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VEGETATIVE PROPAGATION TECHNIQUES FOR FODDER CROPS

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Vegetative propagation is possible in many tropical grasses by means of stem cuttings, rooted slips, or sprigs in addition to seeds. Some forage species can be challenging to grow from seeds because of issues with hard seeds, inconsistent seed production, poor quality, dormancy, high seed costs, or low genetic stability. Due to the limited shelf life of seeds, seed propagation may not be dependable in many tropical climates unless adequate storage facilities are provided. Certain grasses don't yield viable seeds, as the hybrid Napier grass. In these situations, vegetative techniques are the only method of proliferation.

Slips or Sprigs

The main planting material in many perennial bunch grasses, like guinea grass, is the division of rootstocks or tufts known as slips or sprigs. To create several slips with roots attached, an established plant is separated. It's possible to dig out most of the clump, allowing only a portion to grow back and replenish the nursery. Certain fodder grasses that yield seeds are also propagated by slips or sprigs for quicker establishment. For bunch grasses, planting rooted slips is more dependable than using stem cuttings. Usually, slide propagation begins with the onset of the wet season. The designated area for slip collection needs to be mowed and the vegetation removed in order to produce slips. After that, the clumps are removed using a hoe and divided into numerous sprigs, each with two tillers. Typically, the sprigs are sown in furrows with some of their stems visible above ground. It's necessary to press the sprigs into the ground.

Stem cuttings:

Certain bunch grasses, including Hybrid Napier, produce canes from their culms, or grass stems. Stem or cane cuttings are commonly employed for propagation in these grasses. However, the reliability of stem cuttings depends on suitable moisture conditions. It is essential to use somewhat ripe stem cuttings. Typically, three-noded setts are cut from the stems or canes and then planted.

Stolons:

Stolons are stems that some forage grasses have that creep along the ground's surface. A stolon is a trailing stem that typically grows above ground and can produce roots and shoots at its nodes, as seen in para grass (*Brachiaria mutica*). For easy propagation, stolons extracted from the parent plant can be used to propagate stoloniferous grasses, which root at the nodes.

Rhizomes:

Rhizomes, or underground stems, are produced by rhizomatous grasses. To harvest rhizomes, dig them up and cut them into pieces that are 5–10 cm long, ensuring each piece has at least two nodes. Grasses propagated through rhizomes tend to grow more quickly in the first year compared to those propagated from seeds, due to their stronger buds, thicker stems, and greater tillering ability.

Stakes:

Stakes, or long stem cuttings, which have a survival rate exceeding 85%, are an effective method for propagating certain fodder shrubs like *Gliricidia* and fodder trees such as *Erythrina*. Thick, wet bark enhances the survival of stakes compared to thin, dry bark. Typically, a shrub stake measures about 125 cm in length and 2–3 cm in diameter. Hardwood cuttings or shorter stakes are also used, especially when a large quantity of propagation material is needed. Stakes can be stored in bundles of twenty-five under cover for up to six months. While seeds encourage tap root development and are better suited for deep soils, stakes promote the growth of lateral roots, which are more appropriate for shallow soils.

Division:

This method involves digging up the parent plant and dividing it into smaller sections, each containing both roots and shoots. These divisions are then replanted. It's a common technique for propagating perennial grasses and clump-forming species. Division ensures the quick establishment of new plants, maintains genetic uniformity, and promotes vigorous growth in the resulting crops.

Tissue Culture (Micro-propagation):

This involves cultivating plant cells or tissues in a sterile, nutrient-rich medium to produce plantlets. This technique is particularly effective for mass-producing disease-free and genetically uniform planting material, ensuring high quality and consistency in the resulting plants.

Care of Propagating Materials

If stem cuttings or setts are used for propagation, they should be planted on the same day or within 24 hours of being cut. Depending on the species, slips, rootstock pieces, and stakes can be stored for two to three days. For optimal crop establishment, it is always recommended to plant stakes, stem pieces, and slips within 24 hours of cutting. Napier grass canes, if stored properly in the shade, can be kept for a few weeks without clipping. All planting materials should be kept in the shade before use. For grass stem cuttings, the recommended planting depth is 2.5 to 4.0 cm when placed horizontally and 4.0 to 7.5 cm when planted upright. For hybrid Napier, the depth should be adjusted accordingly. The planting depth for hybrid Napier should be adjusted to ensure that two nodes are buried beneath the soil. When planting slips or sprigs, the tiller base should be covered at a depth of 2.5 to 3.5 cm. To prevent wilting from surface drying, it's crucial to plant at an adequate depth to avoid moisture stress. Regular firm wood cuttings from trees or bushes should be planted at least 10 to 15 cm deep. For shrub stakes, drive them into the ground to a depth of 15 to 25 cm, and for tree stakes, plant them up to 30 cm deep.

Conclusion

Vegetative propagation techniques are invaluable for enhancing the production and quality of fodder crops. They contribute to the sustainability and profitability of fodder farming, ensuring a reliable supply of nutritious feed for livestock. By leveraging these

techniques, farmers can improve their resilience to environmental challenges and support the overall health and productivity of their agricultural systems.

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