

MODERATOR HESS: Thank you, Dick. Joerg Leiss will next tell us about trials with three juniper understocks.

TRIALS WITH THREE JUNIPERUS UNDERSTOCK

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This paper is a continuation of a previous paper by Mr. C. deGroot and credit for these trials should go to Mr. Constant deGroot, a member of this Society from its early beginning. It was he who had the idea of using the various understock, while I worked with him. We started searching for better understocks after using *Juniperus virginiana* (Platte River source) entirely for years, but ran into a number of problems over the years. Heavy losses after grafting in the propagation bench from phomopsis blight were aggravated by uneven stands in the field, failure of seed to germinate and last but not least a poor root system and consequent transplanting losses, even after root pruning. To say the least, we came to a stage where you could say we were fed up. You have to consider that even a 20% loss of 60000 which we grafted at that time represents a large number of plants.

Our trials are concerned with the following *Juniperus* species and/or varieties, and I will briefly describe them as they are not all very familiar.

1. *Juniperus hetzi* which was discovered before 1948 in a batch of seedlings from the West Coast received by Hetz Nurseries in Fairview, Pennsylvania. It is believed to be a cross between *J. virginiana glauca* as seed plant and *J. pfitzeriana* as pollinator, is easily rooted, transplants readily and produces very even stands after grafting. It also accepts all *Juniperus* species we have tried readily and there seems to be no incompatibility. We have used it for *J. chinensis*, *J. communis*, *J. sabina*, *J. scopulorum*, *J. squamata*, *J. virginiana* species and all their many varieties, and have found all of them to grow well and transplant well.

2. *Juniperus pseudocupressus* is of unknown origin and botanists cannot seem to agree how to classify it. We received our stock from H. den Ouden in 1924 who got it from Hesse Nurseries in Germany. It roots fairly good, has a very fibrous root system and is a terrific fast grower, so much so, that under wet soil conditions it freezes back at the tips. *J. pseudocupressus* transplants very easily. There is incompatibility with some *J. virginiana* varieties. It grows well from cuttings.

3. The third is a chance seedling which came up in a stone stairway, was called "Stone Step" and has been renamed for marketing "Grey Rock". It is an upright growing plant with whipcord like grey foliage and of semi-open habit, but more compact than *J. virginiana glauca*. We propagate our under-

stocks from seed of the grafted plants. It seeds heavily, germinates very well and produces a good root system. It seems to be phomopsis resistant as we have not lost a single understock to this disease since using it. This is without any preventative spray programme. It is also one of the hardiest *Juniperus* varieties we grow, and does well in the province of Quebec. We have also found some interesting seedlings among them.

We became involved with *J. hetzi* after hearing about cutting grafts in 1959. We tried some, had good success to heal them, but were unable to promote roots at that time, partly because of too high humidity in the grafting case where this trial was made, and the timing of the experiment (late February). Grafting method used was side graft tied with rubber. Seradix 3 treatment. The next year we tried again with *J. pseudocupressus*. The results of this trial were published in 1960 by Mr. deGrott in the Plant Propagators' Society proceedings, page 124. They show very poor results with *J. virginiana glauca*, *burki*, and *canaerti*, fair with all *J. chinensis* varieties and very good with *J. virginiana*, Hills Dundee. We have, by the way, abandoned cuttings grafts as we believe in potted grafts and there is no saving in space or grafting time by using cutting grafts, — as a matter of fact, it took us nearly double the normal grafting time.

In 1962 we tried *J. pseudocupressus* again, this time as potted, well established understocks. The following *Juniperus* were grafted 30 each:—

<i>J. chinensis blaaui</i>	— 29	— field planted and counted 1 year later
<i>J. chinensis japonica</i>	24	
<i>J. chinensis keteleeri</i>	25	
<i>J. chinensis pfitzeriana</i>	Armstrong	29
<i>J. chinensis pfitzeriana compacta</i>		25
<i>J. chinensis sargentii glauca</i>		28
<i>J. communis depressa nana aurea</i>		28
<i>J. communis</i>	Pencil Point	26
<i>J. sabina tamariscifolia</i>		25
<i>J. scopulorum</i>	Hills Silver	27
<i>J. scopulorum</i>	Moonlight	26
<i>J. scopulorum</i>	North Star	22
<i>J. squamata meyeri</i>		29
<i>J. virginiana burki</i>		29
<i>J. virginiana canaerti</i>		29
<i>J. virginiana glauca</i>		20
<i>J. virginiana</i>	Hills Dundee	21
<i>J. virginiana</i>	Nova	28
<i>J. virginiana pyramidalis</i>		28
<i>J. virginiana</i>	Skyrocket	27

none of these were root pruned.

The growth of these plants has been good and they are bushier than on *J. hetzi* or *J. virginiana* with the exception

again (as before when cutting grafts were made) *j. canaerti*, *J. glauca*, *J. burki* which are, if not dead, only 2 feet tall, while all other upright varieties are 5' on an average. spreaders have reached as much as 3' in *J. squamata meyeri*.

On all three trial understocks we found that the roots of all *J. chinensis* are reasonable to good, while the roots of the 3 *J. virginiana* varieties which grew well are very coarse while the 3 *J. virginiana* which showed signs of incompatibility with *J. pseudocupressus* have kept the fine root system of the understock *J. pseudocupressus*. I would at this point suggest there is, as in many other plants, a definite influence between scion and understock and which has been well documented in the case of fruit trees and their respective vegetative propagated understocks (E. M. and M.M. clones for *Malus* and the various Quince types for *Pyrus*. Plum clones for plums and peaches). We still feel the ease of propagation and transplanting outweighs any drawbacks we might encounter and makes it worthwhile for us to continue to use these understocks. The main point in favour being their resistance to disease and very high percentage of success in grafting.

MODERATOR HESS: Thank you, Joerg, for an excellent presentation. The balance of this afternoon's program will deal with weed control and will be moderated by Roger Coggeshall.

MODERATOR COGGESHALL: Our subject of weed control is one we are all interested in. It is a controversial subject. As you know some people are successful, others are not. We are fortunate this afternoon in having two men to speak to us. The first I would like to introduce is Dr. Alfred Pridham, Cornell University, Ithaca, New York.

WEED CONTROL FOR THE NURSERY

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Weed — A weed is a plant out of place or an unwanted plant.

Some weeds carry plant diseases and insect pests while the mere presence of quackgrass in a plant ball is enough to restrict trade by quarantine in some states.

It is now 20 years since the selective action of "Carrot spray" was found to apply to the weeding of evergreen seed beds and that Dinitro killed seedling weed growth promptly on contact but that woody stems were merely defoliated.

Large scale soil fumigation was in use 20 years ago in production of Hawaiian Pineapples and mulch paper was laid by machine. Young cuttings or offsets of pineapples were set through the paper mulch and early growth proceeded with a minimum of interference from weeds. Those weeds that