GROWING *EUNOMUS FORTUNEI* PLANTING MATERIAL AND USING IT IN LANDSCAPING

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Among the advanced powers, the state of the out-of-touch middle class is a subject of special respect. Rich plantings play a special role in weakening the negative influx of civilization. The stench permeates the natural microclimate of urban areas, takes part in the formation of the alien environment, and creates a specific image of the place. At the same time, for the improvement of urban areas, rich plantings can occupy a larger area of streets, industrial enterprises, parks and public gardens [6, 21].

Euonymus fortunei is an evergreen ornamental tea-grass native to Celastraceae R. Br., which, due to its inflexibility, durability and variety of decorative properties, finds a wide range in landscaped gardens and private areas [11, 16].

According to guesses, the taxon is valued for a whole series of aesthetic powers: it creates dense kilim plantings, you can climb along the supports with the help of dried crusts, which indicates the diversity of fertilization leaflets. The decorative effect of the bush is preserved by stretching the cane to add its unique element to the molding of the landscape middle [35].

Relevance by those. An important task is to enhance the technological process for the production of *Euonymus* gardening material, and the taxon *E. fortunei* itself, to monitor it and promote it in the improvement of the territory. This means a reduction in the species diversity of phytocenoses and an increase in their resistance to unpleasant environmental factors.

Meta-robots have been observed in the increased volumes of growth of gardening material *E. fortunei* through the path of root-hair reproduction in the soils of the spores closed to the ground and further growth in the landscaping of the covered territories.

For the sake of the above-mentioned sign, the following instructions were passed on:

- collect and analyze information to multiply the main representations no one in the genus *Euonymus*;
- look at the type of substrate at the process of creation of the root system in the gardening material of *E. fortunei*;
- evaluate the regeneration capacity of *E. fortunei* livestock during the period of their preparation;
- add infusion of Rhizopon AA poeder to the rhizogenic nature of *E. fortunei* micropagons;
- consider the viability of *E. fortunei* in green areas.

Object of work: *Euonymus fortunei* as an ornamental plant that is used for recrea-tional purposes.

Subject of research: technology of growing gardening material *Euonymus fortunei* Silver Queen and Emerald Gold.

The family *Euonymus* L. extends to the homeland Celastraceae R. Br., which has about 200 species, with about 100–120 genera and over 1300 species, expanded in tropical, subtropical and often extinct regions of the world. These are mainly trees, bushes, lianas 2–6 m high, and sometimes – branches of herbaceous plants [1, 11, 17]. Representatives of the homeland are known as decorative, medicinal and other native species.

Young pagons are often four-sided, sometimes with characteristic warty growths. The bark is gray-brown, in older trees it is cracked and flaky; it contains barnacles and bitter words that give it toxic powers. The leaves of the roses are opposite, simple, on short petioles, ovoid or eliptical in shape with a jagged edge. The leaf surface shows a fine pinnate veininess, a skinny structure, and often a sparkle. In spring, in most species the leaves turn bright red, purple or erysipelas, which means the genus is decorative [11, 15].

The flowers of the roses are small, double, collected from the umbrella-like flowers (3–9 flowers each), the calyx consists of 4–5 greenish sepals, the corolla has 4–5 yellow-green or brown petals color, 45 larvae, which are attached to a disk that exudes genetia. Plid is a capsule that opens when reached. The variety of

fruits varies from rye to raspberry or red. Fruits are peeled - remove glycosides, saponins and alkaloids (evonimine, euonimoside). Cover the filling with fleshy arylus (orange and worms), which will add birds.

Mostly the plants are light-loving or shade-loving species that are resistant to dryness. It is important to grow in forests, on knots, in chagarniks, on skhila yarov. It is good to endure the cuttings, so as to make them handy for molding the livingrafts and decorative plantings.

Euonymus is an important element of the flora of the world's latitudes and has significant ecological, decorative and scientific value. Species of this genus play a role in the formation of forest ecosystems, and are promising for landscaping small areas, but will require protection and rational vigor. These species (*Euonymus nana*, *Euonymus latifolia*) are listed in the Red Book of Ukraine due to the decline of natural populations.

The most popular representatives of the genus *Euonymus* in Ukraine include: Euonymus alatus (Fig. 1-3), *Euonymus japonicas* (Fig. 4), *Euonymus europaeus* (Fig. 5), *Euonymus verrucosus* (Fig. 6-7), *Euonymus fortunei* (Fig. 8-11).

Figure 1. E. alatus [32]

E. alatus is a deciduous ornamental chagarna, a tree 1.5–3 (or up to 4) m high, which shows bright autumn leaves (Fig. 1). The pagons are almost sided, with visible corky growths in the later ones, with a “krelets” appearance. The bark is grey-brown; in older roslins it is cracked.

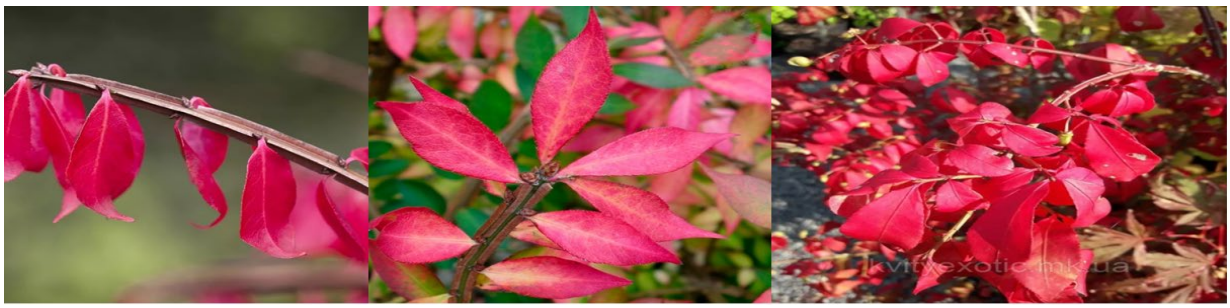

Figure 2. Leaves and shoots of E. alatus [32]

Leaves are opposite, simple, eliptic, 2–7 cm in length, with toothed edges. In the spring - green, in the spring - purple-red or erysipelas-crimson (Fig. 2).

The flowers of the given species are friable (up to 1 cm), greenish-yellow, light-colored, spread out in 2-3 at the axils of the leaves. The flowers are grass-cherry. The fruit bears the appearance of horny-red-red bolls, from which, when spring reaches, an orange-colored hue drips, covered with arylus (Fig. 3).

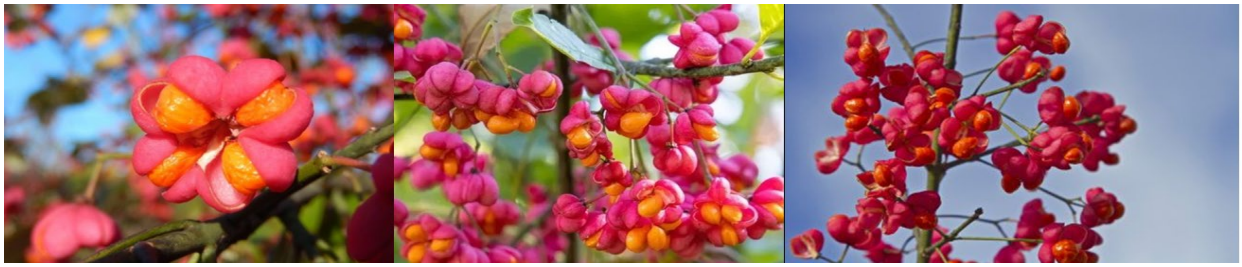

Figure 3. Flowers and fruits of E. alatus [32]

E. alatus is light-loving, frost-resistant, tolerant of small minds and short-hour shade. Growth is best on well-drained, moderately watery soils with a neutral or slightly acidic reaction (pH 6–7). Reproduces by plants, live bait, and seedlings; The plant will require stratification at +3...+5 °C for 90–120 days.

In nature it grows in forested areas of Western Asia (China, Korea, Japan). In Ukraine, it is cultivated in botanical gardens, parks and private gardens, well suited to the climatic minds of Poliss, Forest-Steppe and Pivnichnogo Steppe.

E. alatus is a valuable ornamental crop. Used: in landscape design for creating living spaces, borders, group compositions, as well as in landscaping urban areas. You are often seen in parks, for administrative purposes, and even for decorative purposes, and may not require any supervision. *E. alatus* can be an effective solitaire (besides plantings of accents), a wonderful element of living creatures or basic compositions. It is popular in landscape design for its contrast. colors and structure of nails. The plants of the named taxon contain biologically active compounds: alkaloids, saponins, glycosides. The fruits are delicious for humans, but for birds - hedgehogs are more important.

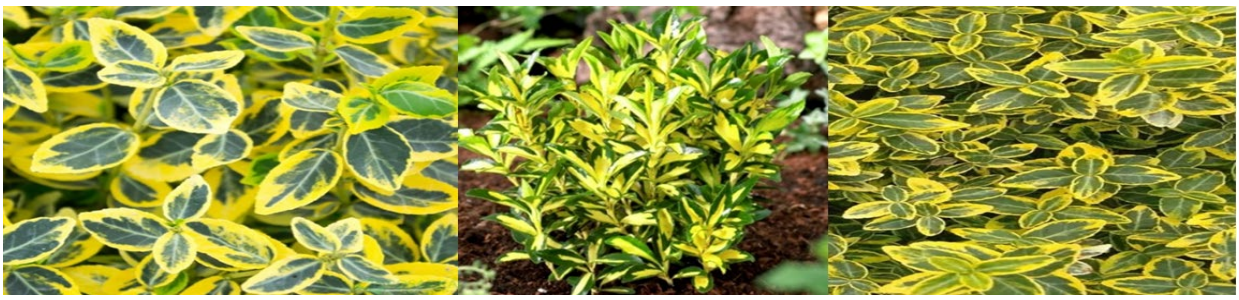

Figure 4. E. japonicus [31]

E. japonicus (Fig. 4) is an evergreen ornamental bush or small tree, 2–5 m high (sometimes up to 6 m in the wild), naturally growing in Western Asia (Japan, China, Korea). The culture, dating back to the 18th century, actively develops in landscaped areas with a dense, shiny leaf surface, a variety of decorative forms and high resistance to pruning. Roslina has a dense, rounded or branched crown, greenish or brown, smooth, mature trees and develop a gray-brown color. The leaves are simple, skinny, eliptic or egg-shaped, 3–7 cm long, 1.5–3 cm wide. The edge of the leaf blade is jagged, sometimes entire. The upper surface is dark green, shiny; the bottom one is light.

The flowers of the plants are small (up to 1 cm in diameter), greenish-white, indistinct, collected from small umbrella-like flowers, 3–9 pcs. The flower stalks are thin, up to 2 cm thick. The flowers are grass-cherry. Filled with gnats. The fruit of *E. japonicus* is a trignid capsule with a diameter of up to 1 cm, the bud is green, when it reaches a horny-orange color. The inside is dark brown, cover it with bright red or orange arilla (meat). Reaches spring (yellow-leaf fall).

E. japonicus - shaded, ale light-loving rose, good to tolerate partial shade. Gives advantage to the kindred, the good, the peaceful Volumic soils with a neutral or mild reaction. There is a short-term drop in temperature to – 15°C, but in the lower regions it can freeze, which often occurs in containers or winter shelters. It is good to tolerate gas pollution and cuttings.

It reproduces by plants, green and woody livestock, and also by nurseries. The most advanced method is live infusion (worm-lime) with vicoristic root stimulants.

E. japonicus is a popular ornamental gardening element. Vikorist is used for creating living spaces and borders, in formal plantings (topiary art), as a solitaire in park compositions and in container landscaping and interior design (zocrems in winter gardens). The species is often used for color contrasts in landscape compositions.

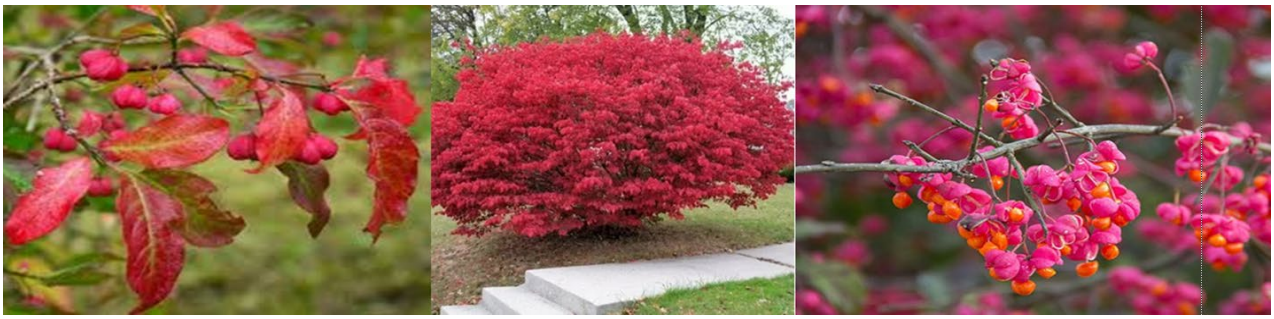

Figure 5. E. europaeus [34]

E. europaeus is a deciduous chagarna or a small tree 2–6 m high (sometimes up to 7 m), with a dense, spreading crown (Fig. 5). Growth is gradual, long-term (up to 50–60 years). The bush may be erect or have some bent branches, evenly sided at the transverse cut, greenish-brown. Young pagons have characteristic quadruple ribs, which is a diagnostic sign of the species. The bark is gray-brown and becomes cracked as it ages. The leaves are simple, eliptic or lanceolate, 3–8 cm long, with a serrated edge. The upper surface of the leaf is dark green, the lower surface is light green. The petioles are short (up to 1 cm). In spring, the leaves swell with a bright red or purple coloration, which makes them highly decorative. The flowers, as in the first representatives of the fungi, are greenish-white or yellowish-green, up to 1 cm in diameter, collected in 3–7 from an umbrella-like flower. There are two flowers, with several pellets. The color fades from the grass-cherry. It is consumed with komakha (entomophilous plant). The fruit is a bright, four-nestled capsule with a diameter of 1–1.5 cm, the bud is green, when reached it is erysipelas or crimson, often with several convex blades. The inside is dark brown, cover it with orange arilla (meat). The fruit reaches the cow and is often lost on the growth until winter, giving it a decorative appearance. All parts of the plant, the fruit is frozen, and peeled off when grown in the middle.

E. europaeus is a light-loving plant that grows well on rich, fresh, clayey or loamy soils. Provides superiority to vapid substrates. Dry resistance - medium, frost resistance - high (visible up to –30°C). Do not endure the dryness of water and stagnation of water. Due to its durability and inflexibility, the species is often cultivated for reforestation, strengthening of groves and layers.

It reproduces by plants, live bait and root shoots. Root shoots are actively forming at the base of old bushes, which facilitates natural vegetative renewal.

E. europaeus is resistant to most illnesses and diseases, but unfriendly minds can be attacked by euonymus milia, popelitz, and hogweed. In the middle of the disease there is widespread flatness, mildew, and bushy dew. We recommend sanitary pruning and prompt removal of weeds.

This tree is highly valued for its bright autumn leaves and decorative fruits, which are preserved until winter. These authorities often rely on landscape design for the creation of living creatures, group and solitary plantings, as well as in the forest kingdom for strengthening yars, ridges, like land reclamation, and in folk medicine, like dzherelo alkaloids and glycosides (with great care) [22, 26].

Due to the loss of fruits, the sprout is not recommended for planting in children's gardens or school areas. This is a typical representative of the flora of Europe, which plays an important role in natural ecosystems and is a valuable decorative weed for green living.

Type of expansions in Central and Modern Europe, in the Caucasus, and in Asia Minor. In Ukraine, it occurs throughout the entire territory, except for the extreme steppe zone and the high mountains of the Carpathians. Grows in forests, on knots, in chagarb thickets, ravines and river valleys. Most often it is harvested near the warehouse of broad-leaved forests (oak, hornbeam), where it creates undergrowth or clumps.

E. verrucosus is a deciduous chagarna or a small tree that has acquired its name “warty parts” through the characteristic black warty parts of growths on young branches (Fig. 6).

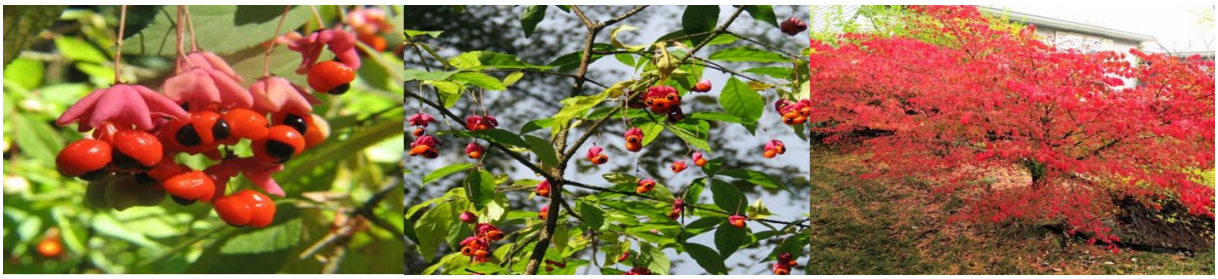

Figure 6. E. verrucosus [33]

The bush grows up to 2.5–3 m in height, with a rounded, densely leafed crown. In rare varieties it can reach 4 m. The width of the bush, as a rule, approximately corresponds to its height, creating a round, thick crown. The average one can reach 1.5 to 2 m in diameter [11, 17, 20].

Young shoots are thin, brown-green, densely covered with dark, corky growths - “warts”. The bark becomes grey-brown or dark grey, cracked.

Leaves (Fig. 7) are opposite, eliptic or ovoid-lanceolate, 3–7 cm long along the edge of the grain-serf part, the top is pointed. The spring leaves are bright green, the intermittent leaves are dark green, and in the spring they bloom with a dark purple or fiery rye-colored bloom - *Eunomus* itself is especially decorative. The flowers of *E. verrucosus* are even smaller (5–7 mm), inconspicuous, greenish-brown, spread out in groups of 2–5 in the axillary flowers. The fruits are even decorative, but are detrimental to humans (they contain alkaloids and glycosides) [22].

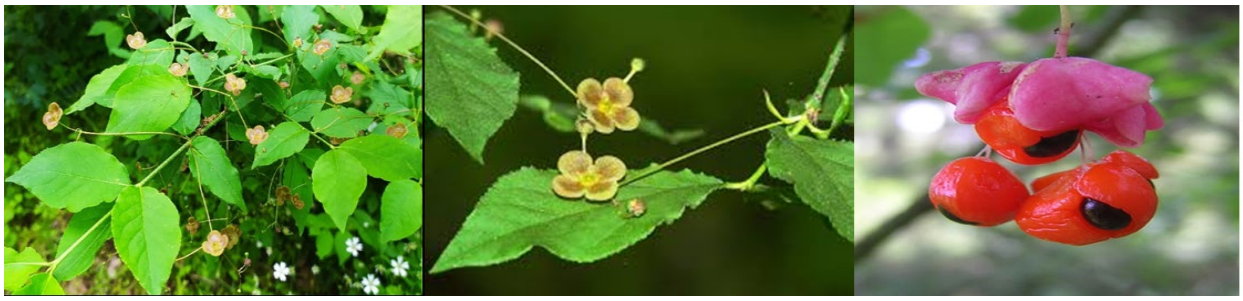

Figure 7. Leaves, flowers, fruits of E. verrucosus [33]

E. verrucosus grows in Central and Contiguous Europe, throughout Ukraine, except for the most important areas of Polissya, especially in deciduous and mossy forests, in forests, skhila, near chagarnik thickets, often on vapnyak soils. To love dearly, dearly, well-drained lands.

The ecological role of this plant is important because it is an important food plant for birds, who eat fruits and spread sap. The shading is good for ventilation, which often grows near the understory. It plays a stabilizing role in biocenoses, significant ridges and disappearing erosions.

Autumn leaves and brightly colored fruits of *E. verrucosus* often grow in parks and wooded areas.

In traditional medicine, vicorism is used with caution in small doses as a transmissible and anthelmintic infection. All parts of the plant are rotten, especially the fruits - a stench can cause vomiting and a confused heart [22, 26]. Regardless of the situation, the birds themselves actively spread throughout the world, so the toxicity for them is insignificant.

I would especially like to add *E. fortunei* (Fig. 8). Ceroslina is rich river, evergreen; It has a creeping or liana-like appearance, is suitable for creating thick plantings or climbing along the supports of the wind suckers [29, 35].

Figure 8. E. fortune [35]

This *Euonymus* bears the name of the Scottish famous botanist Robert Fortune, who knew and brought the plant to England. The species has a large natural range, including many parts of China (from the sea level to an altitude of 3400 m), India, Indonesia, Japan, Korea, Laos, Myanmar, the Philippines, Thailand and Vietnam [11].

Figure 9. Shoots of E. fortunei [35]

The height of the plant depends on the molding method and reaches 0.4 to 1 m. The logs are thin, long-lasting, greenish-brown, densely ironed, filamentous, often with a ribbed surface, with long-lasting wood (Fig. 9).

The leaves of these euonymus are simple, skinny, opposite, ovoid or elliptic in shape, with a jagged edge (Fig. 10). The length of the leaf should be 2–6 cm, the color varies from dark green to lined (with yellow or white edges).

Figure 10. Leaves of E. fortunei [35]

The leaf shape is oval, leathery, shiny, with jagged edges. On top of everything, the leaf surface tends to change its fermentation throughout the growing season: in the spring it becomes horny and all winter it pleases the eyes of the ruler.

Roslin forms invisible, small greenish-white flowers, collected from small umbrella-like flowers (Fig. 11).

Figure 11. Flowers of E. fortunei [35]

The color comes out most importantly in the black lime, but the flowers do not lose their decorative value. The fruit is a round, four-sided capsule, when horny, with bright orange hues in the middle. There is a trace of the mother on the street, so that the stench is gone.

Roslina grows well, forms thick plantings, tolerates pruning well, and is easy to trim to the required shape. The building may spread along the ground or hang along the supports.

E. fortunei is most noticeable in dormouse plots (also the most beautiful). A yellow color may become darker in a pigment. The desired species will require rich, slightly moist, well-drained soils. The winter hardiness of the plant is high, with temperatures down to –25°C; In winter, the leaves may freeze, but will soon renew. Pruning must be carried out in the spring using the method of maintaining the shape.

Reproduction of representatives of the genus *Euonymus* occurs both naturally (generatively) and through vegetative methods, which is widely used in ornamental gardening and forestry. Choose a way to keep in mind the biological characteristics of the species, with the aim of developing the minds of the middle class.

This creation is not typical for wild populations. This occurs in capsule-like fruits, which, when opened, wilt the caryopsis, covered with a bright orange or erysipelas (Fig. 12).

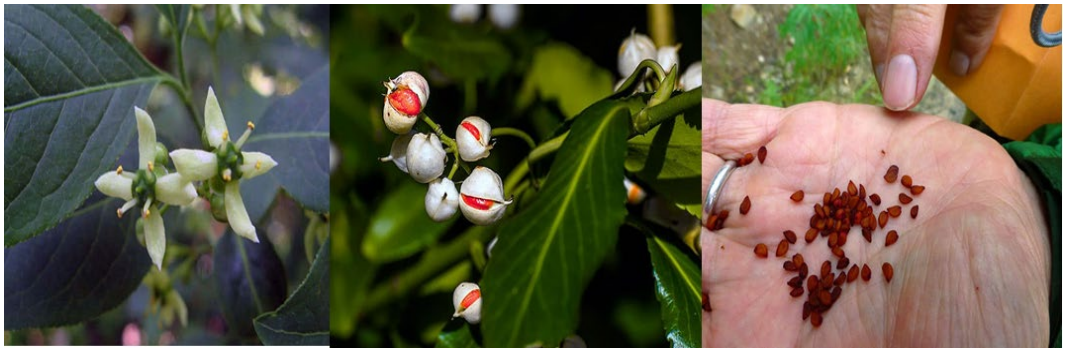

Figure 12. Fruits and seeds of E. fortunei [35]

I'm going to get ready to go to work with the woman. The resin material is placed near the water wells of potassium permanganate. This is necessary for removing acidic and healthy seed material. Well-formed and well-formed sediment settles to the bottom of the vessel, and unclear and does not spill onto the surface. *E. fortunei* hangs near wet soil in the spring. In this case, sow and mulch with humus or straw. During the winter period, the process of stratification of the plant material begins, and *E. fortunei* emerges in the spring.

Hanging walls (Fig. 13) can be installed in the spring, otherwise they need to be stratified. For the germination of seed material, most cultivars require stratification (100 to 250 days), which is accompanied by a long period of dormancy. For this purpose, mix with soft peat or sand, and then place in a refrigerator (+2°C). The process of stratification continues throughout the winter period. Spring seeding material is hung on a plot of open ground.

Figure 13. Sowing of seeds of E. fortunei [55]

After 3 days, planting material is installed in a permanent place. In this case, during the process of replanting the plants, pinch the tops. In addition to everything, the seedlings (Fig. 14) are closed for the winter period.

Figure 14. Seedlings of E. fortunei [30]

In rozsadnytsia, vikory is rarely propagated in the present day, since it does not guarantee the preservation of decorative characters of the varieties and it is a difficult process. In nature, *E. fortunei* plants can be spread by birds and other creatures and transferred to large areas.

For the production of *E. fortunei* planting material, a vegetative propagation method is often used, which ensures the preservation of maternal signs and powers. Living is the most extensive method of planting. For this purpose, green live bait (inflight) or wood (in spring and spring) are harvested (Fig. 15). To improve the move-ment of the rooted stimulants, root solution (heteroauxin, IMC).

Figure 15. Cuttings of E. fortunei [35]

The optimal time for preparing live bait is the third decade of the worm. Prepared micropagons with a depth of 5–7 cm from two or three between nodes, it is necessary to treat them with a rooting stimulant. Micro-pagons are planted at 45° in a mixture of peat and sand. Next, water the live bait material with warm water (23°C). Live bait is covered with agrofibre or it creates a greenhouse effect, so that it takes root over a length of 4–6 rows (Fig. 16).

Figure 16. The process of growing planting material of E. fortunei [35]

Watering gardening material every day. Before the start of the growing season, the root system will be established on live bait. The appearance of new leaves on live bait indicates that regeneration of the root system has begun. Then carry out hardening of the gardening material. For the winter, cover it with compost, humus or peat (Fig. 17).

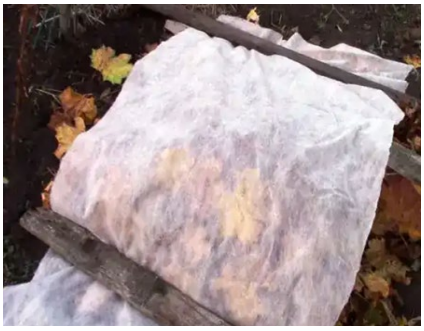

Figure 17. Shelter for winter of young seedlings of E. fortunei [30]

Pagoni, which spread along the ground, easily root at the nodes upon contact with soil. The bottom of the well-formed pagin is laid down to the ground and covered with a loose substrate or soil. In this case, do not dry the top of the pagon (with a depth of 15-20 cm). Throughout the growing season, the soil on the pagon is regularly cultivated. In the first decade of the worm, the rooting seeds emerge from the mother's bush and plant in their permanent place. The name is a method characteristic of natural propagation of *E. fortunei*, in which the growth expands, creating large bushes and can occupy large areas. Gardeners use nozzles to remove gardening material without special equipment (Fig. 18).

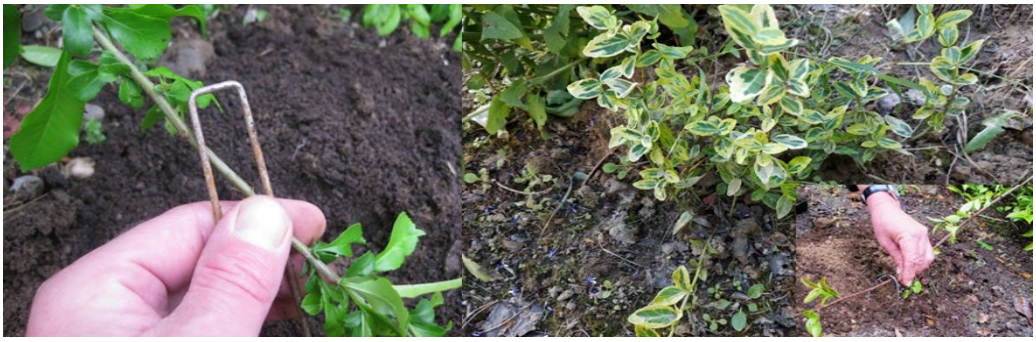

Figure 18. Drop-offs of E. fortunei [35]

Mature shoots of *E. fortunei* with a well-rooted root system can be propagated by plantings under the bush (particulations). This method allows for less widening, but allows you to quickly cut off a bunch of life-long lines (Fig. 19).

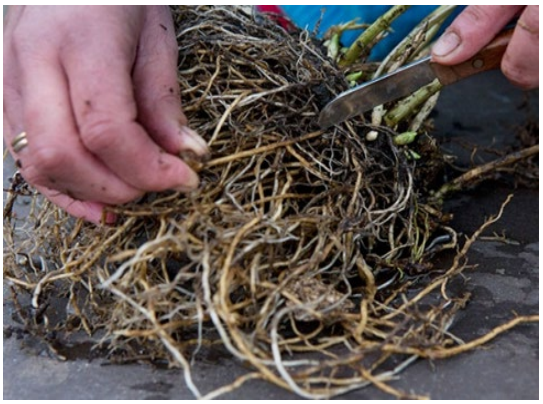

Figure 19. Division of the bush E. fortunei [30]

This method is used to propagate dwarf clones. In such varieties, the root system is formed finely, and root shoots appear in the skin. The alternative to this process is to dig up the stem of the tree, and then cut it into pieces with a knife or other sharp tool. When done, shorten the pagon by 50%. Remove the old gardening material and apply it to a new place. The technological operation is called not to harm the plants, and the plants are visible in a good way. Particulate the clumps of mother shoots in spring or spring.

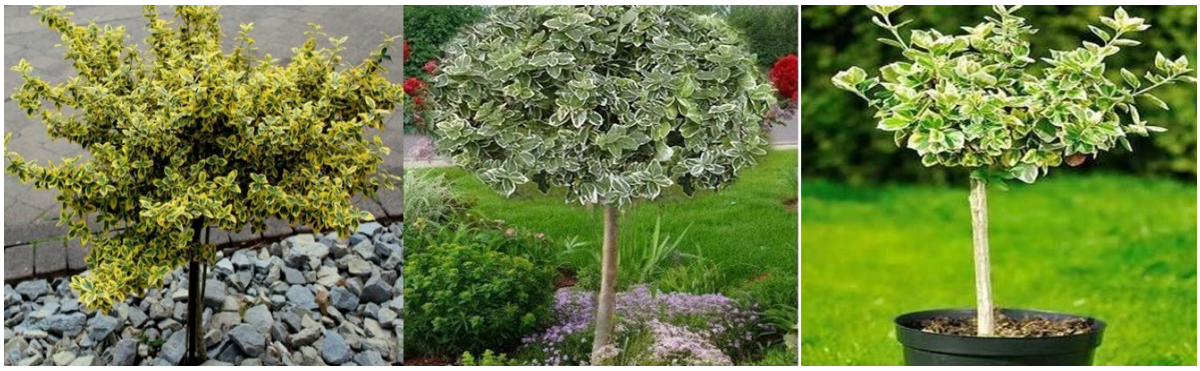

Figure 20. Grafting planting material [30]

Chips (Fig. 20) are rarely cured, it is important for rare decorative forms and the preservation of valuable varieties. Most often they are pinched on closely related *Euonymus* species with high winter hardiness. For this purpose, take a well-formed single growth of the wild form, which will serve in the core of the wood. The cultivation must be carried out as long as there are friendly minds on the street. You can work at the end of the linden tree. In this case, cut the shield with a piece of paper on the pin and insert it at the edges on the bark of the pin (it looks like the letter "T"). Before the phase of screeching, it is necessary to remove the top of the wood chips above the shield. The brunka will create a layer that reaches up to 100 cm until the beginning of autumn.

Around the cultivars of *E. fortunei*, they create shoots that are suitable for the propagation of decorative forms of plants. Young plants are carefully dug up, and then replanted in a new place and mature in the face of intense sedative changes.

Vegetative methods (living, planting) guarantee identity with the mother plant, the ability to create decorative forms, which is widely used in ornamental gardening.

The most promising for practical cultivation in the minds of landscaping and ornamental gardening are vegetative methods of propagation, growing livestock and plantings, which will ensure the mass removal of planting material and conservation of characteristic decorative authorities.

Figure 21. Harvesting of cuttings material [own photo]

Figure 22. Cuttings of E. fortunei [own photo]

An experimental part of the qualified work of vikonan in the minds of a sporuda closed to the ground in the initial laboratory of Landscape Design. At the root of the gardening material for root propagation of *E. fortunei*, the stem micropagons were harvested at a depth of approximately 6-8 cm (Fig. 21-22). Live bait material was kept in water for 1 year.

The temperature during the hour fluctuated between +18 - +26°C, and the humidity was 60-70%. For the leather version, 80 pieces were prepared. live bait For livestock, mother plants of *E. fortunei* (Silver Queen and Emerald Gold) were harvested for up to 5 years. The substrate is made up of mixed peat and river sand. The depth of application to the gardening material was 2 - 4 cm.

Poshukova's work was carried out in three directions:

1. Analysis of the term baiting on the process of coregenesis in stem baitfish *E. fortunei*.
2. Revealing the influx of form features on the uniqueness of stem micropagons.
3. Infusion of Rhizopon AA poeder to renovate the root system of live *E. fortunei*.

The experimental design included variations, factors such as the type of substrate,
terms of life, the form and characteristics of the auxin nature (Rhizopon AA poeder).

Experimental research was carried out on the offensive scheme:

Factor A – type of substrate: 1) forest soil; 2) sand; 3) peat (control). Factor B – term livestock: 1) control (10.04); 2) 10.05; 3) 10.06; 4) 10.08. Factor B – form features: 1) control (Silver Queen); 2) Emerald Gold. Factor G – semi-auxin nature: 1) Rhizopon AA poeder; 2) control (water).

The treatment of gardening material with physiologically active chemicals was carried out according to the instructions for the plant (Fig. 23).

Figure 23. Treatment of cuttings with root formation stimulator [own photo]

The work was condensed to the methods of efficient propagation of ornamental and flowering plants in the Botanical Garden of Ukraine [14]. The results were processed using additional special programs.

Reproduction of plants is a biological feature of a living organism, in the process of which new individuals are formed. The essence of it lies in the ability of the body to form similar parts to itself. There are two ways of propagating growing organisms: plant and root (vegetative). The basis of root-hair creation is the regenerative ability of the body to renew the waste of organs. For the minds of vegetative propagation, the new generation is formed from somatic tissues. It should be emphasized that signs of decline are preserved in everyday life [3, 9, 12, 18].

In addition to everything, vegetative propagation is actively developed in nurseries for the production of gardening material with characteristic features (highly decorative crown, planted with leaf shape), such as for plant reproduction on the plots often transmitted or not transmitted [2, 25].

Reproduction of plants with the help of stem lifers is a common method of root propagation. When living, the integrity of the plant organism is destroyed, and for the gardening material it is necessary to create drains for the regeneration of damaged organs [19, 25].

One of the important changes for the renewal of the root system in mikropagons is a substrate [5, 10], which is characterized by optimal agrophysical characteristics (Table 1).

The results of the experimental investigation show that the minimal indicator of the root-creative nature of the *E. fortune* microorganisms was recorded in the variant where the field soil was vicorized. The maximum value of rhizogenesis was observed in the variant where peat was vicorized.

Table 1. Effect of substrate type on rhizogenic capacity of *E. fortunei* cuttings

Experiment option	Decorative form	Restorative capacity, %	± to control
Field land	Silver Queen	62	- 36
	Emerald Gold	59	- 37
Sand	Silver Queen	87	- 11
	Emerald Gold	89	- 7
Peat (control)	Silver Queen	98	-
	Emerald Gold	96	-

At the same time, there was a difference between the options, and it is important that vegetative propagation of decorative forms of *E. fortunei* must be carried out in peat.

Analysis of the results of experimental testing to determine whether the type of substrate influences the regeneration capacity of livestock in monitored cultivars.

The results of the research into the regeneration capacity of *E. fortunei* livestock are presented in Table. 2.

For the livestock on 10.05 and 10.06, the indicator of regenerative yield was not likely to vary under control, but during the livestock on 10.08, a change in the creative yield was recorded.

Table 2. The influence of the term cuttings on the process of adventive rhizogenesis

Option	Decorative form	Restorative capacity, %	± to control
Control (10.04)	Silver Queen	93	-
	Emerald Gold	95	-
10.05	Silver Queen	96	+ 3
	Emerald Gold	98	+ 3
10.06	Silver Queen	95	- 1
	Emerald Gold	98	0
10.08	Silver Queen	48	- 48
	Emerald Gold	41	- 57

During the investigation, it was revealed that the period of preparation of gardening material coincides with the processes of creation of the root system in micro-plants of decorative forms of *E. fortunei*. The early stages of preparing live bait form the minds to the probable improvement of the regenerative capacity of them, the lower development new agrotechnical input at a later date.

The enhanced regenerative properties of live bait material are supported by phytohormones (biologically active substances) [28]. In this case, they activate the processes of establishment and growth of roots, and also ensure faster rooting in the stem microorganisms of plant-based organisms that are difficult to root [13].

Due to its physiologically active nature, in the process of propagation of decorative forms, *E. fortunei* creates a very friendly mind by controlling the processes of formation of the root system of gardening material (Table 3).

The results of the investigations made it possible to reveal that the presence of physiologically active compounds does not affect the rhizogenic growth of *E. fortune* microorganisms. In the shock variant, the value of the root-creating yield of live bait was in the range of 99-100%, which was 1-4% higher than in the control. Please note that the root system of live bait fish in the previous version was more disturbed.

Thus, the harvesting of live bait material Rhizopon is a clear indication of a well-developed garden material.

Table 3. The influence of Rhizopon AA poeder on the reproduction process of the root system

Option	Decorative form	Restorative capacity, %	± to control
Rhizopon	Emerald Gold	100	+ 4
	Silver Queen	99	+ 1
Control (water)	Emerald Gold	96	-
	Silver Queen	98	-
HIP $_{05}$		7,53	

E. fortunei is one of the most popular plants for landscaping and decoration of garden plots and garden areas [7-8, 20]. In European countries, you can see it on the streets, in public gardens and in private gardens [15, 24].

The taxon is predicted to be similar to China [23].. Vin vikorist is found in the green dominion, and today it is found in gardens of various climatic zones. Agricultural technology for its cultivation is fundamentally different from other Euonymus cultivars. This chagarnik is slanky. In addition to everything, the taxon belongs to evergreen crops, which grow in high latitudes [23]. There are a number of decorative forms (Fig. 24), which vary with the color of the leaves, and harmoniously decorate your pot or mixborder.

Figure 24. Leaves of E. fortunei [29]

The representatives of the gardening and park government appreciated the decorative power of this type and used it for the improvement of public gardens and parks. Plant *Euonymus* in effective single plantings (Fig. 25).

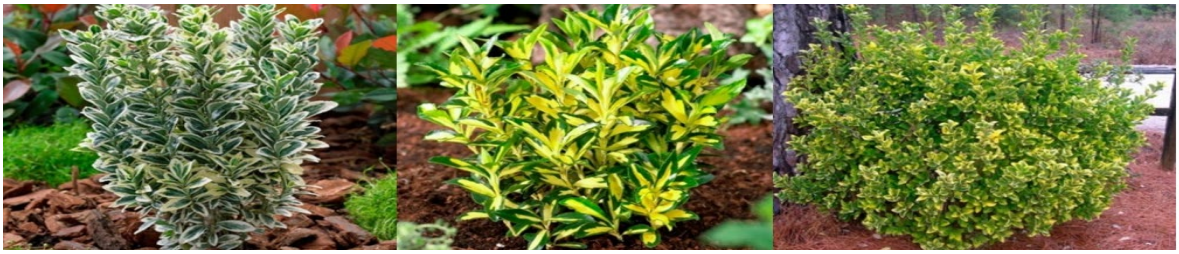

Figure 25. Saltwater plantations of E. fortunei [29, 35]

E. fortunei can be grown in the yakost of ground-covered growths under the crowns of trees (Fig. 26). It is difficult for other types of plants to grow, but it will be better growth in the minds of light deficiency, as well as clones from lined leaves. At the same time, the decorative forms of *Euonymus* are transformed from ground-covering crops in liana-like (coils), but not very tall. For optimum results, plants of these varieties can reach 200 cm in height (Fig. 27).

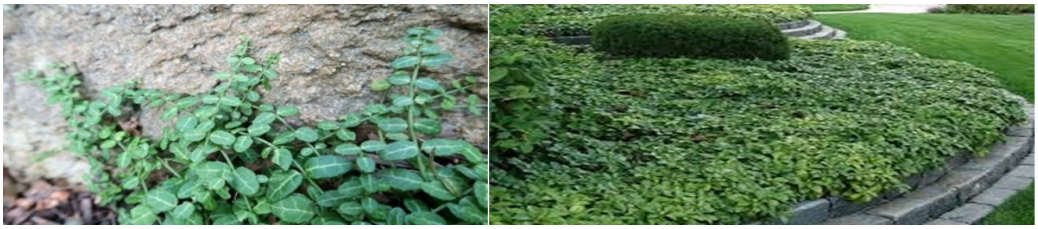

Figure 26. E. fortunei [29]

Figure 27. E. fortunei in vertical landscaping [35]

On the right, *E. fortunei* looks highly decorative not only in solitaire plantings, but also in group ones. They can be used to form living gardens, or even borders (Fig. 28), with which *Euonymus* looks attractive both in summer and spring.

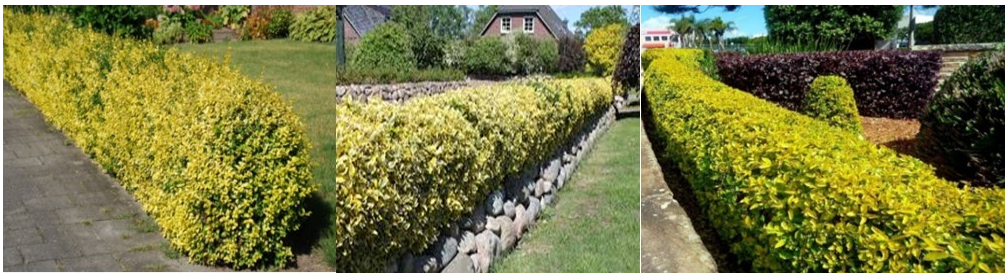

Figure 28. Hedge E. fortunei [35]

Euonymus requires periodic pruning, which is why the bush begins to intensely gel, which adds to its decorative appearance. Shaping pruning makes it possible to create unique topiaries (Fig. 29).

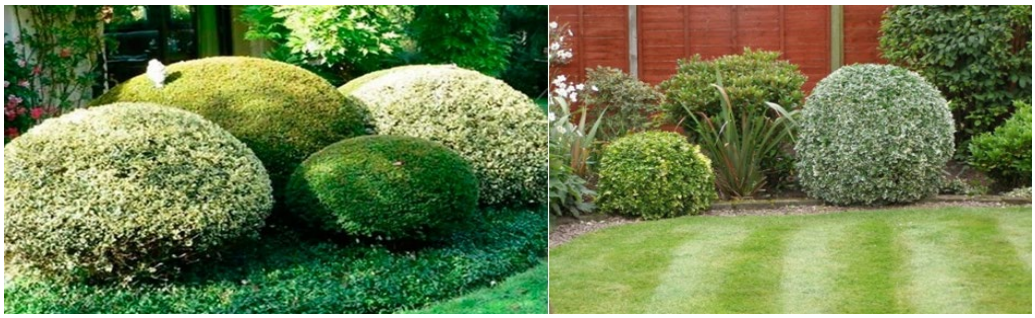

Figure 29. Topiary figures of E. fortunei [29]

Container gardening (Fig. 30) is a current and effective method of improving urban space, which is becoming increasingly popular in the minds of the urban middle surrounded by space. One of the promising plants for this type of landscaping is *E. fortunei*.

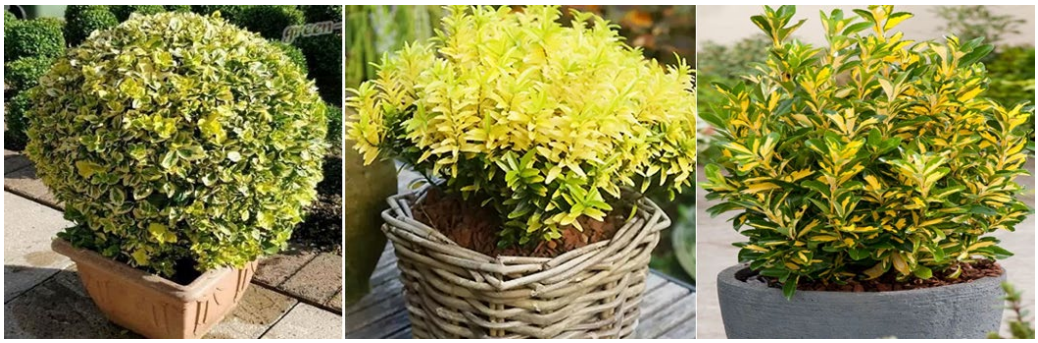

Figure 30. Container culture of E. fortunei [35]

Container culture facilitates the growth and development of plants, preserving their decorative properties throughout the growing season.

Surrounding everything, *E. fortunei* grows like a room-balcony plant. Therefore, winters are good at temperatures above +20°C.

The decorative form of *E. fortunei* goes well with other types of growths in rockeries and alpine hills (Fig. 31). Vin looks great in compositions with coniferous cultivars, as well as other chagarnas.

Figure 31. E. fortunei in garden design [35]

E. fortunei decorates the base of bushes and trees, hanging in front of conifers (*Thuja, Picea, Juniperus, Taxus*) (Fig. 32).

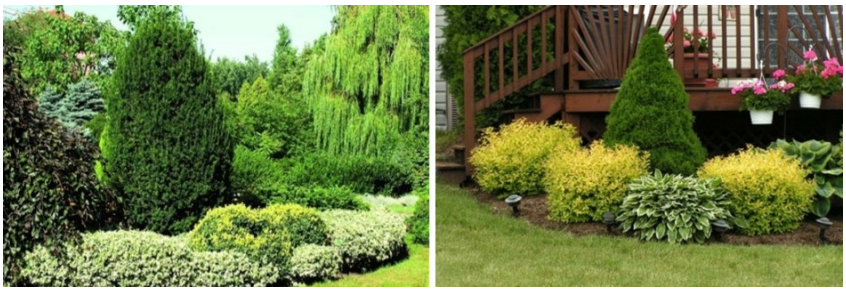

Figure 32. E. fortunei in landscaping [35]

E. fortunei shows a slight deficiency of light, but its pockmarked form is better suited to grow on the dormouse plot and the leaves are more colorful. Do not plant it in lowlands or plots with nearby groundwater deposits. Vin will be pleased with its active growth on native soil with a neutral reaction of the middle ground. Crushed stone is poured onto the bottom of a garden measuring 50x50 cm to remove excess water, and then covered with fertile soil. On acidic soils, add 200 g of vapnyak material.

Planting material is better to plant in spring, but autumn is also possible planting. The soil is compacted around the seedling, intensively watered and mulched with peat or compost. At the same time, within 10-15 days after planting, the soil moisture is controlled.

Euonymus does not vitrify the soil, but it is not necessary to sacrifice the soil for the minds. During periods of regular rainfall, water rises and the excess moisture in the soil negatively affects the development of the root system.

During the growing season, *Euonymus* survives several times: the first - add nitrogen fertilizers in the spring, complex vicorous fertilizers, and stagnate phosphorus and potassium fertilizers in the spring. In addition, in the spring, add compost at a rate of 3-4 kg/m² of near-burning stake.

Conclusions

It was discovered that the root-creating properties of *E. fortunei* microorganisms are infused with a substrate during the preparation of gardening material. The most suitable substrate for the rooting of live baits of the target taxon is peat. With this, the indicator of rhizogenic content became 96-98%. For root-haired propagation of *E. fortunei*, it is necessary to completely sap live bait with a stretch of cherry-worm. The indicator of the creative output of micro-panels in the control variant was between 93-95%, and in the last variant (10.08) it was 48-57% less. Treating the gardening material with a root stimulant (Rhizopon) promoted the development of the root system. Representatives of *E. fortunei* form high decorative plants in solitary and group plantings and associate with other taxa. The medical diversity of the vicor of *E. fortunei*, which contains its unique element in the mold of the absent medium.

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