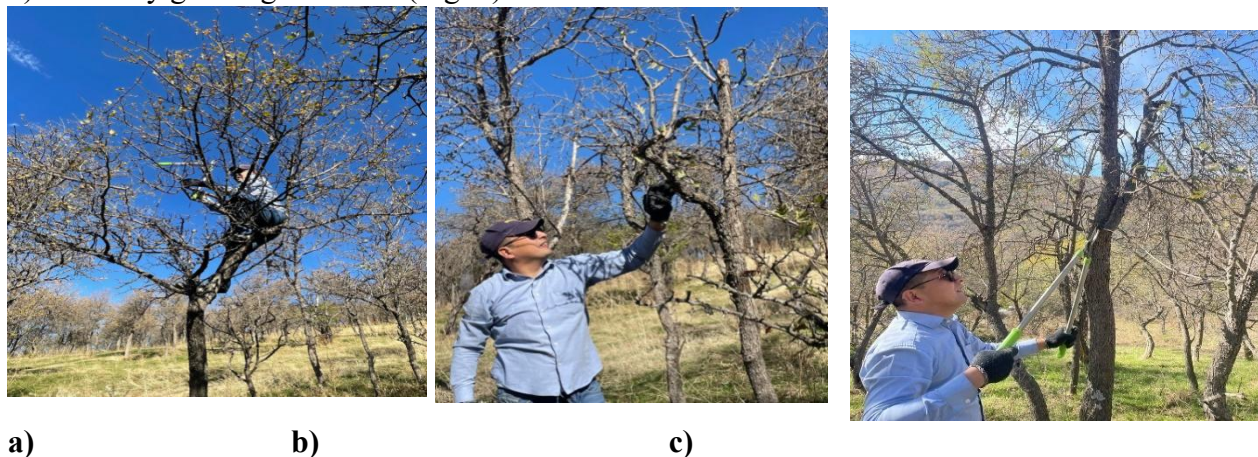
$X_2$  — the indicator **of the experimental group (shaped tree)**, the result was calculated as a percentage (%).

**DISCUSSION.** 3-5 year old (4.0-4.5 meter tall) Pontic hawthorn ( *Crataegus pontica* ) growing naturally in the Korankul forest department of the Burchmulla state forest enterprise, Sogdian hawthorn (*Crataegus songarica*) and Turkestan hawthorn ( *Crataegus Turkmenistanica* ) to Shaping work was carried out. Shaping work on hawthorn trees was carried out when the sap flow in the trees was completely completed (the second decade of November). In this case, the trees were pruned using the vase-like (open-center) method, that is, several main branches were separated from the main branch (skeletal branch) of the tree, and the length of the branches was reduced along the tiers of side branches.

When giving shape to the trees, branches and branches, especially damaged parts, were cut and disposed of.

The main attention was paid primarily to the following aspects of the tree:

- 1) Branches that are severely damaged by disease and pests, dry, broken, and overgrown.
- 2) Branches that absorb nutrients from their roots.
- 3) Branches that suck food from the body and grow on the inside of trees.
- 4) Closely growing branches (Fig. 1).



**Figure 1. Giving hawthorn trees a vase shape.**

a) Treating branches that suck nutrients from the trunk and grow into the interior of the tree, b) Treating branches that are severely damaged by disease and pests, dry, broken, and overgrown, c) Shaping branches that are closely spaced.

Garden emulsion was applied to the cut areas of the cut trees so that they were not affected by rainwater, rotting, diseases, pests, and winter cold.

**RESULTS.** As it can be seen from the table, it was found that vase-shaped shaping of hawthorn trees growing under natural conditions in the Koronkul forest division significantly increased the number of flower buds and fruit set in hawthorn trees. In this, the number of flower

buds in 1 branch was +23.7% higher, and the level of fruit set was +27.1% higher than that of unshaped trees. (Table 1).

Table 1

**The effect of shaping hawthorn trees on productivity indicators**

t./p	Indicators name	Shape not given trees (control)	Vasemon form given trees	Difference, %
1.	Tree Height, m	3.8 ± 0.2	3.5 ± 0.1	-7.9
2.	Horn- shaba density, score	8.5	6.0	-29.4
3.	Leaf area, cm <sup>2</sup>	34.6	42.8	+23.7
4.	Number of flower buds (1 horn)	14.3	19.2	+34.3
5.	Fruit contact level, %	61.5	78.2	+27.1
6.	Average fruit weight, g	1.48	1.92	+29.7
7.	1 tree average yield, kg	8.4	11.2	+33.3
8.	To the disease ringing level, %	17.4	9.6	-44.8



**Figure 2. Pontic hawthorn ( *Crataegus pontica* ) and Sogdian hawthorn The process of determining the yield of hawthorn (*Crataegus songarica*) trees after they have been given a vase-like shape.**

It was found that the method of giving hawthorn trees a vase shape increases the amount of tree yield by 33.3%, and the weight of fruit by +29.7%. Shaped trees were more resistant to diseases, and the damage rate was -44.8% lower than that of non-shaped trees.

**Conclusion.** Vase shaping of hawthorn trees increases photosynthetic activity, increases the number of flower buds by 23.7%, fruit set by 27.1%, yield by 33.3%, and fruit weight by 29.7%.

Also, shaping hawthorn trees reduces the risk of spreading diseases in trees by 44.8%.

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