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South Dakota State University Agricultural
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Experiment Station. The Organization

L. Foster
Dakota Agricultural College

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DAKOTA

AGRICULTURAL COLLEGE
AND
EXPERIMENT STATION.

Bulletin No. 2.

April, 1888.

DEPARTMENT OF AGRICULTURE and EXPERIMENT STATION.

Brookings, Dakota.



PRESS STEAM PRINT, BROOKINGS, DAKOTA.

AGRICULTURAL COLLEGE

And Experiment Station of Dakota.

BULLETIN NO. 2.

EXPERIMENT STATION.

The Organization.

The Board of Regents of the Dakota Agricultural College, who under the Territorial law have the direction of the Agricultural Experiment Station provided by the Hatch Act, at a meeting held on the 13th of March adopted the following scheme of organization:

I. The general management of the Dakota Agricultural Experiment Station, located by the last legislature in connection with the Agricultural College at Brookings, shall, under the Regents, be vested in a Council of Control, consisting of the President of the College as Director of the Station, the Professor of Agriculture as Superintendent of Farm and Stock Experiments, the Professor of Botany, Horticulture and Forestry as Superintendent of Horticultural, Botanical and Forestry Experiments, the Professor of Zoology and Physiology, in charge of Entomological work, an analytical chemist in charge of Chemical Analysis, and a professor of Veterinary Science in charge of investigations of the diseases of animals.

II. The President of the College, as Director of the Station, shall be Chairman of the Council and shall have the same supervisory control of the Experiment Station as of the College. He shall also cause to be kept complete account of all receipts and expenditures and all the necessary records of the Experiment Station.

III. The Director of the Station, with the Superintendent of Agricultural Experiments and the Superintendent of Horticultural and Forestry Experiments, shall constitute an Executive Committee, to determine all questions of interest to the Experiment Station that may arise as emergencies in the interim of meetings of the Board of Regents.

IV. The Superintendent of experiments in agriculture shall have the oversight, direction and planning, under the advice of the Council of Control, of investigations and researches in all branches of agriculture and stock industry as more fully specified in section second of the Hatch Act.

V. The Superintendent of Horticultural, Botanical and Forestry Experiments shall have similar authority in the investigations of his department, and he shall pursue the lines of research identical with section second of the Hatch Act.

VI. The duties of the Entomologist are to investigate the habits and the conditions of growth and multiplication of all injurious insects, their enemies and the best methods of protecting agricultural interests against their inroads.

VII. The duties of the Veterinarian are to make investigation into the diseases of domestic animals, search for remedies and methods of prevention and to make researches in the anatomy, physiology, and hygiene of animal life, as indicated in the second section of the Hatch Act.

VIII. The duties of the Chemist are to make such chemical analyses as are needful for the successful completion of any experiments in any of the other departments, and to make analyses of soils, waters, foods and forage, as indicated in the Hatch Act.

IX. It shall be the duty of all to prepare for publication in bulletins and in the general annual reports, the results of their experiments as fast as facts are ascertained or conclusions reached.

X. All purchases of books, apparatus, machinery, tools, teams, stock or other material necessary to carry on the experiments of the Station, shall be made in the same manner as purchases for the College are now directed to be made, and all expenditures for labor are to be made and controlled as like expenditures for the College.

XI. The treasurer of the Board of Regents shall be treasurer of the Experiment Station, shall have the custody of all funds, shall receipt for them on behalf of the Station, shall pay them out as ordered by the Board of Regents and according to their rules, shall keep complete accounts of all receipts and expenditures, and shall prepare the financial statement for the annual report.

By action of the Regents, the apportionment of the money derived from the Hatch appropriation, is as follows for the first year :

Salaries,	\$3,300
Labor,	\$1,550
Library,	\$1,200
Chemicals and Apparatus,	\$1,200
Horticulture and Forestry Supplies,	\$1,700
Agricultural Supplies and Apparatus,	\$1,700
Plant House,	\$3,000
Entomological Supplies,	\$ 200
Printing,	\$ 200
Stationery and Office Supplies,	\$ 100
Incidental, Fuel, Lights, etc.,	\$ 300
Balance,	\$ 550

\$15,000

The plans of work for the first year in Agriculture and Horticulture are briefly outlined in subsequent paragraphs. Definite plans of work in Chemical Analysis, in Entomology and in the diseases of domestic animals are to be laid as fast as possible. At present work is being done in the analysis of waters.

Agricultural Department.

In this department the experiments for the present will be conducted principally in those lines that will give results of immediate or early benefit to the farmer. The following is an outline of the work to be undertaken the coming season :

CORN—

Experiments will be carried on with many varieties, to determine

- 1st. Time for planting,
- 2d. Length of season required for maturity,
- 3d. Varieties best adapted to our climate.

WHEAT, OATS AND BARLEY—

The work here will be divided as follows :

- 1st. New or untried varieties. To test their hardiness, adaptability to this climate and their general merits; to compare with standard kinds.
- 2d. Old and well known varieties; to find the most profitable, all things considered, for general cropping; to improve some of the best by selection; to test methods of seeding, time of harvest, and quantity of seed per acre.

GRASSES AND CLOVER—

Experiments will be started with all the most promising varieties of both grasses and clover, to find :

- 1st. Those that will survive our winters.

- 2d. What varieties or mixtures can be most profitably grown for meadow and pasturage.
- 3d. The best time for seeding.
- 4th. The best methods of seeding.

FODDER PLANTS—

The various Millets and coarser forage plants will be given a thorough trial to determine their relative value, and find what ones can best be depended upon when the grass crop fails.

POTATOES—

A large number of the latest and most popular varieties will be grown to determine:

- 1st. The best and most productive early and late varieties.
- 2d. The comparative merits of the different kinds.
- 3d. Their value as a general crop.

To test the various ways of preparing the tubers for seed and the different methods of planting.

SUGAR BEETS—

All the best varieties will be given careful trial to test their value for sugar making and stock feeding.

ROOTS—

Experiments will be made with all the best kinds of Mangles, Carrots, Rutabagas and Turnips, to determine:

- 1st. The best time and method of seeding and harvesting.
- 2d. Their value as a general crop.
- 3d. The best method of storage.
- 4th. Their comparative value for cropping and stock feeding.

STOCK—

While no special experiments will be undertaken at the present, careful records will be kept of the growth of the different breeds of cattle, sheep and hogs on the College Farm, with a view of determining the best breeds for the Dakota farmer.

Department of Forestry, Horticulture and Botany.

In the fall of 1877, about two and one-half acres were planted with the seeds of the following varieties of trees: Box elder, white ash, bass wood, hard maple, black wild cherry, honey locust, yellow locust, black walnut, butternut, shell bark hickory, white oak, burr or mossy cup oak, red oak and chestnut. These were so set that if they grow they will form a mixed grove, protecting the ornamental grounds of the college from the North winds.

Twenty-five thousand yearling and two-year-old trees of the following sorts, deciduous and evergreen, have been ordered for planting this spring: Pines—Austrian, red, gray, Scotch and white. Spruces—Norway, white, Douglas, pungens and hemlock. Red and white cedar, European larch, bass

wood, black walnut, yellow birch, canoe birch, white birch, black wild cherry, yellow locust, white ash, white elm, box elder, cottonwood, silver maple, hard maple. Dakota grown stock was secured wherever possible. These trees will be grown in nursery row the coming season, and in due time a bulletin will be issued concerning them.

A large number of cuttings of Russian willows and poplars have been presented to the department by a citizen of Faulk county, who has met with great success in cultivating them there. Orders have been placed with Hale & Thompson of Rapid City, for a complete set of seedlings of the native conifers of the Black Hills. Five hundred of each kind will be secured and their merits for prairie culture will be tested.

Seeds of the following trees, in quantities ranging from $\frac{1}{4}$ to 1 pound, will be planted this spring, with a view to determining the relative and special values of different species: black ash, white ash, blue ash, European ash, American basswood, European basswood, black wild cherry, choke cherry, bird cherry, hackberry, European larch, American larch, black locust, honey locust, sugar maple, Norway maple, mountain maple, sycamore maple, European and American mountain ash, sycamore, caragana, black thorn, cockspur thorn, corsican pine, Douglas spruce, red pine and red cedar. It is scarcely to be hoped that all varieties here named will succeed with us, but all will be tried, and as many more as can be secured.

Seeds of the same species, grown in different sections of the country, will be planted, to determine the influence of locality on hardiness: box elder from New York, Illinois, Kansas and Dakota will be grown in this experiment, and other seeds if they can be secured.

The above covers the work thus far mapped out in forestry.

In Horticulture we have already secured rions of seventy varieties of Russian apples, and are promised another collection of greater numbers. These will be grafted in April. An extensive correspondence, covering the entire northwest, has been carried on during the winter, and the present status of apple culture has thus been pretty clearly ascertained. It would seem wise to test with equal care, the Russians and the many seedlings which our enterprising fruit men are introducing. We have secured a number of seedlings direct from the originators, and shall give them careful attention. An orchard, including the entire list recommended by the Horticultural Society will be planted, together with other apples and crabs, recommended by prominent fruit men.

As complete a list of plums of the Northern type as can be secured, will be set in orchard this spring. It is yet too early to begin with native sorts, but we hope to give the native plum due attention another season.

In small fruits, plantations of standard varieties, sufficient to supply our boarding clubs, will be planted, and in addition large lists of the most promising new sorts will be secured.

The vegetable garden will serve both as a test of relative values and as a means of supplying the boarding clubs with fresh garden products throughout the season. To do this from four to many varieties of each vegetable will be planted, and a record kept of yield, quality, etc. An experiment to

determine the most valuable tomato for Dakota will be the leading feature of garden work.

Owing to many pressing lines of work little will be attempted this season in the way of ornamental plants and shrubs.

In botanical research, we hope to make a collection of the Dakota grasses, and in connection with the Department of Agriculture, to assist in determining something of their economic value, and of the usefulness of various cultivated grasses.

Should the work of the Department progress favorably as planned, bulletins will be issued during the year on forestry, the fruits, and garden products.

An especial effort will be made to secure at the College a complete collection of the trees, shrubs and economic and ornamental herbs of Dakota. Any person having or knowing of any native plants of value, would confer a very great favor by corresponding with us regarding them.

DAKOTA EXPERIMENT STATION.

BROOKINGS, D. T.

First Bulletin from the Department of Agriculture.

LUTHER FOSTER, Superintendent.

Introudction.

In justice to the Agricultural Department, a few words of explanation concerning the experiments herein detailed, are necessary.

At the beginning of the season we were without teams and implements or the money wherewith to purchase. The funds that had been appropriated for this purpose was not available until the seeding season had passed. We borrowed the money necessary to buy seeds for the general as well as the experimental crops, depending on the returns of harvest to pay the debt. Under these circumstances I did not feel justified in going very extensively into any line of experimental work. What we did do was not undertaken with a view of publishing a bulletin of results, but rather as a preparation for more extended experimentation the coming season.

The details are therefore not as complete as they would have been under more favorable circumstances, and it is with some degree of reluctance that we publish them. But since it is thought advisable to make the publication we give the results of the past season's work for what they are worth.

LUTHER FOSTER,
Prof. of Agriculture and Supt. Farm Experiments.

Growth of Grains Tabulated.

The land used for the experimental grain plats is a sandy loam, with a clay subsoil. It had produced but one crop, the plats being so arranged that the north half followed wheat, the south portion flax and the rest oats. I may here note, that in this instance there was no proof of the common theory that no crop will do well following a first crop of flax. There was no perceptible difference in the growth and general appearance of the grain plats that followed the three crops, and in pieces of several acres of wheat and oats, each following the same three crops, there was not the slightest observable difference in color, growth or appearance, to indicate where one previous crop had ended and another had begun.

The grains represented in the following tables, as will be noticed, were not all subjected to the same conditions at planting or during the time of growth. The soil was in all cases thoroughly prepared. A number of the plats were sown broadcast by hand and covered with a harrow. The rest were drilled in rows ten inches apart. Our manner of drilling was similar to that of the press drill. We drilled by hand making the feet answer the purpose of the rollers for firming after the grain was covered. In soil like ours firming is of great importance. All seeds planted by hand are pressed down into moist soil at the bottom of the furrow with the ball of the foot, and the covering afterward firmed. This method insures moisture and immediate germination even in very dry weather.

The drilled plats were all hoed twice and some of them a third time—often enough to keep them entirely free from weeds. Some varieties of wheat and oats from Russia were received too late for a fair trial, and are not included in the report.

Two plats of spring rye were sown—one the ordinary small kind, the other the mammoth. The latter was put in very late. It made good growth but it rusted and was very poorly filled. The former did fairly well. We hope to give them loth another trial the coming season.

WHEAT.

NAME OF VARIETY.	Sown.	Harvested.	Length of straw.	QUALITY OF STRAW.	Length of head.	filled.	SIZE OF GRAIN.	Degree of Rust.
Blount's Colorado or Seven Headed...	April 30	Aug. 10	ft. in. 3 1	Rather large, stout	3	Very poorly	Small and slightly shriveled...	Medium.
Wellman's Saskatchewan Fife	" 30	" 9	3 1	Medium size, strong and well glazed..	3	Extra well	Medium and Plump	Slight.
Saskatchewan Fife *	" 25	" 1	3 3	Large, stiff, extra well glazed, light foliage	3½	Very well	Med., short and very plump...	None.
Pure Scotch Fife.....	" 30	" 6	3 3	Size medium but well glazed, strong..	3½	Well	Medium and fairly full.....	None.
Russian Fife.....	May 3	" 11	3 7	Excellent in all respects.....	3½	Well	Med., very plump and full....	None
China Tea.....	" 3	" 11	3 5	Good.....	4	Medium Extra	Large, long, not plump.....	Medium.
Velvet Chaff or Blue Stem	" 3	July 29	3 5	Large, strong and extra well glazed ..	3½	Extra well	Large and full	None.
Blount's Hybrid No. 15.	April 30	Aug. 9	3 5	Stiff, well glazed and little foliage.....	4	Extra well	Little above med., full, plump	None.
" " " 17	May 3	" 6	3 4	Fairly good.	4	Medium	Large, long and medium full.	Slight.
Champlain.....	" 8	" 8	3 2	Only medium in good qualities.....	3½	Medium Extra	Very small, not full.....	Medium.
Golden Drop	" 3	" 4	3 3½	Rather small, but extra strong for size	4	Extra well	Slight below medium, fairly plump.....	None.
Blount's Rust Proof	" 8	" 3	3 6	Below medium in general qualities..	4½	Well Very	Medium, long and lank.....	Medium.
Peerless or Black Bearded.....	" 3	" 20	4	Very large, coarse and strong.....	4	Extra poorly	Large, long and shriveled	Much.
Pringle's Grandee	" 8	" 12	3 3	Small, stiff and well glazed	4¾	Extra well	Large, med. in plumpness.....	Slight.
French Imperial*	April 25	July 29	3	Very good.....	4	Well	Very long, medium full.....	None.

* Sown broadcast and had no cultivation.

OATS.

NAME OF VARIETY.	Sown.	Harvested.	Length of Straw.	QUALITY OF STRAW.	Length of head	filled.	SIZE & QUALITY OF GRAIN.	Degree of Rust.
White Victoria.....	May 5	Aug. 3	ft. in. 3 3	Large, extra stiff.....	8½	Medium	Small and plump, thin hull....	None.
Black Norway.....	" 5	" 8	3 1	Medium in size and strength	9	Well Extra	Large, awn light, thick hull...	None.
Black Tartarian.....	" 5	" 8	3 3½	Good size, fairly stiff.....	9	well	Large, awn long and heavy....	Slight.
Dakota Choltain.....	" 5	" 1	3 3½	Large and strong.....	10½	Medium	Small, very plump, light hull....	None.
No Name.....	" 5	" 1	3 4½	Slightly inclined to lodge	10½	Well	Small and plump, thin hull... Size, thickness of hull and	Slight.
Golden Ruslan	" 5	July 28	3 2½	Rather weak, inclined to lodge	9½	Very well	plumpness medium..... Small, loop hull rather thick	None.
White Surprise.....	" 5	Aug. 1	2 8½	Size medium, strength good.....	10½	Very well	light, short awn	Slight.
Holstein.....	" 5	"	3 2½	Slightly lodged.....	10½	Medium	Medium in size and plumpness hull heavy, awns light....	Slight.
Probstler *	April 23	July 29	3 2½	Stiff and strong.....	9	Well	Size, plumpness of grain and thickness of hull medium....	None.
Welcome.....	" 25	" 29	3 3½	Med. in size and strength, not lodged..	9	Well	Small, very plump, light, thin hull.....	None.
White Belgium.....	" 25	Aug. 1	3 2½	Quite stiff, very good.....	8½	Medium	Large, plump grain, heavy hull and slender awn	None.
Wide Awake.....	" 25	" 6	3 2½	Medium size, weak, much lodged.....	8½	Very well	Med. in size and plumpness, husk light.....	Slight.
White Bonanza.....	" 26	" 1	3 2½	Extra good in all respects.....	9½	Very well Extra	Small, extra plump grain and light hull	None.
Hargett's White Seizure.....	" 26	July 22	3 4½	Good, stiff and strong.....	9½	well	Small, extra plump, hull very light.....	None.

* The first eight varieties were drilled and cultivated while the remainder were sown broadcast.

BARLEY.

NAME OF VARIETY.	Sowed	Harvested	Length of Straw	QUALITY OF STRAW.	Length of head	Plum.	SIZE & QUALITY OF GRAIN.	Degree of Rust
Manshury	May 5	July 25	ft. in. 2 9/16	Extra strong and stiff	2 3/4	Extra well	Large and full	Very Slight.
Two Rowed.....	" 5	" 22	2 6	Stout and stiff.....	4	Extra well	Medium size, plump.....	Very Slight.
Me'on.....	" 5	" 20	2 6	Stout and stiff.....	3 1/2	Well	Extra large and full	None.
Imperial.....	" 5	" 25	2 4	Medium in stiffness.....	2 3/4	Medium	Small and lank.....	Slight.
Four Rowed	" 5	" 25	2 7	Stiff and stout.....	2	Well	Size and fullness medium.	None.
Barley No. 3	" 5	" 20	2 6	Very good	2 1/2	Medium	Large and full.....	None.
Black Hulless	" 5	" 28	2 7	Rather weak and inclined to lodge ...	2 1/2	Extra well	Extra large and plump	None.
Scotch *	April 25	" 18	3	Very large and stiff.....	2 1/2	Well	Size above med., quite plump	None.
Chevalier.....	" 25	" 23	2 5	Stout and stiff	4	Extra well	Med. size, fairly full & plump.	None.
Wisconsin Manshury..	" 25	" 18	2 5	Extra stout and stiff	3	Well	Small, medium full	None.
Imperial Hybrid.....	" 25	" 18	2 2 1/2	Extra stout and stiff	2 1/2	Well	Very small, fairly plump	None.

* The last four varieties sown broadcast, the rest drilled and cultivated.

NOTE—Many varieties of wheat, oats and barley were furnished by Prof. Porter of the Minnesota Experiment Station and a few by Prof. Blount of Colorado Agricultural College.

In each of the preceding tables every one will find some few familiar varieties that will give a means of comparison. The varieties of wheat giving the best yield the past season are as follows: Pringle's Grandee, French Imperial, Blount's Rust Proof, Golden Drop, Velvet Chaff or Blue Stem, Blount's Hybrid No. 15, and Wellman's Saskatchewan Fife.

The Harris Oats, not mentioned in the table, ripened fully ten days in advance of other varieties. Our trial for the past two seasons has not shown them to be of any value for cultivation here.

The Black Hulless Barley, as its name indicates, is entirely free from husk, like wheat, and with us gave an extra large yield. It will no doubt prove valuable for feeding purposes.

Potato Culture.

The ground in which the potatoes were planted is a dry sandy loam. It had been cropped only one season, a small portion having been in corn and the rest in wheat. The soil was thoroughly prepared by deep plowing, barrowing and clod-crushing. A part of the plowing was done in the fall and the rest in the spring, the final preparation being made just before planting. The crops on these different plowings did not differ materially, but the former gave us a little more work in cultivation.

The furrows for planting were made with a fourteen inch stubble plow, three and a half feet apart. An extra large single shovel plow would have been better, but we had none. With the exception of a small piece, the planting was done as fast as the furrows were made. On this small piece, where the planting was delayed a day or more, not over one-half of the seeds ever germinated, and these were a long time in coming up.

The potatoes were cut to single eyes, as nearly as could be done and still leave a good sized piece of the tuber with each eye. These were dropped in the row from ten to fourteen inches apart, and covered with the hoes to the depth of three to four inches, the covering being well firmed.

The cultivation consisted of one harrowing before the potatoes came up and three plowings afterward. Those on the fall plowing received an extra harrowing, and were also hoed. The plow used was a double shovel, and with this the billing was done. A few rows were carefully hilled with the hoe for the purpose of comparing results. The only difference observed was an occasional sunburnt potato where the double shovel was used, none being found where the work was done with the hoe. The stand was excellent and the growth of the vines very vigorous, but the yield was only medium, owing to extremely dry weather at the time when tubers were setting and during the time of their growth.

Potato Bugs.

We were troubled some by both the black beetle and the striped Colorado beetle. The former did but little damage to the potatoes, leaving them after a few days for the Alfalfa, which they ate up pretty thoroughly. The

damage done by the Colorado beetle was slight, but it required regular treatment throughout the season.

In the beginning the bugs and eggs were picked by hand, but we found this a very laborious and also expensive method. We therefore abandoned it and resorted to the common remedy—Paris Green. This was applied with an ordinary hand sprinkler, using a table spoonful of the poison to two and a half gallons of water.

Quantity of Seed.

In order to determine the value of an extra amount of seed, rows of equal length side by side were planted with the same kind of seed, placing in one row single pieces containing a single eye fifteen inches apart, and in the other two such pieces every fifteen inches. The products of these rows did not differ in size or quantity of tubers. In this single experiment the extra seed was of no value.

Further experiments in seeding with whole potatoes and those cut to single eyes, also in drilling and hill planting will be necessary before anything like a complete report can be made on this subject.

The Polaris.

This, all things considered, is the best potato grown by us last season. The tuber is long, oval, smooth and handsome, its color being a creamy white. So far as one season's experiments can show, it combines to a great degree all the essential qualities of a first-class potato. From twenty ounces of seed, received from the Department of Agriculture at Washington, we harvested two bushels of potatoes.

Earliest Potatoes.

The following were the earliest varieties raised on the College farm the past season. They were all excellent potatoes and gave a fair yield: Early Maine, Clark's No. 1, Pearl of Savoy and Early Sunrise. In addition to the above, last season showed the following varieties to be good: Chicago Market, Early Ohio, Beauty of Hebron, Early Triumph, Early Harvest, Michigan Rose and Early Rose. All of the above varieties can be depended upon in this part of Dakota for a medium yield of good potatoes free from disease.

Late Potatoes.

The following may be given as the best of the late varieties grown on our grounds, all of them are good: White Star, Empire State, Burbank's Seedling, Late Favorite, Alexander's Prolific, Dakota Red, Iron Clad and O. K. Prolific.

Alfalfa.

The land used for this experiment had produced two crops, the first wheat and the second cabbage. It was selected on account of its thorough cultivation the previous season and consequent comparative freedom from

weeds. The seeds were drilled in rows twelve inches apart, a Planet Junior garden seeder being used for the purpose.

A portion was sown at the rate of twenty pounds of seed to the acre, and the rest at fully thirty. The only difference observable in the sowing is shown in the size of the stems, those of the thin sowing being much larger and coarser. Two small pieces were also sown broadcast, one at the rate of twenty pounds of seed to the acre and the other at forty. The first of these pieces was almost entirely choked out by the weeds, and the second required assistance to keep it from suffering a like fate. That sowed in drills was hoed thoroughly twice and after that all weeds were kept pulled out. It was not mowed at all but left to make the strongest possible growth the first season. This was good, save one backset caused by the ravages of the black beetle in June, when they left the potato field and came in full force to the Alfalfa. Here they staid until most of the young leaves and tenderest shoots were devoured. The piece is now covered with snow and has been throughout the entire winter.

White Dutch Clover.

Toward the latter part of June, 1886, a portion of the campus was sown in White Dutch Clover. Although put in thus late it made an excellent growth, covering the ground nicely before cold weather set in. During the winter, all except a small portion, was covered with snow and was not injured in the least, but that portion not so protected, nearly all died, not a tenth part living through the winter. Last summer it did well notwithstanding its use as a portion of the students' play ground.

Alsike, or Swedish Clover.

A small piece was sown broadcast early in May, 1886. It made satisfactory growth during the season, was well covered through the winter, no portion being exposed for comparison in wintering. Thus protected it stood our cold winter very well. Last season the growth was good; the drouth not affecting it perceptibly. This variety does not make as large a growth as the common red clover. It is again completely covered with snow.

College Lawn.

Last spring we seeded four acres of the college campus for a lawn. This piece of ground was pretty well subdued, although it had produced but two crops, the first wheat and the second potatoes. The soil was first thoroughly prepared, being made very fine and smooth with the harrow, clod-crusher, rake and hoe. Having but little faith in commercial lawn mixtures, we made our own, selecting for that purpose the following seeds: Kentucky Blue Grass, Red Top and White Clover. On the four acres we sowed thirteen bushels of Blue Grass and Red Top in nearly equal quantities, to which was added one-half bushel of White Clover, for the purpose of producing a quick lawn. For want of a roller, the last and most important steps in the process was omitted. The drought affected the early growth somewhat, but

after the rains it came on very well and by fall was in fairly good shape. We found it necessary to run over the ground twice during the summer with the mower, cutting the weeds above the grass.

Horticulture and Forestry.

In the line of Horticulture and Forestry, which was not separated from my department and made an independent chair until last September, numerous experiments in forest and ornamental trees had been started, as detailed in a previous bulletin by Prof. Keffer, now in charge of that department. These experiments and various others in Horticulture, testing the relative merits of the different kinds of garden corn, peas, beans, etc., received their due proportion of care and attention throughout the summer.