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MAINE AGRICULTURAL EXPERIMENT STATION.

BULLETIN No. 24.

SECOND SERIES.

CABBAGES.

The purpose of this bulletin is to give a concise account of our experience with cabbages during the past season, with a brief discussion of the evidence presented.

The seed was sown April 1st, and the seedlings pricked out into seed-flats April 27th, and set in the field May 25th. The season being exceptionally dry, all of the plants made a weak growth and correspondingly small heads.

1. *Influence of size of seed*: The idea has been advanced that it is the tendency of plants from large seeds to run to leaves at the expense of the head, while the tendency of plants from small seeds is to run to head. In order to study the influence of the size of seed on the relative size of the head, fifty of the largest seeds, also fifty of the smallest were selected from each of three varieties. Of two of the varieties, the weight of the smaller seeds was less than half that of the larger; the weight of the smaller seeds of the other variety was a little more than half that of the larger. Each lot of fifty seeds was sowed, and when the plantlets were ready for the first handling, twenty of the best plants from each lot were selected and handled as above stated.

Table I gives the ratio of the average weight of the heads from the small seed to that of the heads from the large seed.

TABLE I.

	Ballhead.	Reynolds' Early.	Harvest Home.
Large seed.....	1.69	1.37	.94
Small seed.....	1.00	1.00	1.00

The facts are too obvious to need extended explanation. The large seed of two of the varieties, Ballhead and Reynolds' Early, produced heads which averaged 69 per cent. and 37 per cent. larger respectively, than did those from the small seed. The other variety,—Harvest Home, gave contradictory results, the heads from the small seed averaging 6 per cent. heavier than those from the large seed.

2. *Results of tying up the outer leaves:* It has been thought by some one that by drawing the leaves of the cabbage together and binding them with a string over the head, maturity would be hastened. Accordingly, with this idea in mind, as soon as the heads had fairly commenced to form, three lots of plants were treated in the way described above, i. e., the points of the leaves were drawn together over the head and a string tied around them sufficiently tight to keep them in the desired position. The results obtained relative to the point in question cannot well be expressed by figures, but suffice it to say that the operation seemed to have no influence whatever upon the date of maturity. This treatment, however, was not without its effect, as the figures in table II will show.

TABLE II.

	Harvest Home.	Surehead.	Reynolds' Early.
Outer leaves tied up....	.44	.46	.67
Check	1.00	1.00	1.00

Representing the weight of an average head from the check plants by 1 or 100 per cent., an average head from the Harvest Home which received the special treatment, would be represented by 44 per cent. In the same manner, we observe that the heads from the treated plants of Surehead were only 46 per cent. as heavy as the untreated, and Reynolds' Early, 67 per cent. In a word, the size of the heads from the treated plants averaged from 33 per cent. to 56 per cent. by weight smaller than did those from the untreated plants.

Another result of this operation which was even more noticeable than the decreased size of the heads, was the effect upon quality. Although all possible care was taken in tying up the leaves, they did not overlap sufficiently to keep out all moisture, so that during rains a considerable amount of water entered each head. This moisture being so inclosed within the leaves, did not readily evaporate. As a result of this continued dampness, the inner portions of the plants very soon began to decay; it was not long before this effect became noticeable upon the outer leaves, resulting in a large proportion of the leaves falling off long before the season of growth would otherwise have ceased. As a result of this decay, not a single head was produced fit for home use, to say nothing about its marketable qualities.

3. *Effect of Mulching:* The advisability of using straw or some similar material as a mulch for the purpose of conserving

the soil moisture has often been discussed. In order to ascertain the advantages, if any, of such treatment in the culture of the cabbage, three lots of plants, as soon as they were fairly started after being set in the field, were thoroughly mulched with swale hay so that when packed down the mulch was two or three inches thick, the space between the rows of plants being completely covered. Three lots of plants corresponding to those mulched, received frequent cultivation. So far as the maturity of the heads was concerned or the per cent. of plants forming heads, the mulching seemed to have no appreciable effect. There was a slight increase in the size of the heads favoring the use of the mulch, as shown in the following table :

TABLE III.

	Lupton.	Surehead.	Harvest Home.
Mulched	1.00	1.07	1.13
Cultivated	1.00	1.00	1.00

The differences are not sufficient to be very conclusive. It will be noticed that there was no difference in the case of the Lupton between the average weights of the heads from the two lots, while the average weights of the other two varieties were only 7 per cent. and 13 per cent. in favor of the plants which were mulched. These differences are so small that we would not feel justified in making too strong claims for the advantages of mulching, as the variations might result from some other causes, yet we may infer from the indications that a mulch can be applied to advantage, especially in a dry season.

4. *Shallow vs. Deep Cultivation*: It has been our practice in the cultivation of the cabbage, as in that of nearly all vegetables, to use the horse-cultivator with much freedom, running the cultivator as close to the plants as possible without disturbing them. This, oftentimes, becomes in effect a method of root pruning, giving rise to the question,—Does deep cultivation affect the heading of the plants? For the purpose of ascertaining, if possible, the effect of such treatment, four lots of plants were cultivated as described above, while four similar lots were given only such cultivation as could readily be furnished with a common hoe. The various lots of plants were all cultivated with the same frequency, the only difference being the depth to which the soil was stirred. The following table gives the comparative results :

TABLE IV.

Variety and treatment.	% of immature heads.	Ratio of average wt. per head.
Surehead:		
Shallow cultivation	10.5	1.16
Deep cultivation0	1.00
One-hundred Weight:		
Shallow cultivation	11.1	1.12
Deep cultivation.....	.0	1.00
Lupton:		
Shallow cultivation	5.3	.93
Deep cultivation.....	12.5	1.60
Harvest Home:		
Shallow cultivation	52.6	.72
Deep cultivation.....	5.0	1.00

The effects as expressed by the above figures are somewhat contradictory. In the case of all but one of the varieties, Lupton being the exception, a larger percentage of the heads from plants which received shallow cultivation were immature at the time when most of the heads were ready for cutting, than from those receiving deep cultivation, the difference varying from about 10 per cent. to over 47 per cent. It seems probable that the deep cultivation which gave to the plants a heavier mulch of finely pulverized soil than that given to the plants receiving the shallow cultivation, so aided in the conservation of the moisture that the plants were able to make a more vigorous growth, and to form more perfect and uniform heads. No specific conclusion can be drawn from a comparison of the average weights, as two of the varieties gave results favoring deep cultivation, while two were against the practice, though the greater difference was in favor of deep cultivation.

RECAPITULATION.

1. The size of the seed seems to have some influence upon the size of the head, the larger seed, as a rule, producing the larger head.
2. The tying up of the outer leaves seems to have no influence upon the maturity of the heads, while it produces a marked decrease in the size and almost invariably causes the head to decay.
3. Mulching with straw or some similar material in a dry season tends to increase the size of the head.
4. Deep cultivation seems to have little if any effect upon the size of the head, but plants so treated appeared to mature more uniformly than plants receiving shallow cultivation.

H. P. GOULD, *Ass't Horticulturist.*

MAINE STATE COLLEGE, }
ORONO, ME., March 1, 1896. }