

South Dakota State University  
**Open PRAIRIE: Open Public Research Access Institutional  
Repository and Information Exchange**

---

Bulletins

South Dakota State University Agricultural  
Experiment Station

---

11-1887

## Notes on the Growth of Trees in the College Grounds

C.A. Keffer

*Dakota Agricultural College*

Follow this and additional works at: [http://openprairie.sdstate.edu/agexperimentsta\\_bulletins](http://openprairie.sdstate.edu/agexperimentsta_bulletins)

---

### Recommended Citation

Keffer, C.A., "Notes on the Growth of Trees in the College Grounds" (1887). *Bulletins*. Paper 1.  
[http://openprairie.sdstate.edu/agexperimentsta\\_bulletins/1](http://openprairie.sdstate.edu/agexperimentsta_bulletins/1)

This Bulletin is brought to you for free and open access by the South Dakota State University Agricultural Experiment Station at Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in Bulletins by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact [michael.biondo@sdstate.edu](mailto:michael.biondo@sdstate.edu).



AND

# Experiment Station.

Bulletin NO. 1.

November, 1887.

**Department of Forestry and Horticulture.**

**Notes on the Growth of Trees in the College Grounds.**

PRESS STEAM PRINT, BROOKINGS, DAKOTA.

P

33560

# Agricultural College <sup>and</sup> Experimental Station of Dakota.

---

BULLETIN NO. 1.

---

*Department of Forestry and Horticulture.*

---

## NOTES ON THE GROWTH OF TREES IN THE AGRICULTURAL COLLEGE GROUNDS.

The following notes on the growth of the trees in the Agricultural College grounds are given as showing the action of different varieties under similar conditions. The trees were planted one and two years ago, having been shipped from Lake City, Minn., a town on the Mississippi River. They were placed in what is destined to be the campus, and having been set in irregular groups, with a view to ultimate landscape effect, it was impossible to give them much cultivation. They were carefully planted, liberally mulched with coarse manure, and left with but little care until September last. The campus occupies the summit and slopes of a slight ridge, and being exposed to winds on all sides, the trees were so blown as to make holes at their bases, in many instances as much as six inches deep and three inches in diameter. In September the mulch was removed from the trees and the ground about them was firmly tamped, after which the mulch was replaced and the trees left for the winter.

The soil is the usual black loam of the prairies with compact subsoil of yellow clay, containing a little sand. One crop of wheat had been taken from the ground, the remainder having been broken in June, backset in the fall and set to trees in the spring. The land had been but poorly plowed for the wheat crop, so that the

entire plot might be considered new. About the only favorable condition for tree growth was the mulching. The early part of the season was rather dry, but copious rains fell in August, to the great benefit, no doubt, of the trees.

In the notes which follow, the figures given are the result of actual measurements, the longest leader that could be found on any tree of the variety having been measured. In most cases an estimate of average growth is given; this estimate was made after a careful examination of all the trees and may be considered reasonably accurate. The leaves of most of the trees having fallen when this bulletin was prepared, the species of a few sorts could not be definitely determined. In such cases the genus is given, followed by an interrogation point.

*Betula Alba*. White Birch. The trees of this variety, taken as a whole, have made better growth during the past season than any others on the college grounds except white willow. When planted, they averaged not more than four feet in height. The average growth of over thirty trees, located in different parts of the grounds, was more than a foot. The longest leader measured three feet one inch. No apparent difference in growth was observed between the trees on the top of knolls and those in lower ground. Birch wood is now being used very much in the manufacture of furniture, a large part of the so called "mahogany finished" furniture being stained birch. The foliage is healthy, and the graceful habit of the tree, with the white bark of its trunk, make it very ornamental. This, with the commercial value of its timber and its rapidity of growth, should commend it to planters generally.

*Betula alba pendula laciniata*. Cut Leaved Birch. This is one of the most ornamental trees that will thrive in Dakota. The leaves are deeply cut and the long slender branches are quite pendulous after the trees have attained a height of sixteen feet, more or less. The few trees we have did not make half as much growth as did the white birch. The longest top branch found measured nine inches.

*Betula*. ? *var. fol. purpurea*. Purple Leaved Birch. A number of small specimens, budded a foot from the ground on a dwarf species—probably *B. nana*—have made scarcely any growth during the season, the beautifully tinted foliage not being able to stand the dry weather of this region. It cannot be recommended.

*Alnus glutinosa*.(?) Alder. A dozen or more alders in the college grounds passed through the last severe winter without injury, and made a fair growth the past season several trees showing new wood ten inches long. One leader measured one foot three inches in length. The alder is a fine ornamental tree with foliage somewhat resembling the small leaves of the hazelnut. It seldom exceeds thirty feet in height and its wood is not particularly useful; for lawn planting, however, it should prove a valuable sort.

*Negundo aceroides*. Box Elder. This is one of the varieties most largely used in the planting of tree claims. The trees on the college grounds did not make a great growth last year, the longest shoot found measuring two feet two inches, while the average growth would hardly exceed ten inches. The species has made a remarkable record under cultivation, and our specimens, while they have not equaled the white birch in growth the past season, have been healthy and are evidently in good condition for work next spring. The box elder is probably the

toughest of the soft wooded, rapid growing trees, and for this reason it would make good live fence posts.

*Acer dasycarpum*. Silver Leaf or Soft Maple. Only a few trees of this kind have made a good growth this year, most of them showing little more than a tuft of leaves. One had a leader two feet three inches long, but this was exceptional. The soft maple cannot be recommended for prairie culture because the wood is not tough enough to withstand the heavy winds. Its timber is no more valuable for farm uses than box elder, which will give greater satisfaction to the planter.

*Acer* ? *var. laciniata*. Cut Leaved Maple. This unique variety of soft maple has made a growth of five inches the past summer. The leaves are smaller than in silver maple and deeply cut, the lobes being divided and pointed. If it prove hardy it will be a valuable lawn tree.

*Pyrus Americana*. American Mountain Ash. The trees of this sort have grown well and been free from blight the past season, several branches being found which measured one foot six inches in length. The trees do not show any injury from freezing. The beautiful compound leaves and the clusters of brilliant red berries of this species make it a most desirable variety for the lawn.

*Pyrus aria*. White Beam Tree. Like the mountain ash, which it resembles, this is an ornamental tree of great beauty. Its leaves are darker and thicker than those of the mountain ash, and they are lobed or cleft rather than divided; the tree is also a more upright grower. A leader was found which was nine inches long, and the average growth was but little less. Some of the trees blighted badly; a very grave fault in an ornamental sort. Aside from blight, it is a question whether either the mountain ash or the white beam tree is perfectly hardy.

*Fraxinus Americana*. White Ash. This variety has grown but little during the past season. Only one tree of the hundred or more living in our grounds shows even a moderate growth; on this one the leader measured one foot in length. In the great majority of specimens, the year's growth consisted of a mere tuft of leaves on a very short axis. If the lesson to be learned from this fact is that the ash needs good cultivation, it is an important one. Our trees were nursery grown and few of them were more than one half inch in diameter when planted.

*Tilia Americana*. Basswood, Linn, Linden. The trees of this variety spent most of the season in determining whether to live or die, and that question settled, they had not much time or energy left for growth. The longest branch measured nine inches. The timber of basswood does not equal that of box elder in value. As an addition to our short list of ornamental trees it is to be prized. Its round leaves make fine shade during the summer, and its fragrant, cream-colored flowers add much to its beauty.

*Salix alba*. White Willow. There are only three trees of this species in the college grounds, and they seem to have determined to make a good reputation for themselves. One bore a lateral shoot which measured five and one half feet in length. The best terminal shoot was two feet long. The tree on which it grew stood on top of a low ridge. The trees were all healthy, and being quite young, the branches reached to the ground, making a dome of green.

*Quercus alba*. White Oak. Of the two dozen or more oak trees set, but one showed any life this fall, and in it the top had died to the ground, but a healthy

young shoot, several inches long, has sprung from the root. The great value of oak timber need scarcely be mentioned. As the tree is a very slow grower, and makes a tap root that descends deep into the earth, it is difficult to transplant. Every planter should put acorns into his tree claim. While the more rapid trees are reaching upward, the little oak will be sending its root deep down, and after a few years, when he has almost forgotten its existence, the planter will be astonished to see the young trees appear among their more rapid growing fellows.

*Catalpa speciosa*. Hardy Catalpa. Probably no tree has been more extensively experimented with in the west than the catalpa. The specimens here seem to be out of their latitude. The longest branch of this year's growth is six inches and all the growth is weak. The catalpa cannot be recommended.

*Populus dilatata*. Lombardy Poplar. The two trees of this variety have both been broken off, one near the ground and the other about three feet above; both sent up vigorous shoots the past season, the longest measuring four and one half feet. The Lombardy poplar is very erect in habit, its branches rising close to the trunk and thus making a pillar of green.

*Larix Europaea*. European Larch. The half dozen trees in the grounds suggest great possibilities in the species for forest culture. One tree made a leader a foot long and all grew well. The larch is a native of high latitudes, and is grown in vast quantities in many parts of Europe. The trunk is very straight, the laterals small and the thinnings from a plantation can be used for fence poles, stakes, etc., while the trees are still quite young. As the leaves start very early in the spring, transplanting should be done sooner than with other deciduous trees.

*Ulmus Americana*. White or American Elm. Next to white birch, the white elm has made the most satisfactory growth during the past season. Unlike the birch, the elm has not thrown out strong leaders, but a great many small twigs have appeared, each clothed with glossy foliage, and the trees have proved themselves in fine condition. The longest shoot found measured only a foot, but on each tree there were several branches of almost equal growth. The elm is a most valuable tree for the Dakota planter; the wood is tough and can be used in many places where a strong timber is necessary. It makes a steady growth, and is perfectly hardy.

*Pinus Strobus*. White Pine. Several white pine trees, six or eight feet high when set, barely lived through the past season, their weak and scanty foliage making them anything but ornamental objects. The small trees, while they have grown but little, are healthy and promising.

*Pinus sylvestris*. Scotch Pine. Trees of this variety which were four or five feet high when planted, show good foliage, and have perfectly matured buds, indicating a fine growth next season. The young trees also are in excellent condition. This species seems better adapted to the climate of this region than the white pine.

*Thuja occidentalis*. Arbor Vitæ. White Cedar. A hedge of Arbor Vitæ borders the front of the College grounds and its growth the past summer has been entirely satisfactory; a few leaders in it measured a foot, but these were exceptional, the average growth probably not exceeding seven inches. Isolated trees

made six inches of new wood. The arbor vitæ is one of the prettiest of the evergreens and should be extensively used for ornamental hedges.

*Picea*. The Spruces. The white spruce (*P. alba*) has grown very little, but a few trees of the species seem determined to live, and may yet make fine trees. Norway Spruce (*P. excelsa*) shows a fair average growth, several branches measuring six inches in length. The trees are healthy and have fine buds.

*Abies Balsamea*. Balsam Fir, There are a number of healthy young specimens of this tree, but they have grown but little the past year, the longest leaders measuring three and four inches.

*Juniperus Virginiana*, Red Cedar. Our specimens were all planted singly, and have made a ragged growth, the leaders measuring from four to eight inches. The tree may be used to good advantage for hedging, but it is inferior to Arbor Vitæ where isolated.

November 10, 1887.

CHAS. A. KEFFER,  
Professor of Forestry, Horticulture and Botany.