

THE COLLECTION, STORAGE AND USE OF BUDWOOD

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In the propagation of field grown roses, budding can be performed over almost the entire growing season of the understocks, which in southeastern Pennsylvania extends from mid-May until late October. In fact we can start several weeks earlier than the current season's budwood is available, a point which can be illustrated by noting that while it is possible to start on May 15 using stored budwood, we would have to wait until June 15 for wood from the stock block or July 15 before it is available from the main crop.

It is only by the use of budwood stored from the previous year that we can gain a month over nature and start in May, an operation made possible by the use of refrigerated storage and the comparatively recent knowledge of how to use it successfully. The adoption of this method has brought with it several money saving improvements which are, first, that by being able to start four weeks earlier, the same number of budders are able to produce 25% more plants during the season, secondly, the budwood can be cut late in the season when it is in prime condition and when it places the least burden on our work schedule, and lastly, it removes the need for maintaining that expensive nuisance in the rose world, a stock block. In short, overwinter storage of budwood allows us increased operating flexibility by lengthening our budding season by one month.

As a result, we are now cutting budwood for two purposes during the year, some for long term winter storage, and some for short term storage and use in the current season. Both collections share the two most essential requirements in that they must be carefully selected from plants which are typical of the variety, and also that they come from plants free of symptoms of virus or other diseases. Failure to pay attention to these points could result in the degradation of the variety either by the wood being collected from a plant which has mutated in some fashion or from plants infected with certain bud transmitted virus diseases. Also in both collections it is important that as little time as possible elapses between the time of cutting and the placing of the wood in refrigeration, and that there be no unnecessary exposure to the drying effect of the air.

The collection in the field is made by a competent specially trained worker, who selects and cuts the wood, assisted by a helper who carries it to a covered pick-up truck. It is then watered down and covered with wet burlap to prevent drying. At this stage it is important that it never be allowed to wilt or stay in high temperatures for any length of time. To prevent this, the helper returns at frequent intervals to the handling shed where the wood is trimmed of dead flowers and placed in refrigerated storage for from two to three weeks. The degree of maturity of the wood cut is determined by the period of storage to which it is to be exposed and by the budding technique involved. Where it is to be budded during the current season, it can

be softer and less mature than wood for long term storage, and, where the "wood out" technique of budding is used, should preferably be taken just as the flower on the cane passes maturity and the petals begin to fall. However where the "wood in" method is the rule, budwood can be of any stage of maturity from petal fall to wood that is completely dormant and taken in mid-winter. Ideally, we prefer to collect our wood for overwinter storage in late September and early October using canes of good maturity and medium caliper.

In many respects wood for short and long term storage is handled the same. The flower head is removed together with the top of the cane down to the first good live leaflet leaf, and the remaining leaves are pulled off, but the next operation depends on the destination of the wood. That for the current season's use has the prickles removed before being made up in bundles of about 50 canes (or 200 eyes) and sealed in a polyethylene bag for storage at about 36°. However budwood for overwinter storage has the prickles left on and, after bundled as before, is wrapped in polyethylene lined butcher's paper. It is then enclosed in two thicknesses of wet newspaper before being placed in a polyethylene bag and sealed. Important points to follow are that as much air as possible be excluded from the packages, that the budsticks be dry when packaged, and that no pieces of leaf, petal or other material adhere to the sticks. If these points are followed, *Botrytis* mold does not become a problem and the use of fungicides does not appear to be necessary, but where strict sanitation is not practiced, even the use of fungicides seem to be of little avail in preventing rot. Finally, the bags are placed in small wooden crates and stacked in refrigerated storage with each layer being separated by wooden battens and with a 4" air space adjacent to the walls to allow free air circulation. Successful storage from this point on is dependent on the keeping of a constant temperature in the 28° to 31° range. Fluctuations much below this range or above 32° appear to result in loss due to mold. From experience a very worthwhile investment is the inclusion of two thermostats, one being set to operate a degree below and a degree above the other, and also an alarm system to operate if the temperature rises above 32°.

In the spring the packages are removed from storage a few days prior to use and placed in a temperature of about 36°. Afterwards they are unpacked, prickled, and then treated in the same manner as newly collected budwood, eventually being replaced in polyethylene bags and kept under 40° refrigeration until needed by the budder in the field.

In budding we use the ordinary T method with the "wood in" but instead of using rubber bands, for some years we have been using the Speed-Easy bud patch. This patch besides being faster to use than rubber bands, has resulted in an improvement in the take which today averages over 90% in a normal year, which in our climatic condition rates as excellent.

In conclusion let me say that occasional unexplicable failures will still occur in budwood storage, for it has still not been pinpointed to an exact science. However, reasonably consistent results will be

obtained provided strict attention is paid to the details of the operation, especially that the wood be healthy, mature, protected from drying and stored at a constant temperature.

MODERATOR LEACH: Thank you, Mr. Mackay.

The next speaker is Ray Halward of the Royal Botanic Gardens, Hamilton, Ontario, and he will speak on Collection, Storage and Use of Dormant Scionwood.

COLLECTION, STORAGE AND USE OF DORMANT SCIONWOOD

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Selection of Scionwood

I hardly think it necessary to delve at any length into the importance of the selection of suitable scionwood and to what extent it affects the Propagator's success in grafting. This has been emphasized in many previous papers presented to this society.

Selection of Scionwood should be from known plants whose performance in the past has been observed and found to have the most desirable characteristics of the species and varieties involved, and permanently labelled or charted to prevent errors. It is equally important to be sure that the wood to be used for grafting is kept free of insects and diseases. Weakened Scionwood is a poor risk.

Maturity of Scionwood in respect to grafting, in most cases, has not been reached until it has been exposed to a period of near freezing temperatures. This process in nature can be duplicated by the use of refrigeration. This allows early collection where necessary, particularly where importation is desirable or extreme weather conditions prevail or where scions are needed from plants which might suffer from winter injury.

Storage of Scionwood

Most of the growers were of the opinion that storage was unnecessary except for a day or two in advance of actual use. When storage for any length of time is necessary most sources were agreeable that plastic bags or wrap, and refrigeration with a constant temperature between 35 and 40 degrees is best. In some cases slightly moist sphagnum moss or sawdust is used in conjunction with plastic. Whenever storage is necessary humidity should be kept high to prevent any dehydration of scionwood. Mr. DeGroot of Sheridan Nurseries suggested layering evergreen scions in boxes, with snow between the layers, in snowbelt areas. He added a word of caution, all frozen scions should be thawed in cold water before using. An older method of storage is the use of a trench covered with boards in a shady location, using sand as medium for heeling in the Scionwood.

Use of Scionwood

The selection of the material to be used as understock is equally important as the selection of scionwood. Is the understock compati-