

About Stems!

By Jolene Adams

This is pruning season – and everyone is looking at rose stems. But you need to know how important the stems of the plant really are!

Stems support buds and leaves and serve as the pipeline for carrying water, minerals, and food.

We need to speak the same language when we talk to each other about stems. This is how stems are explained in a classroom:

Stem Terminology

Shoot - A young stem (1 year old or less) with leaves.

Twig - A young stem (1 year old or less) that is in the dormant winter stage (has no leaves).

Cane - A stem that is more than 1 year old, typically with lateral stems radiating from it.

Lateral - A stem growing from the main cane.

The Function of Stems

Cells are the basic structural and physiological units of plants. Most of a plant's reactions occur at the cellular level. Stems contain plant **tissues** (meristems, xylem, phloem, etc.) that are large, organized groups of similar cells that work together to perform a specific function – in this case the transport system.

The vascular system inside the stem forms a continuous pathway from the root, through the stem, and finally to the leaves. It is through this system that water and food products move.

Parts of the Stem

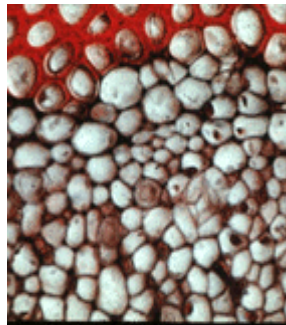
Cambium

Cambium is the layer of actively dividing cells just beneath the skin of the cane.

Cambium cells divide to form 'transportation' tissue. This layer is seldom more than 10 cells thick, usually averaging 5 cells. It gets damaged by rubbing or accidental nicks.

Phloem

This is the system of tubules that allows nutrients to flow from the root area to the growing tips of the stems and leaves. Without a healthy phloem, you wouldn't have a rose. All the food that the roots accumulate flows up through the phloem and into the rest of the plant.

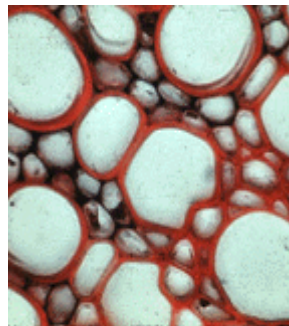


1Phloem

Xylem

A bit further into the stem, you find the xylem. This tissue is the principal water transport system for the rose. Water and anything that is dissolved in it moves up and down

through the tissues of the xylem.



2Xylem

Xylem and phloem together form a continuous system of vascular tissue extending throughout the plant.

The Growing Point

The most actively growing part of the

stem is the very tip – it is the meristem.

This tip is the only part of a stem (or rootlet) that grows. And it does it by cells dividing and then the next layer dividing and then the next layer dividing, etc. If the meristem is damaged or cut off, the stem cannot grow any longer.