

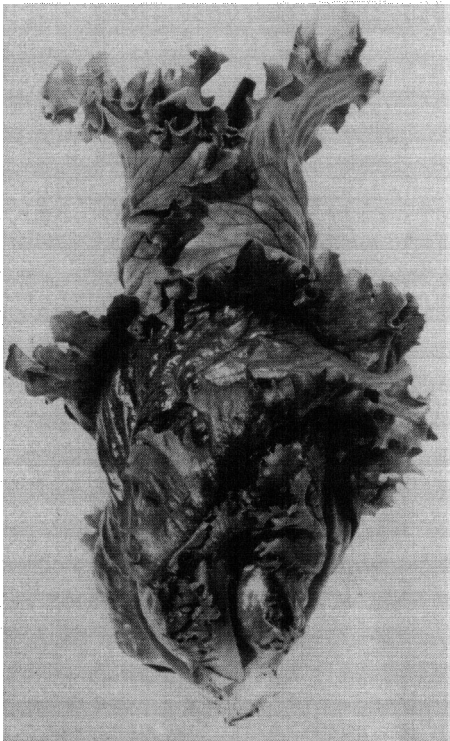
Spiraled Heads in Lettuce

malformation in Great Lakes lettuce strains apparently an inherited character producing united wrapper leaf margins

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Great Lakes lettuce, adapted to culture under a range of environmental conditions, normally produces a medium-large, globular, semi-exposed head. In some plantings, however, a percentage of the plant population develops conical-shaped heads, with the wrapper leaves or head leaves in a spiral-like fold. Market-stage plants of this type are generally referred to as spiraled heads. The shipper and retailer prefer a slightly oblate head with broad, flat butt, which can be packed evenly and firmly.

Plant with the frame leaves removed to show the eighth true leaf with its opposite margins united.



Observations made of 30 variety tests in the central coastal section of California from 1953 to 1957 indicated that some strains of Great Lakes produced more spiraled heads than did others. Premier Great Lakes, Great Lakes 428, and Great Lakes 118 were the least likely to produce spiraled heads. Lettuce planted for May, June or October maturity was more likely to have spiraled heads than lettuce reaching the harvest stage in the summer months. The results from four typical trials with both high

The Percentage of the Plant Population with Spiraled Heads Occurring in 13 Strains of Great Lakes Lettuce in Four Trials

Great Lakes strains	Trial 1	Trial 2	Trial 3	Trial 4
	June 28* %	July 20 %	Aug. 8 %	Oct. 10 %
Premier Gt. Lakes	0	0	0	2
Great Lakes 118	2	0	0	31
Great Lakes 65	3	0	3	26
Great Lakes 66	31	0	3	30
Great Lakes 6238	.81	10	52	83
Great Lakes 366	.21	2	1	48
Great Lakes 54	.27	0	2	21
Great Lakes "R"	.25	2	0	44
Great Lakes "S"	.41	2	11	63
Great Lakes A-36	.31	0	2	38
Great Lakes 407	.30	0	3	56
Great Lakes 659	.71	0	4	88
Great Lakes 428	0	0	0	18

* Date of first harvest.

and low percentages of spiraled heads are reported in the table above.

A close examination of plants with spiraled heads has shown that, in many cases, the margins of a wrapper leaf or leaves were united by a natural graft. Two types of united leaf margins were observed: two successively initiated leaves united along one side of the leaf lobe, and a union of opposite margins of a single leaf lobe, forming a tubular-like structure.

A survey was made over a three-year period to determine the relationship of united wrapper leaves to the formation of spiraled heads. This showed that spiral-head formation is associated with the occurrence of united wrapper leaves. This natural graft was found to range from the sixth to the sixteenth true leaf. These leaves—referred to as the wrapper leaves—fold loosely around or over the head. In none of the plants were united leaves found in the terminal bud, commonly called the head. It was also found that more spiraled heads were the result of a wrapper leaf united to itself rather than to a successive leaf.

In another study, observations were made on the head development of young plants with 12–15 true leaves. Fifty plants that had the margins of a single leaf united were selected and marked by placing a stake by the plant. The united leaf margins in 25 of these plants were carefully cut and the subsequent head development compared with that of plants with the united leaf margin intact and with plants that showed no united leaves. The results of three such trials are reported in the table on page 8 and

Concluded on page 8

Tubular-like leaf formed as a result of opposite margins united.

