

is, one which contains potash, nitrogen, and phosphoric acid in such quantities as are needed by the crop desired. As it only cut about half a ton of grass per acre five years ago, and has had no animal manure in that time, but has yielded by actual measurement an average of sixty-four bushels per acre each of the three past years, at a cost of two shillings per bushel for fertilizer and labor, and promise for more this year than it gave last, the evidence was that it is possible to grow this important crop even upon light soil, without being dependent upon barn-yard manure.

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After looking over the fields as much as we pleased, we returned to the house, where the doctor gave us some figures to show the difference in cost between the machine cultivation and hand cultivation. One of the fields had cost \$3.69 per acre for labor to date, including ploughing and spreading fertilizer, and another, upon sod land, \$4.50 per acre. Another, which had been hand-hoeed and hand-planted, had cost \$15.20 for about the same amount of cultivation.

After we had looked over the tools, consisting of gang-plow, pulverizing harrow, fertilizer distributor, corn planter, a home-made machine, and one that would do good work, cultivators, and other tools used among the corn, the doctor gave us a list of such tools as he thought important for the cheap cultivation of corn, with their prices, and also of other tools used for general farm cultivation, making out \$400 or \$500 worth used in corn growing, and some \$1200 to \$1500 upon the farm, including wagons, harnesses, etc. Charging interest and depreciation upon these tools makes it expensive cultivating a farm with them, unless there should be some twenty acres to cultivate. It was suggested by one speaker that farmers might combine to purchase such implements when they had not enough land to make their use profitable upon one farm. The New Hampshire farmers present seemed to feel great interest in the corn crop, it being a crop that had less enemies than other crops, and a crop for which there is always a ready market, and which can be marketed at the convenience of the grower, instead of his being the slave of it from the time it is grown until it is sold, as the market gardener is of his crops. They stated that their Board of Agriculture had held forty meetings yearly in as many different towns for some years past, and congratulated themselves upon having doubled the corn crop of the State within two years.

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I think each one present was able to get some new thoughts to carry home with him, and we left reluctantly, feeling that it had been good for us to be there, and hoping that we might have the privilege, another year, of meeting there again.

Weeds.

The after-lunch speeches and talks were uncommonly interesting. Mr. F. W. Miller happily hit the subject of weeds in the following way: Mr. Miller said that of all the weeds he had seen on a farm, the worst was that which farmers are so careful about that they take pains to destroy it in little pipes which they carry in their mouths for the purpose. It was worse than pig-weed, rag-weed, or "pursley." If farmers could learn to get rid of that, the other weeds would be, comparatively, of small account.

What say we to weeds? First, that they are very undesirable. Second, that if one can raise a crop at a cheap price, with a few weeds growing, it is better to do so than to raise a dear crop with no weeds, no, not one.

Third, that a person riding fifty or one hundred miles to see the farm will, when he reaches it, observe more closely than he does his neighbor's farm, and discover more weeds. Every weed seen will count for ten seen about home. This is human nature.

Fourth, that our fields convey useful instruction in showing how far weeds can be kept out, and how far they must be allowed in the system. A field has been shown which has not been hand-hoeed during the growth of four crops of corn. Some weeds are incidental to the system. Shall

we hand-hoe and have some weeds? Shall we hand-hoe and have no weeds? Shall we horse-hoe only and have some weeds? Let every farmer decide for himself. Said one farmer, \$4 an acre will take out every weed. Yes, said we; that means \$100 for twenty-five acres. It is from five to eight cents a bushel.

Fifth, that machine intercultural tillage implies a tolerance of some weeds. It is one argument against it. Is it sufficient to call in the hoe? The West says no, and raises corn for from fifteen to twenty cents a bushel. The East is inclined to say yes, and say farming don't pay. We grow less weeds than are common to the great corn-fields of the North-west. Excessive weediness must be avoided by rotating crops, which is a condition of good farming.

If farmers would bear in mind that these are the fields with which we are trying to successfully compete with the West, they would not be thinking so much of their acre fields, which it is not difficult to keep clean without going out and hiring additional help. Waushakum Farm is trying to demonstrate that upon large areas, cultivated by machinery, after the manner common in the West, the New England farmer may purchase plant-food, and grow his corn for less money than he can import it from Illinois. Pray, if we shall succeed in this, let the few weeds that will grow in two inch breadths, that no machine can touch, grow.

If thou, O weed! can give us corn for thirty cents a bushel, give it, and we will plough thee under gently in the autumn, to be compost in the furrow.

How Many Seeds Grow?

One seed is not altogether like another, although the two may look alike. Suppose we have three seeds of millet or of cabbage. One may have a strong vitality and produce a strong plant, another a feeble life and produce a weak plant that with all our nursing is of small value, and the third is dead before it is put into the ground.

Now when the seedman sells us a package of seeds of which one-third are dead, one-third sickly, and one-third good, we feel that he ought to go to prison, and have bread and water diet; and we think it would be a wise thing for farmers to insist that such seedmen shall not be left free to defraud them from year to year in this manner with impunity.

Most of the seedmen have printed on their seed packages a declaration of their non-responsibility after the seed has gone from them.

A law that should provide for every dealer in seeds taking out a license before he may deal in them, and the appointment of an inspector of seeds, whose duties shall be similar to those of the inspector of fertilizers, would save thousands of dollars to the farmers of the State. We respectfully suggest to the Boards of Agriculture that they petition their respective Legislatures to take action in this matter. It might be well for the Board to appoint the inspector, who shall be paid from the license fees.

Do you think this a small matter, and that cultivators are not damaged to the amount of thousands of dollars annually? Do you think our illustration of one-third of the seeds in a package being dead, and another third weak, far-fetched?

Not only, we reply, may this be so, but much of the seed may be of a different kind from the name on the package.

Prof. Beal, of the Michigan Agricultural College, has been examining into the germinative power of seeds furnished by different seedmen, and with very interesting results. His plan has been to take fifty seeds of a variety, plant them under suitable conditions, and observe how many "came up."

Of seeds sown from — — — about thirty-seven per cent. came up.

Of — — — about forty-seven per cent.

Of — — — about forty-nine per cent.

Of — — — about twenty-three per cent.

Says Prof. Beal: "My hearers will draw their

own conclusions from these figures. In the last experiments with the onions, the college seeds produced plants which, at the age of three weeks, were fully twice as large as those from the papers bought at the groceries. These are sold on commission. They are sent around the country in spring, and gathered up late in autumn, we presume to be sent around in a similar manner again and again, till they are all sold. He who buys them in most cases throws away his money. The firms whose names are previously given doubtless sell many good seeds to those who apply directly to their stores. To what extent even these seeds are good we are not prepared to say."

The seeds hitherto named have been those commonly confined to the garden. The farmer in his field crops suffers as much or more from poor and from dead seed; since in case of these much labor and expense goes for nothing, and a year's use of land, and a year's waste of manure is the result.

Clovers and Grasses.

Says Prof. Beal: "I purchased quite a variety of seeds of clovers and grasses, in small quantity, of one of the best seedsmen in New York city. The seeds were tested in the greenhouse, at a temperature of fifty-six to seventy degrees Fahrenheit. The seeds were placed between folds of coarse bibulous paper, and kept moist. At two different times two lots of seeds were counted out, with fifty seeds in each lot. They germinated as follows:—

Large Red Clover.....	41+43+46=177 or 88 per cent.
Medium Red Clover.....	46+39+48+43=176 or 88 "
Bokhara Clover.....	35+28+15+18= 96 or 48 "
Italian Clover.....	42+48+37+38=165 or 82 "
Lucerne.....	37+39+38+35=149 or 74 "
White Clover.....	44+42+42+40=168 or 84 "
Alsik Clover.....	40+37+30+22=129 or 64 "

In experiment with college clover seed ninety, ninety-two, ninety-eight per cent. germinated. Thirty-five samples of clover sent in to the Professor, at his request, from as many persons, show ninety-seven per cent. as the highest, sixty per cent. as the lowest, with twelve samples above ninety, and fifteen above eighty, per cent.

In crops like the clovers and grasses it is not to be expected generally that all the seed will be equally mature when mown; and unless the immature seed that is threshed out with the rest can be separated, there will remain some per cent. of bad seed.

The grass seed purchased in New York did not germinate as well as the clovers, and indeed germinated very poorly. For example:—

Hard Fescue.....	16 per cent.
Rhode Island Best.....	2 "
English Rye Grass.....	4 "
Sweet-scented Vernal.....	8 "
Meadow Foxtail.....	2 "
Kentucky Blue Grass.....	0 "
Red Top.....	23 "
Yellow Oat Grass.....	11 "
Orchard Grass.....	39 "
Hungarian Grass.....	67 "
Timothy.....	96 "

It would seem from this showing that it is unsafe to purchase kinds not in much demand, as the seed may be the left-over seed of seedsmen, and so too old for germination. It would seem to be safe also to seed our lands pretty heavily, as the chances are in favor of much of the seed we put on being already dead.

Surely, Prof. Beal is doing useful work, and we hope he will keep on and that others will join him in demanding of our seedsmen living seeds.

SEED SELECTION.—In the first stage of the growth of a plant, that stage which precedes the feeding of it from the soil, and while yet it secures its growth from the material stored in the seed itself, we may often observe in the plant-let from two seeds of turnip, peas, or two kernels of corn, a difference in the vigor of growth. There may also be other differences.

Afterwards, in a rich soil, the differences may not be so discernible. We think that in the early-observed differences there may possibly be a hint to the selector of seed plants. It is possible, if we would increase the vigor of growth of some of our farm crops, a vigor desirable to