

## STUDY ON AN APPLICATION FOR TREATMENT PLANT EQUIPMENT IN FORESTRY SEED LIVEZILE

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### ABSTRACT

Obtaining large amounts of seeds improved (capacity germination above 60%), requiring action to protect and preserve trees remarkable, beyond the age of exploitability economic, until the age of exploitability physiological stage close deperisarea natural trees. Biotic (insects, fungi) sensitive influence fructification through their effects on processes of growth and accumulation of biomass.

The main diseases that affect the fructification *Microsphaera alphitoides* and ***Taphrina coerulescens***. The equipment proposed must realize the entire surface treatments to combat foliar and ramuri. He trees but also must make at heights up to 20 meters vertically.

Orchards seeds (planting seed or seed orchards) are special plantations of trees (clones or lines selected), as well insulated to minimize the pollination exogenous unwanted designed to produce frequent large quantities of seed quality and ease of harvest as early as lower. Copies of these cultures are known provenance, being identified by their progeny or clone of belonging. Even if these trees do not reach ages specimens of the arboretum sites or parks dendrologic, these formations could also act as forest conservation funding by keeping valuable germplasm genotypes and clones performing and well adapted.

Seed reserves are pure or mixed stands, mostly natural and, in the same regions of origin, they differ distinctly from the other stands with the same specific composition (Enescu et al, 1997).

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In our country they have been identified over 2300 seed reserves covering over 70,000 ha (32,000 ha deciduous conifers and over 37,000 ha) and includes all the main species of forest.

**Table 1**

### Reservations seed entered in the national catalog of 1986

No.crt species	effective surface	Observations
1. Fag	13.875,4	natural artificial
2 Gârni .	1395,2	natural artificial
3 Stejar brum riu	673,6	natural artificial
4 Salcâm	598,	natural artificial
after Enescu, 1986		

These populations of trees is the basis for improving populations as seed trees selecting the category tree specimens "plus" exemplary always located in the ceiling and considered as true dominant "gene centers" of wood species (Stanescu, 1984).

Over the life of woody plants go through a progressive development with irreversible. This development is carried out in several distinct phases, namely: embryonic stage, youth, maturity and old age.

Stage youth (juvenile) - start from seed germination and emergence of seedlings and ends at the first reproductive organs (flowers, fruits). The duration of this stage is relatively short (from several years to decades), is different depending on the species and external factors. This stage is characterized by a sustained accumulation of biomass, a great plasticity and adaptability. Therefore, stalks or roots used to get new copies vegetatively by cuttings harvested from juveniles stage.

Maturity stage (a fructifications) - is the longest and lasts from the first fructifications of the specimens until they reach early state of decrepitude. Are species in maturity stage fructifies not abundant every year, identifying a certain periodicity of this phenomenon. In this interval of years of abundant fructification, are still producing small quantities of fruit, so-called "splashing" the seeds are usually inferior quality indices

Determinants of fructification process

The internal factors

In 1863, I. Sachs emitting hormone theory, that the onset of fruiting process requires a special substance, producing flowers that are formed is conveyed to the tips of the leaves and growth, where flowers are formed.

German physiologist G. Klebs, who in 1903 argued that training based on their own research fruiting bodies is the result of interaction between internal and external environmental factors, environmental factors (mainly light) printing process fructification particularities

As long as the plant dominates minerals absorbed from the soil to those synthesized in photosynthesis, and C / N holds for nitrogen, the plant recorded sustained accumulation of biomass. With reinforcing the chlorophyll and the increase of hydrocarbon feedstocks (sugar), the plant goes into maturity stage, forming fruiting bodies.

Mineral nutrition influences both vegetative growth and reproduction process. On fertile soils, woody plants grow more vigorously and fructifies abundantly and more often than on poor soils. Research conducted in recent decades have highlighted the favorable impact of fertilization with nitrogen, phosphorus and potassium on the process of fructification in many species and in different conditions stationary was found, however, that excess salts of nitrogen, sulfur, calcium, magnesium, iron delay or inhibit bud formation. Applying fertilizer or herbicides irrational can pollute the environment and poisoning plants. For example, high doses of nitrogen leads to an imbalance between vegetative growth and fructification, negatively affecting the quality of fruit and seeds. (Florescu, 1996).

Biotic (insects, fungi) sensitive influence fructification through their effects on processes of growth and biomass accumulation. For example, massive defoliation often encountered to delay or disrupt the oak bud differentiation. (Abrudan, I. - Afforestation, Brasov, 2006)

The main diseases that affect the fructification

*Microsphaera alphitoides* - oak powdery mildew

It is the most damaging disease that causes the phenomenon of drying oak (*Quercus robur*). In Romania, this disease occurs in nurseries and forests, all species genus *Quercus* (*Q. Robur*, *Petraea Q.*, *Q. cerris*, *Q. Farnetto* etc.). Attack also brown chestnut (*Castanea sativa*).

Symptoms - *Microsphaera* fungus attack *alphitoides* different species of *Quercus* starts in spring and continues until late autumn. The disease is manifested especially on shoots and leaves, which appear typical symptoms of powdery mildew. Attacked leaves are deformed, asymmetrical brittle and are covered by the mycelium of the fungus ectofit. Shoots attacked not fully develop and frozen in winter. Towards autumn, on both sides of the leaf fungus appear cleistotecile form of small black dots clustered. Pathogen transmission from one year to another is accomplished by cleistoteci mycelium and

resistance branches. Spring mycelium resistance becomes active and produces primary infections.

Prophylaxis and therapy - *Microsphaera alphitoides* control the species is achieved through preventive measures (gathering and destruction of infested leaves, pruning and destruction of affected branches) and chemical measures. Fungicides that have given extremely good results in preventing and combating powdery mildew, approved in forestry are the type: Tilt 250 EC 0.03%; Bumper EC 250 0.03% 0.035% Topas 100 EC; Microthiol especially 0.30-0.40%.

The dosage per hectare is between 200 and 500 liters, depending on the density of the foliage. When the attack is strong throughout the leaf stalks and even extremities can be covered with white mycelium paste becomes dusty, powdery when asexual fungus fructification and give the appearance of mildew or dusting with flour.

Powdery mildew affects significantly the fructification of tree seeds.

This fungus attacks the pathogenic species of the genus *Quercus* and produce blistering leaves. The disease is found in the entire area of host plants and produce significant damage when favorable environmental conditions.

Symptoms - attack occurs on leaves. Since June, the leaf surface attacked blistered portions appear irregularly shaped, initially light green, then gray. Blistered portions are initially isolated and then merging and occupies a large part of the leaf lamina. Over time, affected foliar mesophilic brunific , then necrosis and dried. It appears on the leaf surface attacked a whitish powder which is ascospore ASCE with the fungus.

Therapy - to combat this pathogen species, apply chemical treatments, with the first symptoms of disease.

#### **MATERIAL USED FOR STUDY**

Tiller G 73

12 HP engine

Wheels 4.00-8 V35

Tank sprayer equipment

Tank Capacity 200 l

Wheels 4.00-8 V35

The maximum height of 100 cm basin

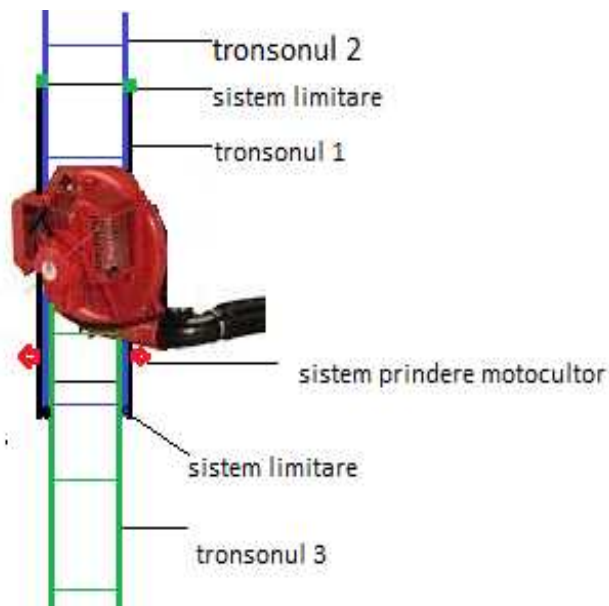
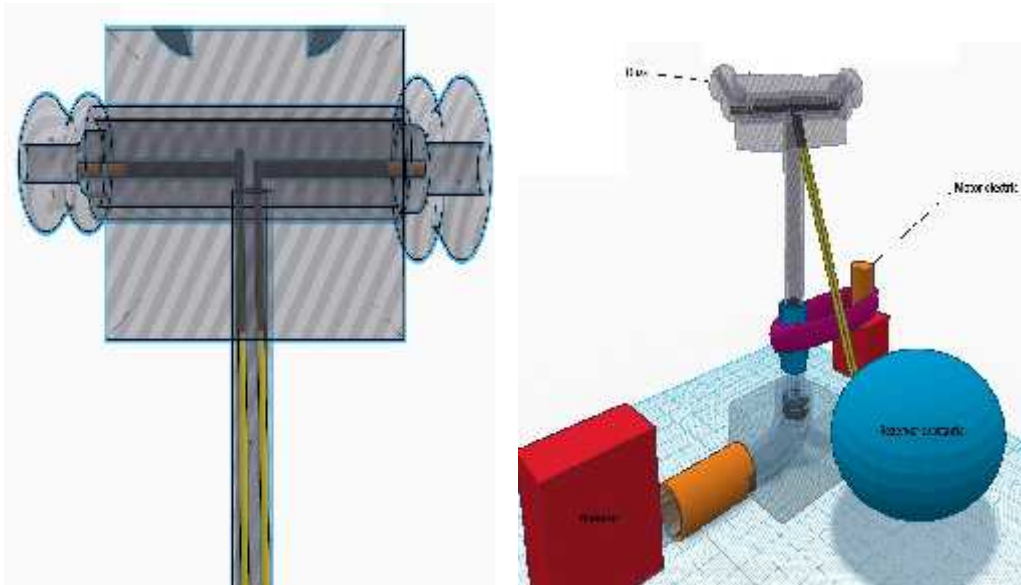
The maximum height of 180 cm basin with operator



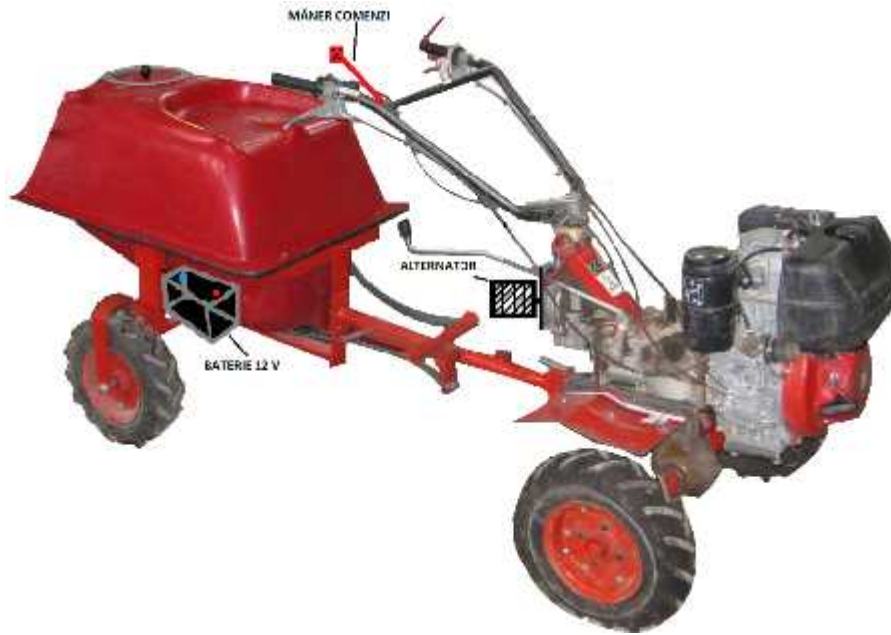
**G73 tiller equipment for chemical treatment**



Atomizer Cifarelli



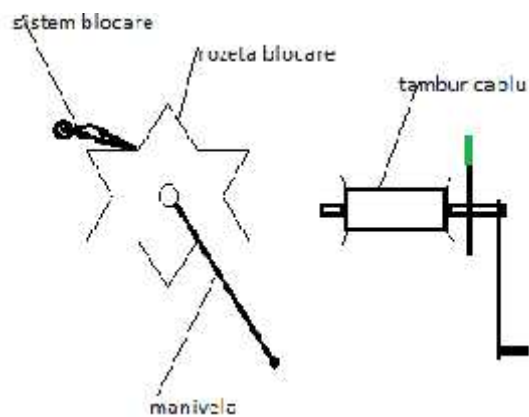
Sections of the lifting system



Preparing for mounting equipment



Equipment for seed treatments in forest groves



Lift system equipment

## Venue studies

Plant seeds of Garni Bailesti 8.9 ha area

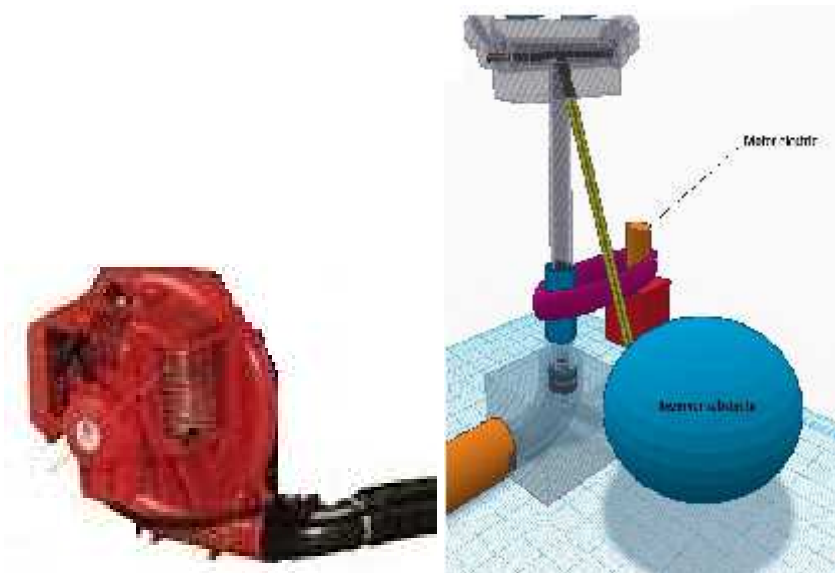


Column height measurement and height peaks with hypsometry





Approximate distance between tree branches



#### Scheme functional equipment for chemical treatments in forest seed orchards

M 1200 is a versatile atomizer suitable for both professionals and users who want to achieve quick and safe operations. This model has a handle improved with a new tilting system which provides fluid control. Ventilation air expands the coverage and vertical and horizontal solution

#### TECHNICAL DATA

Engine: Cifarelli C7  
monocindric two-stroke  
Displacement: 77 cc  
Maximum power: 3.6 KW (5 HP)  
Weight empty: 11.8 kg machine with tubes  
Capacity: 17 Litres  
Horizontal jet length: 18 m

Jet vertical height: 16 m  
Air speed 105 m / sec.  
Air volume: 27 m<sup>3</sup> / m  
Droplet size (indicative require detailed curves): Ø 90 mm

### Working method

It replaces

- pump hydraulic plate alrenator support for 12V
- Hose distributor
- Remove distributor
- Remove ramps
- Remove support sprayers
- It Mounted the atomizer plaibil support Ciffareli
- It Makes the link between car and tank atomizer pump ciffareli
- It Remove the solution tank atomizer
- it mounted to a support 12 V batteries bacteria on the machine
- to eliminate the nebulizer solution tank and connect the pump to the tank Motosapator
- the fitted to the hoist and lowering cable
- Rudder head with nozzles placed at 180 with rotation system 02corp 1800
- it solenoid mounted on the circuit work

### EXPECTED RESULTS

- 1.Guarantee treatment whole leaf area of trees
- 2.Realization maximum distribution uniformity of the solution on the table leaf
- 3.Reducing consumption of the substance and the solution per unit area
- 4.High productivity
5. Timing of making treatments
6. Assuring the equipment movement in seed orchards with low crown
7. Growing the degree of precision pneumatic dispersion treatment using

### CONCLUSIONS

It can achieve a treatment equipment for forestry seed orchards using a tiller, sprayer equipment for tiller and an atomizer.

Equipment used in seed orchards with small area that you can not use other modern technical equipment.

After use, the parts can be restored to original condition

### BIBLIOGRAPHY

**Abrudan, I.** – Împ duriri, Brasov, 2006)

**Elena Stuparu, Virgil Scrl tescu** Revista p durilor ,vol. 128,nr.1, pag. 1-3 Variația genetic inter- i intra-populațional a unor unit ți — surse de semințe de gârniț (Quercus frainetto Ten.)

**Mihai, G.**, 2009: *Surse de semințe testate pentru principalele specii de arbori forestieri din România*. Editura Silvic , Bucure ți, 281 p.

**Giurgiu Victor**, Revista p durilor ,vol. 128,nr.1, pag. 1-3,47-49, Tratamente i alte lucr ri silviculturale specifice realiz rii de arborete cu structuri neregulate

**S r cin Ion**, Baza energetic pentru silvicultur , ed.Aius 2009

**ofletea N., Curtu L.A.**, 2007: *Dendrologie*. Editura Universit ții „Transilvania”, Brașov, 540 p.