Planting and Protection Measures for Seedlings in Urban Landscaping Construction

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Abstract: In this paper, the urban landscaping construction is conducted to explore planting methods and fixed measures of seedlings. In the preparatory stage of planting, site investigation, soil conditioning, seedling selection and transport, and the preparation of relevant materials are taken to lay the basis for growth. During the construction, we strictly control operation procedures such as excavation of planting pits, seedlings fixation, watering and support to enable successful implementation of planting. It mainly includes the scientific management of watering and fertilization, pruning and shaping of seedlings, prevention and control of pests and diseases, environmental protection and other aspects. Based on the construction of skilled teams for planting and protection, a quality supervision system is established and a long-term maintenance mechanism is created, which guarantees the work of seedling planting and protection with comprehensive measures to promote the optimization and upgrading of urban ecological environment.

1. Introduction

Seedlings are the main seed of landscaping. The quality of planting and the protection status after are directly related to a success of greening efforts and exertion of ecological functions. Nevertheless, there are problems such as non-standard construction and low survival rate of seedling planting in the current stage of urban landscaping construction. Meanwhile, protection measures are frequently not systematic, scientific and may be difficult to scale since pest threats are complicated as soon as you begin to apply systemic strategies for coping with environmental change. Consequently, a thorough study of seedling planting key technologies and the establishment of an all-scenarios protection framework is urgent for improving urban landscape environment quality and sustainable development.

2. Key Technical Points for Seedling Planting in Urban Landscaping Construction

2.1 Pre-planting Preparation

Ground prepping includes establishing your seedlings initial growing conditions from several angles before the seed can be planted. Initial perform site investigation and design verification. Construction Drawings: Check how many, where they are planted, planting pit parameters and specifications of the seedlings At the same time study local climate conditions, terrain and underground pipeline location to harmonize the design with site conditions. Secondly, perform soil improvement. Soil pH, organic matter content and permeability. Compacted soil should be plowed over up to 30-40 cm deep. Lime for souring the acid soil and sulfur powder for souring the alkaline soil. In cases of low fertility, add half well-rotted organic fertilizer. Design open ditches or blind conduits through the areas of low permeability hydrology. Furthermore, select and transport seedlings. Selecting plants will be varieties bred for the region, and seedlings produced from those as well as grown on in such a manner that they boast vigorous root systems and have sustained no damage at the roots. Soil ball size for balled-and-burlapped (B&B) seedlings, should be 6-8 times trunk diameter at caliper near the base, and moisture-retaining wrapping requirements. Protective soil around the core roots (hu xin tu) should remain on bare-root seedlings. Protect from strong light and high temperatures, which can cause crushing damage. Finally, prepare materials. For drivable

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vehicles, used tools (like shovels and cranes), maintenance materials (such as organic fertilizer, fungicide) should be ready and pass handover test [1].

2.2 Planting Process Operations

Planting is a repeatable process governed by very specific control over key steps. Dig pits when you are planting them based on seedling specifications Pit diameter for B B seedlings should be 50 cm greater and the depth 30 cm deeper than the ball of soil. In case of bare-root seedlings, the width should be about 20-30 cm more than the root spread. Clear out debris and disinfect the pit. The bottom can be filled after a levelling of loose soil or organic fertilizer. Cut off any damaged roots and diseased or weak branches before planting. B&B seedling wrap removal. Position the seedling, adjust how vertical and the best angle For bare-root seedlings: While backfilling halfway, lift the seedling up so the roots can spread out—backfill in layers and tamp down securely. Soak well in immediately after planting (settling-in water). Insert a water pipe for supplementary watering of large B & B seedlings. Look for soil settlement and assist 4 more soil if required. Use triangular supports to help trees with a caliper larger than 5 cm. Cover Wrap Support Contact Points With Smooth. And finally provide moisture retention and weed suppress with straw mulch [2].

3. Seedling Protection Measures in Urban Landscaping Construction

3.1 Precise Water and Fertilizer Management

3.1.1 Water management should follow the principle of "supply on demand, avoid imbalance."

However, with seedlings planted in the ground for the first time, their root systems are not yet established. Water in well twice with settling-in water (under moisture and close contact of soil to root) within 7 days after planting so the roots settle in and start healing/growing. The water demand is very stable during the growing season; even watering every 20 days meets the basic needs. Increase the frequency of soil irrigations and rely on spraying foliage to increase the air humidity which reduces transpiration losses in high temperatures and drought conditions. In the rainy season, reduce watering timely, clean the drainage system (open ditches or underground pipes) in the growing area to prevent waterlogging that leads to root oxygen deficiency and rotting. When watering: irrigation water temperature should be close to ambient temperatures; if you use groundwater, the roots would suffer a cold shock it is necessary to let the water warm beforehand, avoid watering at daytime high temperatures in order to minimize evaporation and reduce the risk of root scalding; anti-transpirants may be used up three times in each of that first month after planting, but excesses must not be used because it could affect normal physiological functions [3].

3.1.2 Fertilizer management should follow the principle of "stage-specific adaptation, scientific application."

Fertilize according to the growth stage. Sapling stage (spring): apply nitrogen fertilizer as the main, such as urea, 10-15kg per mu, to enhance leaf buds and photosynthesis. Flower and fruiting stage (summer): A phosphorus- and potassium-rich fertilizer should be emphasized (e.g. potassium dihydrogen phosphate) to supply nutrients required for flower/fruit quality; Fall One Way: increase potassium fertilizer use to slow down growth (eg potassium chloride, 7.5-15 g/m²) for developing lignification as well as cold hardiness. Change application methods primary by seedling type: For trees, use the circular trench method; dig a properly deep trench the outer edge of canopy projection, uniformly distribute fertilizer and fill back soil to direct roots outward. For shrubs, then the band application method: trench along the plant row for easy operation and even distribution of nutrients. Foliar application of micronutrient fertilizer (eg, boron, potassium dihydrogen phosphate) during key growth stages like flowering and fruiting can rapidly help fill in nutrient shortages. Do not let fertilizer touch roots directly: Dilute it, or mix it with soil first to reduce high concentration root burn [4].

3.2 Pruning and Shaping

3.2.1 Pay attention to the phenological period of seedlings.

Snip off sprouting seedlings of spring-blooming trees (peach, apricot) after bloom; cutting them back in fall loses flower buds because this occurs in fall. Prune autumn-flowering seedlings (e.g. camellia, osmanthus) in the winter-spring dormancy phase - when leaves are shed but nutrient consumption is low - to avoid affecting growth. The most effective time to heavily thin deciduous seedlings is during their dormancy in the winter, while they are largely inactive and neither actively using water nor nutrients. Contrary to what one might imagine, evergreen seedlings can be lightly pruned at any time in the growing season; however, winter pruning should be avoided since this may result in foliage (what botanists refer to as "branch density") becoming sparse instead of dense, making them less appealing in the landscape and particularly deficient with respect to their capacity to resist cold.

3.2.2 Differentiated operations, balancing growth needs and landscape effects.

Tree pruning should ideally form the tree structure according to cultivation objectives: For a "natural open-center shape", thin crowding and crossing branches for an open, ventilated canopy. If it has a shape of a "central leader",keep the main leader dominant and remove the competing branches-keeping your trunk Vertical. Control the branch point height of street trees to no less than 2.5 m in order not to affect vehicles and pedestrians. Push shrub pruning to protect landscape integrity: At the borders of massed shrubs, add plants for density purposes that will maintain seamless, organic lines and an arch profile. Prune spent flowers directly following their bloom in order to minimize nutrient use, encourage growth of new shoots and prolong flowering. Prune wilted and yellow leaves of herbaceous plants regularly to keep the plant tidy,prevent diseases caused by decay [5].

3.3 Integrated Pest and Disease Control

3.3.1 Reduce pests and diseases through natural regulation

Biological control is one of the основным методами maintaining ecological balance. Use natural enemies of pests, introducing ladybugs (eg, Coccinella septempunctata) or trichogramma wasps to suppress lepidopteran pests in the food chain. Also, use of biological pesticides such as Beauveria bassiana and Bacillus thuringiensis (Bt), with only target specific toxic effects on the organisms while not causing harm to the environment or beneficial organism, will eliminate chemical pollution.

3.3.2 Combine early prevention with direct intervention

Dislodge insect eggs and larvae in buds in early spring by spraying water to wash leaves and branches, along with tilling of soil for reducing overwintering pest bases. Set insect trapping equipment, trap the phototactic pests in time, set up insect-proof nets to cut off the pest transmission path between host plants or between crops and weeds during the growth period, reduce production loss by physical isolation and block access of insects.

3.3.3 Strictly control pesticide use

Chemical control, used as an emergency supplementary measure, must be strictly controlled in the use of pesticides Select highly efficient, low-toxicity and high-residue insecticide such as imidacloprid for aphids with lepidopteran pest cypermethrin. In order to avoid pollution and phytotoxicity due to overuse, use the correct amount and frequency of application as recommended on the label. This will help to control effectively and so ensure to create good paint with coverage on both sides of leaves & branches.

3.4 Protection in Special Environments

3.4.1 Deploy measures in advance

Wrap the main trunks of seedlings with straw or thermal cotton before cold waves to reduce heat loss. I have approximately a million projects on my to-do list, but number one is putting white latex paint on the lower 4 or 5 foot of tree trunks to reflect sunlight during very cold nights when tree barks can crack from large temperature changes. One way you would use local heating, for seedlings that are precious or less cold-hardy is to have in place plastic huts or sheddy type things (pulling netting also doubles as the action of insulating over winter). At the beginning of autumn you are doing tasks such as applying fertilizers with NPK to increase nutrient accumulation and adaptability to cold, preparing for over-winter.

3.4.2 Focus on protection during high temperature and drought periods

Establish shade sheds to deflect direct sunlight during scorching weather. Ensure some space between the canopy and the shed to allow air circulation; if conditions are stuffy, it will impact growth. Spray foliage regularly to cool foliage, provide additional water and decrease leaf scorch and wilting from transpiration water loss [6].

3.4.3 Strengthen response to extreme precipitation

Check for pooling in planting pits and low spots immediately after heavy rain. Pumping equipment for speedy extraction of stagnant water to prevent long-time root soaking. At the same time, examine the drainage body for sinkholes and remove or repair obstructed open ditches & underground pipes so that rainfall can drain quickly to avoid root oxygen inadequacy and decay.

4. Safeguard Measures for Seedling Planting and Protection in Urban Landscaping Construction

4.1 Strengthen Construction Team Building

The planting quality is ensured by the construction team. Concomitant with this, personnel expertise must be bolstered through specialized training and professional guidance.

On ways and the core technical modules training, closely around seedling plant protection key links. Content should include soil improvements (pH adjustment, perk testing/fertility additions), planting devices to keep seedlings stable once planted (applicable standards for hole digging and root treatment/plant placement/layered backfill) & pest/disease management (when/how to use biological/physical/chemical controls). Integrating theory and practice to both explain and demonstrate these tech- nical standards so that they not only master them but also learn the operational taboos will prevent either damage or reduced survival rates from sub-standard techniques in seedlings.

Technical guidance necessitates improved on-site specialized sites, which would send landscape engineers to supervise each site in person. Practitioners have to keep an eye over the whole process, ensuring that operations are compliance, and fixing a mistake such as wrong planting position, mile pit not following the measure regulations or failure on feedstock treatment. They should also take the initiative to communicate with workers to solve technical problems encountered in construction operations, such as the extent of root pruning for different seedlings or adjustments to soil improvement plans, and strive for scientific and reasonable requirements in construction to improve the overall quality of construction [7].

4.2 Improving the Quality Supervision System

Quality supervision weaves through the whole process of plantation and prevention, so as to break quality leak points by forming closed-loop manage through pre-approval, process inspections and post-assessment.

It is the foundation of quality that pre-approval must cement. Examine the construction drawing strictly, examine whether the plant location, tree species, pit parameters and specifications in the

design are consistent with the actual situation on site to ensure that there is no error and the feasibility of design before construction begin to avoid problems later. In addition, do physico-chemical soil tests in the selected area: pH, organic matter content, permeability… to have a basis for new soil improvement conditions and meet the growth needs of seedlings.

The first step of process inspection should prefer to hit the key links. Important factors to inspect include: planting pit specification (diameter, depth, wall smoothness debris removing), seedling fixation posture (trunk verticality viewing aspect orientation root spread), settling-in water irrigation (volume penetration depth). Establish a complete construction log system within your greenhouses, so that it can record the time of construction and the actual operations carried out each day, as well as the growth status of seedlings, and site environment information to facilitate traceability adjustment in a timely manner.

Tracking the survival status of seedlings after an assessment Check the site every week for a month after planting and observe leaf color, how they limbs appear to be doing, whether there are signs of budding new roots, and that no wilting/pests/diseases have appeared. I – Calculate the survival rates after inspections, analyze the reasons for low survival (pd.mainly unsuitable soil, improper planting), and provide data support for optimizing subsequent planting and protection measures [8].

4.3 Establishing a Long-term Maintenance Mechanism

A long-term maintenance mechanism is particularly important for healthy seedling growth over time. Thus, based on the seasonal characteristics and growing habits of flowers a climatic characteristic that accordingly divides main maintenance content in every year spring in to watering and fertilization (supplying moisture and nutrients for flower sprout). Summer mainly covers sunscald protection and drainage, employing spraying, shade cloths and clearance of drains for water logging or to deal with heat/drought. Autumn, with an emphasis on the accumulation of nutrients and resisting the cold, can be fertilized more potassium fertilizer, also remove diseased/weak branches. In winter, frost protection and insulation (e.g., trunk wrapping & whitewashing) is in place to ensure seedlings can endure the winter months creating a closed loop system with embedded seasonality and targeted maintenance.

5. Conclusion

This study summarizes the technical key points of seedling planting and protection measures in urban landscaping construction, as well as targeted safeguard measures. The realistic application of these skills and precautions will reduce the loss rate of seedlings, promote their orderly and healthy growth thus improving their landscape effect and ecological benefits in urban landscaping. With the continuous expansion of urban construction, the relevant departments and practitioners need to keep exploring and innovating, further improve seedling planting and protection strategies, meet the growing landscaping needs under urban development, and help the urban ecological environment step into a new stage of quality development.

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