

Plant Hardy Trees

By J. P. CLEVE

It is a well known principle that like begets like. We know that a maple seed will produce a maple, and a thousand maple seeds a thousand maples, but upon very close observation it may be noted that seven or eight of these maples may have slightly different characteristics from the rest of the thousand; they may ripen their leaves a little earlier, may have a longer or heavier leaf, or vary in some other way, however slight. We take these seven maples, elms, or apples, which have shown harder characteristics than the rest and propagate from these, and the chances are that they will not revert to the original stock, but will continue to show the hardy characteristics of the direct parent. Among botanists this variation, when it is fixed or can be perpetuated, is called a plant mutation. These mutations have in process of years fixed certain definite characteristics in plants, hence we find trees adjusting themselves to their environment—the weaker ones gradually going down in the struggle until by the survival of the fittest we gradually build up a stock capable of withstanding the conditions of our Western Prairie, and of living through the somewhat trying winters without being seriously injured. There are many theories advanced as to the cause of winter-killing of trees in the West.

partially correct. The falling of the leaves is a sign of wood maturity in deciduous trees and shrubs. The coloring and fall of the leaves in autumn is not entirely due to frost but results from the dormant condition that accompanies maturity. In trees with well-ripened wood, the leaves at the tip of the shoots usually fall before those on the older parts of the tree.

Any variety which does not have its wood mature or ripen about the same time as the native species of the district will be subject to winter killing. Immaturity indicates that the sap has a surplus supply of water in which plant food is in solution and the freezing of the water causes the bark to split, thus causing death. The reason that native trees do not kill-back is on account of the wood maturing or ripening thus throwing off all the surplus water and the balance of the plant food is held in various chemical forms which have a great deal lower freezing point than pure water.

In many cases the same species from different parts of America differs widely in hardiness. As well-known examples, *Picea pungens* from the western slopes of the Rocky Mountains will not survive the climate found east of that range. The box elder and sugar maple of the Eastern Provinces will not live long west of the Great Lakes.



A CALGARY HOME. SHOWING THE EFFECT OF GOOD PLANTING

Bradley M. Davis, Ph.D., assistant professor of plant morphology, University of Chicago, says, "It is a well known fact that seed from northern localities when planted further south will produce an earlier crop than that grown from southern seed, and that American varieties of onion, after being grown for a series of years in England become habituated to the longer growing season in England and when the seed from this is returned to America the crop fails to mature before frost." Practically the same thing happens when trees from a southern climate are brought into our Northern latitudes. The plant seems to be broken from its normal habit of growth. It usually develops an excess of tender growth and with the first killing frosts of fall is severely injured or probably killed. All trees to escape winter killing must mature their wood early.

The plant food which is composed of nitrates, carbon, hydrogen, oxygen, calcium, iron, chlorine, etc., is brought up to the leaves through smaller channels or cells in the cambium or corky layer just under the bark. This food, which is carried to the leaves, is in a solution, which contains the plant food. As soon as spring comes the sap starts to flow upwards and the buds break into leaves. The leaves form the food of the plant through the influence of chlorophyll, and this plant food is returned to the stem of the tree, where it forms new cells to provide for the growth of the tree. Towards fall the new cells are completed, and the leaves begin to fall, which shows that the tree has become dormant. There is a general belief that the dropping of the leaves is due to frost, but this is only

Indeed this varied hardiness of given species applies so generally that it is always safest to plant local types, or those from similar climates.

The nurserymen of Western Canada are working with this end in view. They are trying to develop hardy, weather-resisting strains of trees and shrubs which, planted throughout our Canadian West, will not only be objects of beauty but also of utility throughout the coming years.

That they have succeeded, partially at least, any casual observer will testify. The prairie homes to-day are not treeless as they were a few years ago. In city, hamlet, and farm we have seen the birth of a new idea—the dawn of aesthetic taste and feeling; and some measure of credit is due to those pioneers in nursery work and tree planting, who have done so much to bring about the improved conditions.

CANADA'S BUMPER YEAR

Ottawa, Dec. 27.—That the year now closing has been one of unexampled prosperity has been shown by figures of Canadian trade. The aggregate will be a billion dollars worth, which creates a record.

In January the total was \$63,680,443; February saw an increase of one million, while by March it had jumped by \$23,000,000. The increase throughout the summer was steady and October reached the total of \$101,277,469. November figures now being compiled will go three millions ahead of this. The grand total to Nov. 1 was \$821,723,347, and, as stated, the total of the calendar year will be a billion.

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Hail Insurance Largely Adopted

One Hundred Saskatchewan Rural Municipalities Vote for Scheme,
Bringing 12,000,000 Acres under New Act

Regina, Sask., Dec. 20.—Approximately twelve million acres of territory will be included in the area over which the Saskatchewan Hail Insurance act will apply in 1913, or about one hundred rural municipalities. According to returns already received, 89 of the 290 rural municipalities in the province have pronounced favorably on the project, and only 88 against it. It is certain that the final showing will reach if it does not exceed the century mark. Bylaws on the question were submitted in 174 municipalities.

The central principle of the plan is local option. Under the act, municipalities provide for compulsory hail insurance within their borders by voting to do so. When they have decided to come within the jurisdiction of the hail insurance commission, all assessable lands are taxed and the proceeds go into the general fund. With certain exceptions, every foot of arable land must pay its toll toward the protection of the farmer from loss by hail. It is a scheme that is absolutely unique, never having previously been employed, as far as is known in any corner of the globe.

Paynter to be Chairman

J. E. Paynter, a retired farmer, who lives at Tantallon, Sask., is the originator of the project, and it is authoritatively stated that he will be appointed chairman of the hail insurance commission. With his brother, Mr. Paynter came to Saskatchewan from Manitoba many years ago, and settled northwest of Tantallon. He was one of the pioneers of Manitoba.

This question of general hail insurance agitated the Saskatchewan grain growers for many years before a workable scheme was evolved. It formed a prolific subject of debate at the conventions of the Grain Growers' association. For long enough, the grain growers were split into two factions on the question. One group advocated a provincial-wide scheme of compulsory hail insurance, to which the other strongly objected. The ground of objection was that there exist in the province great areas not subject to hail, which it would be unfair to tax for the benefit of other districts.

Scheme Readily Approved

Little progress was made till Mr. Paynter came forward with a plan for municipal option. At once his scheme was approved; the opposing factions agreed, and in two successive conventions of the Grain Growers' association resolutions were carried unanimously recording approval of the proposals. It is the essential features of a plan submitted by the grain growers that have now become a part of Saskatchewan law, under the municipal hail insurance act passed in March, 1911. The act is to be administered by a commission of three, one member of which will be appointed by the government and the other two by the Reeves of the municipalities that adopt the measure.

It was provided that the act should go into force if 25 municipalities voted in favor of it. Under an act passed at the present session of the Saskatchewan legislature, all local improvement districts in the province will, on Jan. 1, 1913, automatically become rural municipalities. In a few days there will be no local governing bodies in Saskatchewan except municipalities, so it will be convenient to use the term "municipalities"

in referring to the districts that voted on the hail insurance scheme during December. As stated, it seems certain that at least 100 municipalities will line up under the act.

Many Big Majorities

were the rule in the 89 municipalities that have made returns to date. In Young municipality the majority for it was 153; in Stoughton 200; in Wilkie 166. Nokomis polled 166 for the measure and 27 against. In Spy Hill the vote was 180 to 7; in Harris 234 to 65; in Saskatoon 343 to 48; in Perdue 241 to 29; and in Vanscoy 161 to 11.

Apparently no general principle influenced the 38 municipalities that decided not to take advantage of the act. Most of them are as largely devoted to grain growing as those that took the reverse position, although a few are better adapted to mixed farming. In some cases the bylaws were defeated by large majorities, the figures in one instance being 159 to 63. This vote was polled in a district as liable to hail as any, judging by the records of the last decade.

Provision is made in the act for the submission of a hail insurance bylaw on demand by initiative petition, signed by at least 25 resident ratepayers. But this right was not made use of this year, all the 174 municipalities that voted on the question having done so at the instance of their councils. Why the remaining 152 municipalities in the province did not vote on hail insurance bylaws is not clear. They comprise lands that would benefit by the provisions of the act as much as any.

Pamphlets Distributed

In order that every opportunity should be given for municipal councils and farmers to become familiar with what was proposed, 80,000 explanatory pamphlets were distributed by the department of agriculture, and 15,000 copies of the act.

Nevertheless, the success of the measure has surpassed all expectations. It was hoped by the minister of agriculture that forty municipalities would avail themselves of the scheme. As it is, four times the number required to make the act effective have elected to profit by its provisions.

The territory that will be affected by the act in 1913 exceeds by two million acres the total area in crop in Saskatchewan in 1912. In one hundred municipalities there are about twelve million acres of land, and a great part of this area will be taxed for hail insurance, the probable amount to be exempted being between two and three million acres. C.P.R. lands will, of course, be exempted, in addition to unsold government lands and school lands. Certain other acreage will also be exempted. Lands within the limits of a hamlet, and lands held under grazing lease from the Dominion Government are exempt. Grazing lands are exempted because they are supporting live stock and not growing grain, and could not reasonably be taxed for hail insurance purposes. Some lands may be withdrawn from hail insurance taxation, as for instance, properly fenced hay lands and unpatented homesteads on which there is less than 25 acres of crop.

Advantages to Farmers

Considerable advantages are offered to the farmers under the act. There will be a tax of four cents an acre on all