# Stolons, Runners, and Rhizomes

*Understanding Plant Propagation Structures*

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## 1. Introduction

The concepts of stolons, runners, and rhizomes are particularly important for anyone trying to control a weed, plant a flower, or cultivate a specific plant species. Consider the experience of attempting to eliminate elephant grass (Pennisetum purpureum): each time the plant is cut back, it seems to grow stronger and spread further. This frustrating pattern is explained by the plant's underground propagation structures, which allow it to regenerate even after the visible portions are removed.

Understanding these structures — stolons, runners, and rhizomes — is therefore essential for effective weed management, successful cultivation, and a deeper knowledge of how plants grow and spread.

## 2. What Is a Stolon?

A stolon is a modified stem that grows laterally from the base of a plant. It can extend either above or below the ground, sending out roots and shoots at intervals called nodes. These nodes are points where new stems, leaves, and root systems can develop, effectively allowing a single plant to produce multiple offspring and colonise new ground.

Stolons are a key mechanism of vegetative reproduction. Because they store and transport nutrients from the parent plant to new growth points, they allow plants to establish new shoots even in challenging conditions.

## 3. What Is a Runner?

A runner is a type of stolon that grows specifically above the ground. While all runners are stolons, not all stolons are runners — because stolons can also grow below the soil surface. Runners typically sprawl across the ground horizontally, rooting at nodes where they make contact with the soil.

The strawberry plant (Fragaria × ananassa) is one of the most recognisable examples of a plant that propagates via runners. Its long, slender stems spread outward from the mother plant, touch the ground, and form new daughter plants at each node.

## 4. What Is a Rhizome?

A rhizome is a modified plant stem that grows horizontally beneath the soil surface. Unlike stolons, rhizomes are typically thickened and serve as storage organs, accumulating starch and nutrients that the plant can draw upon for energy and growth. Rhizomes also have nodes from which new shoots can emerge upward and new roots can grow downward, enabling the plant to spread and reproduce vegetatively.

Because rhizomes grow underground and store reserves, plants that propagate by rhizomes are particularly resilient — they can survive drought, frost, or mechanical removal of above-ground parts, and regenerate from the stored energy in the rhizome.

## 5. Examples of Stolons

The following plants propagate through stolons:

1. Potato (Solanum tuberosum) — produces underground stolons that swell at their tips to form tubers.
2. Strawberry (Fragaria × ananassa) — sends out above-ground runners that root at each node.
3. Spider plant (Chlorophytum comosum) — produces long, arching stolons with small plantlets at the tips.
4. Bermuda grass (Cynodon dactylon) — spreads rapidly via both above-ground stolons and underground rhizomes.
5. Mint (Mentha spp.) — spreads aggressively through stolons, making it difficult to contain in a garden.

## 6. Examples of Rhizomes

The following plants propagate through rhizomes:

6. Turmeric (Curcuma longa) — the rhizomes are harvested for culinary and medicinal use.
7. Ginger (Zingiber officinale) — the familiar edible portion of the ginger plant is its rhizome.

8. Bamboo (Bambusoideae) — spreads extensively via underground rhizomes, which is why it can be invasive.
9. Elephant grass (Pennisetum purpureum) — spreads through both rhizomes and stolons, making it extremely difficult to eradicate.
10. Iris (Iris spp.) — produces fleshy rhizomes just below or at the soil surface.

## 7. Differences Between a Stolon and a Rhizome

Although stolons and rhizomes are both modified horizontal stems used for vegetative propagation, they differ in several important ways:

**Location:** Runners (above-ground stolons) grow along the soil surface, while rhizomes grow beneath it. Stolons may grow either above or below ground, whereas rhizomes are almost always subterranean.

**Function:** Stolons primarily serve as a means of spreading and establishing new plants. Rhizomes additionally function as storage organs, accumulating starch and nutrients to support the plant during dormancy or adverse conditions.

**Structure:** Stolons are typically slender and less fleshy. Rhizomes are often thickened and more robust, reflecting their dual role in propagation and storage.

**Depth:** Stolons (especially runners) remain close to or on the soil surface. Rhizomes can grow deeper into the soil depending on the species.

**Resilience:** Because rhizomes store energy underground, plants with rhizomes tend to be harder to eliminate than those with only surface stolons. This is why rhizomatous weeds like elephant grass are so persistent even after repeated cutting.

### Quick Reference Summary

- Stolon — lateral stem, above or below ground, propagation by nodes.
- Runner — a stolon that grows above ground; all runners are stolons.
- Rhizome — horizontal underground stem, stores nutrients, propagates by nodes.