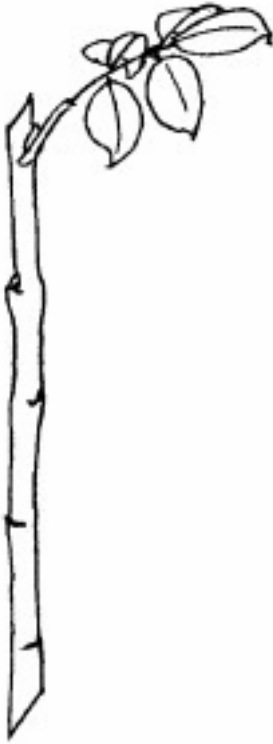


# USING WILLOW WATER TO ROOT ROSE CUTTINGS

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## WHAT IS A CUTTING?

As the illustration shows, a cutting is a piece of rose stem about the size and length of a pencil. As it will not be able to support rooting and all its leaves, the leaves should be stripped from the bottom. Dip the bottom in rooting hormone after having soaked the re-cut cutting overnight in willow water.

## ABOUT WILLOW WATER

As willows root easiest of all flora, there must be some substance in the sap of the willows which promotes this. Still not isolated, "rhizocaline" is actually three or four different unknown elements or compounds.

This was discovered by Dr. M. Kawase, who reported on it, as have others since. One cuts branches of current growth from any willow species, that are very green and supple. Then, cut them into one inch pieces and smash them with a hammer, or cut them lengthwise. Drop them in a pot of boiling water, remove from the heat and allow them to steep, stirring occasionally. **DO NOT BOIL THE WILLOW ITSELF**. After the mixture cools it is ready to use.

## HOW TO USE WILLOW WATER

Soak rose cuttings overnight in the willow water, having re-cut the stem ends on the bottom by holding them under the willow water and dropping them in. **DO NOT LIFT THE CUTS TO EXPOSE TO AIR** as the air will "plug up" the sieve cells that take water up into the plant.

Cuttings should be taken about the size and length of a pencil from newish wood, and with a minimum of 5 leaf joints. Old barky twigs will not root well. If possible, include the heel - the hump on the main cane from which the stem emerges to serve as the cutting. These heel

cells are very active and are prone to produce roots even better than the leaf joint nodes. Mrs. Bollye Fridaye, of Anderson, once told us on a Rustle that the old timers said to tear off the laterals, which is correct, for then one will get the heel section - and lacerated hands! Strip off all the lower leaves from the cutting stem, leaving only one set at the top if desired.

The rooting bed should be WELL DRAINED , about half sand and half good rooting soil, and located in a shady spot that is well protected from strong winds and other disturbing features, like heat from a car exhaust or air conditioning compressor, etc. I then take rooting hormone, clippers (that have been dipped in a solution of 1 quart of water + 1 Tablespoon of bleach to disinfect), name tags & pencil, and the cuttings in their container of willow water and plant the cuttings in the cutting bed. First, dip the wet ends in rooting hormone, gently knocking off any excess hormone powder before inserting them in the ground. (Rooting hormone is primarily a disinfectant and it is vital that cuttings be kept free from harmful bacteria if they are to root. This is also the reason we disinfect our clippers, as mentioned above. This is to try to prevent canker, which is the rose stem turning brown and dying. Canker spreads by entering the stem when it is cut. Being out-of-doors in the sterilizing action of the sun also helps prevent other scourges. Discard any used hormone as it is contaminated.

Firm the soil well around the cuttings. Old timers used to tell us to step on the soil around the slip with your heel to pack the soil, that "air is death to rose roots", and that roses should be grown in lots of clay. We have since tempered this advice and just firm the soil, allowing the moisture to settle it evenly. If planted in the winter, the slips may leaf out in the spring. They may be covered with a fruit jar and allowed to grow a second set of leaves before gradually removing the jar daily.

## **THE WILLOW WATER STORY**

For the old rose fanciers who order grafted bushes, advances in the rooting of hardwood cuttings may not seem so earth-shaking but to rosarians who prefer own-root plants, and more especially to collectors, this is good news indeed!

Dr. Makota Kawase first began his research into the rooting problem in Manitoba, Canada, in the 1960's. Previous experiments in the 1930's had shown him that natural plant hormones, indole-3-acetic acid (IAA), naphthalene acetic acid (NAA), and indolebutyric acid (IBA), promote rooting. Yet another substance, tentatively named "rhizocaline", and NOT a plant hormone, he also assumed to be present in root formation. The separation of a cutting-from a plant causes IAA to move polarly and accumulate at the base of the cutting stem. This "auxin gradient" then causes the hypothetical rhizocaline to follow suit. Rhizocaline then assists the IAA to form roots. This substance has been suggested by researchers to be either vitamin B, vitamin H, Boron, sugar, various Nitrogen compounds, or something else. Further chemical research is continuing to identify rhizocaline with certainty.

In this early experiment, Dr. Kawase proposed to use a centrifuge to physically push the two substances to the tips of cuttings to determine if this would promote root formation. Then an "accident" occurred: He had placed some water in the centrifuge to prevent his cuttings of *Salix alba* L. from wilting. When the water was tested as a control the root-promoting substance was discovered! Willow is perhaps the easiest to root of all woods, and thus contains more rhizocaline than hard-to-root plants. As rhizocaline is perfectly water soluble, it is very available to plants, and as it is natural in all vegetable matter, it is non-polluting in large concentrations.

Various strengths of "willow water" were tested by Dr. Kawase (who is currently with the Ohio Agricultural Research and Development Center, at Wooster) who concluded that it had "the ability to stimulate rooting unmatched by any previously known rooting substance, including plant hormones." All plants contain rhizocaline and other factors in greater or lesser amounts, and it is also seasonally variable, with the highest concentrations observed in the early spring.

To manufacture willow water in the home, Dr. Kawase recommends cutting current year's growth from any *Salix* species. Then, remove the leaves and cut into one inch pieces. Place these right side up in a glass, add 1/2" of hot water, cover with a plastic bag and let sit 24 hours. Steep your cuttings in this for 24 hours, and then place in the rooting medium with or without rooting hormone, as needed. The willow water may be stored in the refrigerator, covered to prevent contamination, but is best used up within three days.

Other Kawase discoveries include the use of etiolation in promoting rooting. Total darkness, he found, increased rooting "sharply" up to four days. The basal tips **MUST** be in darkness for rooting to occur. (The writer discovered this principle by rooting a rose in willow water alone, but in an opaque container which excluded the light from the basal tip.)

Another help in rooting is the presence of ethylene gas. Shall we include a ripening apple in our covered containers of rose slips? These new rooting techniques, especially after the identification and synthesizing of rhizocaline, are predicted to totally revolutionize the nursery industry. And how easy it will be when all us amateurs have "green fingers" as well!

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