

that he is measuring its resistance to adverse conditions by the weakest period of its life. The young alfalfa plant is so sensitive to standing or stagnant water that the intelligent irrigator of Colorado would not dare to put an inch of water upon his field—after seeding—before the plants were six weeks old, even if he were sure that they were going to perish from drought. In eastern Kansas I have known six inches of rain to fall in three days upon the young, growing crops. Is it a wonder that some people have lost their spring-sown alfalfa? This is not a fault of the adult plant, but a weakness of the seedling, which must be respected by man if he would receive the full rewards accruing to the intelligent.

Quantity and Quality of Seed.

“The quantity of seed to sow on an acre is a question of considerable importance. The majority of successful growers advise twenty to thirty pounds. If the seed were universally good, and the ground always well prepared, this would be grossly extravagant. Professor Hadden has made some interesting observations upon the stand of alfalfa in a number of meadows. A field of alfalfa six months old was found to contain 653,400 plants per acre; another field ten years old was found to contain 526,793 plants per acre; another contained 139,392 plants to the acre. All of these three fields yielded practically the same quantity of hay per acre—a little over four tons. Another field twelve years old was found to contain only 70,283 plants per acre, and yet this field yielded over three tons of hay per acre. The stands in these different fields were respectively 15, 12, 3 and less than two plants per square foot. A pound of alfalfa seed contains about 210,000 seeds. If ninety per cent of them germinate, twenty pounds per acre would give 3,780,000 plants, or eighty-eight per square foot. After nine-tenths of the young plants have perished from crowding or accidents we would still have an ample stand. From these facts one can readily find the reasons for difference of opinion among good farmers as to the quantity of seed to sow. As low as eight to ten pounds per acre have frequently been used with success.

“The quality of the seed is another very important factor. Good germinable seed should always be used. The percentage of germinability should be ascertained by a test before sowing. This is easily obtained as follows: Count out 100 seeds and place between two pieces of muslin. Invert a small dish in a larger vessel and pour water around it. Place the muslin with seeds on the inverted dish. Let one end of the muslin hang down into the water. Saturate muslin and seeds before putting them into the germinator and set the whole in a warm place. The sprouted seeds should be counted and discarded at

intervals of two or three days until all have germinated that will do so. The number germinated will give the per cent of germinability. This ought not to be less than seventy-five per cent.

“Farmers are often cautioned against buying old alfalfa seed. Moderate age is no drawback. Seed six years old has been known to show a germinability of ninety-three per cent, and a German experimenter kept alfalfa seed bottled up in nitrogen gas for seventeen years, and at the end of this time it showed a germinability of fifty-six per cent.

Subsequent Care of the Crop.

“Alfalfa may be seeded broadcast or in drills. It is preferable to seed with a drill having a press-wheel attachment, because the depth of planting can be better regulated. The seed should be covered about one inch in depth, unless the surface be very dry, when a somewhat greater depth is admissible. A good method to secure a better distribution of plants is to sow ten pounds of seed, running the drill in one direction across the field, and then cross-drill with the other ten pounds. If the drill has no grass-seeder attachment, the seed should be mixed with about three times its weight of coarse corn-meal. When intended for a seed crop, alfalfa should be sown thinly. Thick sowing improves the quality of the hay; but the plant has wonderful ability to adapt itself to either thick or thin seeding. One good, stout, healthy crown has been known to produce 360 stems at one cutting. When seeding broadcast, the seed should be covered with a light smoothing harrow or with a brush drag. The majority of farmers seem to prefer broadcasting, presumably because they have less difficulty in getting the plants covered shallow enough than with a drill. The majority of grain drills are not properly manufactured to admit of the nicety of adjustment necessary in seeding grass seeds.

“In very sandy districts, where the sand is liable to blow and cut off the young stems of alfalfa, it has been advised to seed a half bushel of oats with the alfalfa as a protection against the blowing sand. The oat plants must be removed before they have an opportunity to shade the alfalfa, using a mowing-machine, the same as if they were weeds.

“After the alfalfa has been sown in the spring, it will be necessary to run a mowing-machine over the ground two or three times during the summer to keep down the weeds. The sickle bar should be set high, so as to injure the young plants as little as possible. If the vegetable debris is so abundant that it promises to smother the young alfalfa, it should be raked up and removed. Foxtail and crab-grass are great enemies to young alfalfa. If a good stand of the young plants can be gotten through the second year, no subsequent crop of

these weedy grasses can hurt the alfalfa. Foxtail and crab-grass are annuals, while alfalfa is a perennial that can crowd these weeds to death. I have heard farmers complain that the foxtail was ruining their alfalfa. I think all cases of this kind were caused by overpasturing the alfalfa, or by some other injury. When my alfalfa has obtained a firm foothold upon the ground, I will let any farmer who wishes to try the experiment sow a ton of foxtail seed per acre on my alfalfa meadow and disk it in thoroughly. I have no fear that the alfalfa would be injured.

“The use of the disk harrow is a great advantage to an uneven stand of alfalfa. This causes the roots and crowns to become thicker in diameter and more vigorous. Wherever the disk cuts or bruises the crown many new buds are formed, and thus the number of shoots is materially increased.”

BENEFACIONS OF A YEAR.

Rossiter Johnson's compilation of public gifts and bequests in the United States which were made or became operative during 1899 shows a total of \$62,750,000, the largest ever recorded. The year previous the total was \$38,000,000, which was a falling off of \$7,000,000 from 1897. The exceptionally large total last year is undoubtedly due to the general prosperity of the country, which had the result of unloosing purse strings.

The largest benefactions during the year were by Mrs. Leland Stanford of San Francisco. On May 31 she transferred to the Leland Stanford Jr. University stocks and real estate of a face value of \$38,000,000 and a cash market value of \$15,000,000. Two weeks later she transferred valuable land and water front rights, swelling the endowment of the university to \$45,000,000. The face value of the securities constituting the bulk of the investment is \$80,000,000 making the total endowment the largest of any institution in the world.

Mr. Carnegie's Gift for 1899, \$5,000,000.

Next to Mrs. Stanford the largest benefactor was Andrew Carnegie, whose total gifts for libraries and other institutions, including pledges, aggregated \$5,000,000. In addition to this amount Mr. Carnegie gave about \$500,000 to foreign institutions, the most conspicuous of which gifts was that of \$250,000 to Birmingham University to promote scientific education.

Mr. Rockefeller's Gifts for Twelve Months.

The year 1899 was not John D. Rockefeller's big year for public benefactions, but the sum of his gifts in cash is \$730,000, viz.: For the improvement of Gordon and Rockefeller parks, Cleveland, Ohio, \$225,000; Brown University, \$250,000; Denison University, \$100,000; Columbia University, for a chair of psychology, \$100,000; new Horace Mann