

Collecting, Storage and Germination of Maple Seed

By ROY M. NORDINE

The Morton Arboretum, Lisle, Ill.

Bailey's Encyclopedia list 110 species of maples, all are found in the northern hemisphere. They range from the northern tree zone to the semi-tropics of northern India. Rehder's Manual of Trees and Shrubs 2nd edition lists 87 species and many hybrids as being hardy in the various zones of this country.

Maple seeds vary in size from less than one half inch long to nearly three inches. All are winged and the seed coats vary from a very thin covering to a hard nut that must be cracked open with a hammer.

Two species, namely *rubrum* and *saccharinum* (*dasycarpum*) ripen their seeds in late May—all other maples ripen their seed in the fall.

Maple seeds have only an embryo, they do not have an endosperm or stored food in the seed. The embryos are green to yellow in color. This makes a cutting test a quick and easy method to determine the value of a lot of seeds. Seeds will vary from a high percentage of filled seeds to 50% in the case of *saccharum* where only half the seeds are ever filled. In old seeds the green color of the embryo will change to white or the embryo retains its good green color but it become very brittle, breaking into many small pieces upon cutting the seed.

A few maples have fairly good records for seed crops each year. Other maples may produce good crops only every 2-3-4 or more years. A number of the exotic maples in this country produce good seeds infrequently. In the intervening years only empty seeds are produced.

Germination is dependent on the moisture content in the seed, therefore the seed should be dried only enough for storage purposes. Too much drying of the seeds will kill the embryo rather than cause a delayed germination.

Seeds should be allowed to ripen on the tree and gathered when the stems are drying or have become completely dried. Seeds can be either hand picked from trees or beaten onto canvas on days when there is no movement of air. They are easy to gather from street trees by sweeping them up from the pavement.

Maple seeds range from those that must be sown soon after gathering to those that must be stratified. I have no work on the proper temperature or length of time to hold stratified maple seeds nor can I find any literature on this subject. I stratify seeds in sand, and keep them moist for a year.

The two species ripening in the spring, *saccharinum* (*dasycarpum*) and *rubrum*, must be sown at that time. Altho, *rubrum*, if it becomes too dry either before sowing or in the ground will lay over until the following year, or the seed can be stored in tight containers and sown in the fall.

Macrophyllum, a fall ripening species must be sown very soon after harvesting.

All maple seeds except *saccharinum* (*dasycarpum*) *macrophyllum*, and *spicatum* can be stored favorably for a year in a cool moist condition or tight containers at a temperature range of 32°-50°.

Fall ripened seed should be sown in the fall, germination takes place in the spring. Seed that cannot be sown in the fall should be stratified for two months or more before spring sowing. When I receive seeds after Feb. 1st, too late for a brief stratification they are stored in a second hand refrigerator, maintained at its highest temperature of 42° until the following fall. The year's growth is lost but we save the seed.

Seed of *ginnala*, *tataricum*, *spicatum* and *pennsylvanica* apparently require an early fall sowing. When *saccharum* (Hard Maple) and Norway Maple is stratified prior to sowing it must be watched, sometimes it begins to germinate in the medium.

The many listed hybrids prove that maples hybridize very easily and produce new forms not true to either parent. A common one is *rubrum* crossed with *saccharinum* (soft) producing in *rubrum* a fast growing tree with very poor fall coloring. The colored and dissected leaf forms of *palmatum* and *japonicum* come quite true from seed.

In securing seed from other sources it is wise to get seed from areas as near your latitude as possible. Seed from southern sources when grown in the north may retain their longer growing season and fail to ripen without frost damage in the fall. Species with purple leaved forms are hardier than their green leaved forms. Schwedler Maple can be well grown in areas where the common Norway Maple freezes out.

It should not be necessary to mention to this group about the preparation of seed beds or good soil conditions for cultural conditions as maples grow well in a range of good soils.

Seeds sown and grown outside are quite free from damping off. However seeds sown and growing in a greenhouse can be severely affected.

Maple seeds requiring stratification for a year are:

campestre
Diabolicum
griseum
mandshuricum
monspessulanum
nikoense
opalus
triflorum

Maple seeds suspected of requiring stratification:

Francheti
Heldrichi
hyrcanum
Trautvetteri

Maple seeds that should be sown in the fall after ripening are:

<i>argutum</i>	<i>Maximowiczii</i>
<i>barbinerve</i>	<i>Miyabei</i>
<i>Buergerianum</i>	<i>mono</i>
<i>capillipes</i>	<i>negundo</i>
<i>cappadocicum</i>	<i>Oliverianum</i>
<i>carpinifolium</i>	<i>palmatum</i>
<i>caudatum</i>	<i>pennsylvanicum</i>
<i>circinatum</i>	<i>platanoides</i>
<i>cissifolium</i>	<i>Pseudo-platanus</i>

Davidii
divergens
Ginnala
glabrum
grandidentatum
Grosseri
Henryi
japonicum
leucoderme
macrophyllum

Pseudo-Sieboldianum
rufinerve
saccharum
Sieboldianum
spicatum
tataricum
tegmentosum
tetramerum
truncatum
Tschonoskii

Chairman Nordine: The next topic on the program involves two individuals, one that you are perhaps well-known with in the nursery trade, and he is Wayne McGill. Unfortunately, he could not be here, but he has prepared this paper on the budding of maples, which is certainly an interesting thing and something in which everyone is interested.

Dr. Snyder of Cornell University, will read this paper and the Plant Propagation Society or plant propagators in the country are certainly most fortunate in having Professor Snyder. It is the first time that a plant physiologist is working in conjunction with the problems of plant propagation, and plants in general. So we are very happy to introduce to you Professor Snyder from Cornell, to read this paper by Wayne McGill.

DR. SNYDER: This paper, as Mr. Nordine has said, was prepared by Wayne McGill, and the title is, "The Selection of Maple Understock, Budwood and the Timing and Placement of Buds."

. . . Mr. Snyder read the paper . . . (Applause)

The Selection of Maple Understock, Budwood and the Timing and Placement of Buds

By WAYNE MCGILL
A McGill & Son, Fairview, Oregon

Mr. Chairman, Ladies and Gentlemen:

I was greatly honored indeed when asked to prepare this paper on the selection of Maple understock, budwood and the timing and placement of buds. When Mr. Nordine asked me to present this paper I did not know that it was going to be a Round Table discussion and in preparing it I find it is much more difficult to prepare a paper which is going to be read than if one were going to read it himself. When reading it himself, any mistakes can be corrected as he goes along. However, as it is a Round Table discussion, possibly it is better that I am not here to present myself, for at least, I cannot be asked questions which I cannot answer. I feel certain that in the group there are many propagators with more experience than myself and a good many of them can answer any question that I have left unanswered.

The experiences and details as outlined in the paper are from our own growing experience and of course, references are made to the growing conditions on the West Coast. The Field Superintendent of our firm,