

Date and Rate of **Lawn Seeding**



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THE AMOUNT of lawn grass to sow and the time of year to sow it have long been subjects of disagreement. Some experiments in progress for a number of years in the Horticultural Division at University Farm throw some light on this question as related to Minnesota conditions.

DATE OF SEEDING

Varied recommendations have been made as to the best time for seeding a lawn. Dickinson² (under Massachusetts conditions) says fall is the only time worth considering. Schreiner and others³ report some success in spring seeding but consider late August and September to be the best time for the latitude of Washington, D.C. Welton and Salton⁴ recommend either spring or fall but indicate that successful seeding may be done in midsummer if adequate facilities for watering are available. They note for northern Ohio that the seeding should be made before September 15 or be postponed until spring.

Inasmuch as climatic conditions in Minnesota differ greatly from those of the eastern states, an experiment was conducted during the years 1930-1936, inclusive, to ascertain periods best

adapted to lawn seeding. Each year plots 10x25 feet were seeded at approximately monthly intervals except during the last three years when additional seedings, mostly at weekly intervals, were made in the latter part of the season.

Table 1 lists the dates on which the seedings were made. An effort was made during the earlier years to start the seeding as early in May as possible. During the last three years weekly sowings were made during the latter part of the season to explore more fully its possibilities.

A mixture composed of Kentucky bluegrass, 60 per cent; Red Top, 20 per cent; perennial rye grass, 10 per cent; and white clover, 10 per cent, was used at the rate of three pounds per 1,000 square feet.

The type of soil used was "Hempstead" silt loam. The soil was very fertile and especially suited to lawns. The plots were artificially sprinkled although they did not receive as much water as the average home lawn would receive. The condition of the seedings was scored at various times through the season as Good+, Good, Good-, Fair+, Fair, Fair-, Poor+, Poor, and Poor-. These notes covered the season in which the seed was sown and the two following years, and were all taken by the same person, the ratings being really a judgment of the thickness of the bluegrass turf, particularly after the first season, although the presence of other grasses and clovers had some influence upon the score.

¹ Accepted for Publication June 11, 1941.

² Dickinson, Lawrence S., "Lawn Management," Mass. Agri. Ext. Leaflet 85 (Revised 1935).

³ Schreiner, O., Skinner, J. J., Corbett, L. C., and Mulford, F. L., "Lawn Soils and Lawns," U.S.D.A. Farmers' Bul. 494, 1912.

⁴ Welton, F. A., and Salton, Robert M., "Better Lawns," Ohio Agri. Exp. Sta. Circ. 18, 1929.

Table 1. Dates of Seeding of the Lawn Grass Test Plots

| Year | May | June | July | August | September | October |
|-----------|-------|-------|-------|------------|-------------------|--------------|
| 1930..... | ..... | 2 | 7 | 2 | 5, 17, 29 | |
| 1931..... | 7 | 7 | 7 | 7 | 7 | |
| 1932..... | 21 | 21 | 21 | 21 | 21 | |
| 1933..... | ..... | 2 | 2 | 2 | 2 | 2 |
| 1934..... | 10 | 9 | 10 | 9 | 6, 13, 20, 27 | 6 |
| 1935..... | ..... | ..... | 9 | 12, 19, 26 | 3, 10, 16, 23, 30 | 6, 13, 21 |
| 1936..... | ..... | ..... | ..... | 15, 24 | 3, 11, 17, 24 | 1, 9, 16, 29 |

Discussion of Results

Table 2 indicates that the best date for seeding may occur at almost any time in the summer, seemingly depending on the season in regard to moisture and temperature. The only month not showing a "best" period is June. The periods that show up most frequently as best are July, August, and early September.

The weather, especially temperature and rainfall, during the growing season affects the germination of grass seed. Table 3 gives the rainfall for the growing season for 1930-1936. For instance, 1934 was a hot dry season with low rainfall in May which probably adversely affected the seeding in that month. Also 1936 was hot and dry in July, but no seedings were made that year until August 15. By that time good rains were falling with the result that the August 15 sowing gave good

results and that of August 24 was the best for the year. The seedings of September 3, 11, and 17 were all in the good column, but the September 24 seeding gave only fair results while that of September 30 and all seedings for October were poor. These facts indicate that a good stand of grass can be obtained even in hot summer if sufficient moisture is present.

Table 4 is a summary by months of the ratings of the third season after sowing of all the seedings, showing the total number of plots for each month that were "good," "fair," or "poor." An examination of the "good" columns reveals that in some year or other, May, June, July, August, and September are all included. May does not show up as well as the other months, "good" occurring only once out of three seedings in May. June shows a "good" plot every year that June seedings were made except for one, the drouth year of 1934. Both July and August show only "good" plots every year. The data for September are divided into two periods: (1) September 1-15; (2) September 16-30. Except for 1930 the early September data register "good," but the latter part of the month has more "fair" and "poor" than "good"; October shows only "poor" results. Turning to the reverse side of the picture, the only "poor" plots are in the late part of the season from September 21 on. Early September also shows up in the "fair" column, and May ranks there mostly too.

Table 2. Best and Poorest Plots in Each Year for Sowings, 1930-1936

| Year | Best | Poorest |
|------|-------------------|-------------------------------------|
| 1930 | Sept. 26*; Aug. 2 | Sept. 29 |
| 1931 | July 7 | May 7 (fair) |
| 1932 | May 21; July 21* | Sept. 21 |
| 1933 | Aug. 2*; Sept. 2 | Oct. 2 (no stand) |
| 1934 | July 10 | Oct. 6 |
| 1935 | July 9; Aug. 12* | Sept. 30; Oct. 6; Oct. 31 |
| | | Oct. 21 (no stand) |
| 1936 | Aug. 24 | Oct. 1; Oct. 9; Oct. 16; Oct. 29 |

* Second best plot but nearly as good as the best.

**Table 3. Monthly Mean Temperature in Degrees Fahrenheit and Precipitation in Inches
for Minneapolis, April to October, 1930-1936**

| Year | April | | May | | June | | July | | August | | September | | October | | Total Precipitation April-October |
|-----------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|--------------------------------------|
| | Monthly mean degrees F. | Precipitation in inches | Monthly mean degrees F. | Precipitation in inches | Monthly mean degrees F. | Precipitation in inches | Monthly mean degrees F. | Precipitation in inches | Monthly mean degrees F. | Precipitation in inches | Monthly mean degrees F. | Precipitation in inches | Monthly mean degrees F. | Precipitation in inches | |
| 1930..... | 49.4 | 0.62 | 58.4 | 3.38 | 68.6 | 6.68 | 75.3 | 0.92 | 75.2 | 0.72 | 62.4 | 4.14 | 47.2 | 1.14 | 17.60 |
| 1931..... | 50.0 | 1.20 | 56.1 | 1.35 | 73.7 | 4.78 | 76.2 | 1.12 | 70.6 | 2.97 | 68.6 | 2.42 | 54.4 | 1.87 | 15.71 |
| 1932..... | 46.6 | 2.15 | 59.1 | 2.05 | 72.3 | 1.56 | 74.7 | 4.36 | 72.6 | 3.87 | 61.0 | 0.85 | 46.4 | 0.89 | 15.73 |
| 1933..... | 44.8 | 1.43 | 58.8 | 7.87 | 77.9 | 1.31 | 77.0 | 2.16 | 70.8 | 1.09 | 67.4 | 3.44 | 47.4 | 1.26 | 18.56 |
| 1934..... | 46.0 | 1.57 | 68.7 | 0.21 | 73.0 | 2.30 | 76.2 | 1.40 | 70.1 | 1.61 | 57.2 | 4.86 | 54.0 | 5.64 | 17.59 |
| 1935..... | 44.0 | 2.32 | 54.9 | 3.81 | 64.3 | 4.82 | 79.8 | 2.59 | 72.6 | 3.02 | 62.2 | 1.98 | 48.6 | 3.95 | 22.49 |
| 1936..... | 39.8 | 1.48 | 64.2 | 2.25 | 66.4 | 2.29 | 81.4 | 0.11 | 74.7 | 3.48 | 66.7 | 0.78 | 46.6 | 0.66 | 11.05 |

Table 4. Summary by Months of the Dates of Lawn Grass Seedings Classified According to Excellence at the End of the Third Season's Growth. Seedings Made During Years 1930-1936

| | No. of Plots | Good* | Fair* | Poor* |
|-------------------|--------------|-------|-------|-------|
| May | 3 | 1 | 2 | ..... |
| June | 5 | 4 | 1 | ..... |
| July | 6 | 6 | ..... | ..... |
| August | 10 | 10 | ..... | ..... |
| Sept. 1-15 | 9 | 8 | 1 | ..... |
| Sept. 16-30 | 10 | 4 | 3 | 3 |
| October | 9 | ..... | ..... | 9 |

* The categories Good, Fair, and Poor include also the plus and minus ratings of each.

From this some definite conclusions are warranted. First, there are several "good" times in the year for seeding lawn grass. August and the early part of September seem especially favorable, but June and July run a close second, with May not quite so good. After the middle of September, conditions are not so favorable, as cold temperatures and frozen ground often occur before the late seeded grass has become established. Sometimes good stands are obtained by seeding just before the ground freezes. In this experiment such results were not obtained, but only in two years were late seedings made.

Another objection to late fall seeded lawns is that they are often subject to thoughtless tramping during the winter, and thus the soil surface may be very irregular by springtime.

Furthermore, the time of year the lawn is seeded has considerable effect on the germination and growth of the different grasses in the mixture. These various grasses are used for the following purposes. Kentucky bluegrass should be used for the ultimate lawn, but because it is rather slow to germinate, it does not reach a size to provide a satisfactory cover of the ground for some months. Red Top is used to give

coverage until the bluegrass attains some size. White clover, which germinates quickly, is also used because it soon covers the ground.

Perennial rye grass is used as a nurse crop because it germinates and grows rapidly and gives coverage and shade till the other grasses and the clover reach some size, but it dies out in the winter. It has the greatest value when used in the earlier seedings as it grows rapidly and stools out heavily when sown early, thus protecting the other grasses during the hot summer.

White clover acts as a nurse crop in the seedings of the early part of the season. As seen in table 5, it varies in its ability to survive the winter depending on the time of the year it is sown. Sown in spring or early summer, it survives readily into the following summer, but in the successive later seedings, it survives to a lesser extent; in very late sowings, rarely is much clover seen during the following year. Usually by the third season clover has nearly disappeared, provided conditions are favorable for the bluegrass.

Thus a lawn seeded late in the summer is likely to be almost wholly or entirely bluegrass the second summer and thereafter, while one seeded in the early season is likely to have much clover the second summer and even into the third summer.

These facts also have a bearing on spring seeding. One thing often pointed out in favor of fall seeding is that there is little competition from weeds when

Table 5. Effect of Time of Seeding Upon Development of Clover

| Date of seeding in 1932 | Stand Sept. 18, 1933 |
|-------------------------|----------------------|
| May 21..... | Heavy |
| June 21..... | Very heavy |
| July 21..... | Moderate |
| Aug. 21..... | Very small |
| Sept. 21..... | No |

seeding is done in the fall, but there is much competition if it is done in the spring. This is largely true, but because the perennial rye grass and white clover come on very rapidly in the spring seedings, they give competition to the annual weeds. Usually if the lawn is mowed as soon as grass and weeds are tall enough to cut, a good lawn will be secured by fall so that by the next summer there will be a good coverage of bluegrass and clover, except when much crab grass seed is present, especially if the soil is sandy. In this case it is difficult to get a good stand of lawn grass unless one waits till later in the summer, after the crab grass has germinated and been destroyed. This accounts for the fact that June and July have shown up as favorable for seeding.

RATE OF SEEDING

Various recommendations have been made as to the amount of grass seed needed to seed a lawn, amounts varying from 2 to 5 pounds or more of seed per 1,000 square feet of lawn. Dickinson recommends 4 to 5 pounds of seed per 1,000 square feet; Welton and Salton say 2 to 3 pounds should be used and that more rather than less would be better.

To check upon these recommended amounts a series of experiments was begun in 1930. The same seed mixture was used as in the date of planting plots. In 1930 the seedings were made on two radically different types of soil: (1) the Hempstead silt loam used in the date of planting series described above, and (2) a very sandy soil described by the Soils Division as "Miami" fine sandy loam. In 1931 and 1932 the seedings were made only on the Hempstead silt loam soil.

Three rates of seeding were used as follows: (1) one pound per 250 square

feet; (2) one pound per 500 square feet; and (3) one pound per 750 square feet. This series of plots was repeated on successive dates for three years as follows: 1930—June 2, July 2, August 2, September 5, 17, and 29; 1931—May 7, June 8, July 7, August 7, September 7, and October 14; and 1932—May 21, June 21, July 21, August 21, and September 21.

Notes were taken at various times during the season on the condition of the lawn plots, as in the "Date of Planting" experiment. The same scale of judgment on condition was used, and watering was the same.

Description of Results

The final ranking of the various seedings grouped according to rate and date of seeding is given in tables 6 and 7. These tables will indicate which rates of seeding finally made a good lawn turf.

On the Miami fine sandy loam which has only one year's seeding, the 1-250 and 1-500 rates of seeding both resulted in good lawn plots at the final readings in a majority of cases, but the 1-750 rate gave only poor results, undoubtedly due to the type of soil. This Miami fine sandy loam is a very light, sandy soil with poor water-holding capacity. (See table 6, A.) Here two factors operated to cut down the stand: (1) lower moisture content and (2) competition with annual weeds, particularly crab grass. Therefore, on unfavorable soil, the amount of grass seed should be increased.

Table 6, B gives the final ranking of seedings on the Hempstead sandy loam, and indicates that a majority of the seedings finally gave good results. All of those designated as poor were made in late September or October, which has been found to be an unfavorable time for lawn seeding.

Table 6. Final Ranking of the Various Rates of Seeding Showing the Total Number of Plots That Were Ranked Poor*, Fair*, and Good*. Numbers in Parentheses Indicate Number of Plots in That Particular Month

| A. On Miami fine sandy loam† | | | |
|------------------------------|--|-----------|--|
| Seeded 1 lb. to | Good | Fair | Poor |
| square feet | | | |
| 250 | June (1), July (1), Aug. (1), Sept. (1) | | Sept. (1) |
| 500 | June (1), July (1), Aug. (1) | Sept. (1) | Sept. (1) |
| 750 | | | June (1), July (1), Aug. (1), Sept. (2) |

| B. On Hempstead silt loam‡ | | | |
|----------------------------|--|------------------------|------------------------|
| Seeded 1 lb. to | Good | Fair | Poor |
| square feet | | | |
| 250 | May (2), June (3), July (3), Aug. (3), Sept. (2) | Sept. (3) | Oct. (1) |
| 500 | May (1), June (3), July (2), Aug. (3), Sept. (2) | July (1), Sept. (1) | Sept. (2), Oct. (1) |
| 750 | May (1), June (3), July (2), Aug. (3), Sept. (2) | July (1), Sept. (1) | Sept. (2), Oct. (1) |

* These ratings, "poor," "fair," and "good," include also the minus and plus ratings of each.

† One year seeding only.

‡ Three years seeding combined.

Table 7 makes somewhat clearer what happened during the progress of the growth of these plots. This table gives an annual ranking (in September) for three years (1931-33) of the plots sown in 1931, and illustrates certain trends. For instance, for the late sowing of October 14, no stand resulted from any seeding. Also, the heavier

seeding, 1 pound to 250 square feet, nearly always gave good results, usually from the beginning. The 1-500 rate was not so consistently good although it finally gave a good lawn. And the 1-750 seeding was mostly poor or very poor at first, gradually getting better and giving a good lawn by the end of the third season.

This would indicate that on areas where it made no particular difference whether or not a quick coverage was obtained, a much lighter seeding might be employed. From 1½ to 2½ pounds per 1,000 square feet would give a good lawn turf by the end of the third season, although thin the first, and only fairly good the second season.

But 3 to 4 pounds per 1,000 square feet of a good Kentucky bluegrass mixture should be about right when seed-

Table 7. Notes on Rate of Lawn Grass Seeding on Hempstead Loam Soil for 1931 Covering a Three-Year Period

| Seeded 1 lb. to | Condition Sept. 10, 1931 | Condition Sept. 24, 1932 | Condition Sept. 15, 1933 |
|-----------------|--------------------------|--------------------------|--------------------------|
| square feet | | | |
| May 7 | | | |
| 250..... | F* | F+ | G- |
| 500..... | P | G | G |
| 750..... | P- | F+ | G |
| June 8 | | | |
| 250..... | F | G | G |
| 500..... | F- | G to G+ | G |
| 750..... | P- | G- to G | G |
| July 7 | | | |
| 250..... | G | G | G |
| 500..... | F | G | G |
| 750..... | F- | F+ | G |
| Aug. 7 | | | |
| 250..... | G | G | G |
| 500..... | F | G | G |
| 750..... | P | F | G |
| Sept. 7 | | | |
| 250..... | ..... | G | G |
| 500..... | ..... | G | G |
| 750..... | ..... | G | G |
| Oct. 14 | | | |
| 250..... | † | ..... | ..... |
| 500..... | † | ..... | ..... |
| 750..... | † | ..... | ..... |

* Abbreviations: G=Good, F=Fair, P=Poor.
† No stand.

ing on good soil in a favorable season. If the soil is light or the season unfavorable somewhat heavier seeding is advisable.

SUMMARY

1. A good lawn may be obtained by seeding at almost any time in the season, depending on weather conditions such as temperature, rainfall, humidity, etc. The most favorable period was August 15 to September 15. The poorest time was later in the fall, with May seedings only fairly good.

2. The time of seeding affects the balance of the grasses and clover contained in the seed mixture. Early

summer seeding tends to give large amounts of clover in the lawn during the second and even the third season; successively later seedings give less and less clover in the second and third seasons; very late fall seedings are likely to give little or no clover.

3. The best rate of seeding seems to be about 3 to 4 pounds per 1,000 square feet of lawn surface. This amount gives a good lawn coverage during the first season. Considerably less than this amount ($1\frac{1}{2}$ - $2\frac{1}{2}$ pounds per 1,000 square feet) often ultimately will give a good turf, but it will be thin for a year or two. On lighter sandy soils considerably heavier seeding is needed than on heavy lawn soil.