

THE INFLUENCE OF SATUREJA HORTENSIS L. ON  
ALLIUM CEPA L.

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by

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In the famous herbal of Rembert Dodoens I noticed the following remark in the chapter on "*Cepa rotunda*" (*Allium cepa*): "Somtijds set men se alleen in bijzonder beddekens; somtijds saeyt men se met andere moescruyden / als met Lattouwe; maer den selven Palladius houdt voor best / dat men se met de Satureye oft Keule saeyt / om dat se soo beter aerden ende voortkomen / als Plinius betuyght." ("Cruydtboek", ed. 1618 or 1644, pag. 1073; see also A. Schierbeek, "Bloemlezing uit het Cruydtboek van Rembert Dodoens", 1941, pag. 139) (Sometimes they are planted by themselves in special beds; sometimes they are sown together with vegetable herbs as e.g. lettuce; but the said Palladius considers best to sow them together with the savory because thus they thrive and develop better, as Pliny attests.) In Pliny's "Historiae Naturalis Libri XXXVII" I found only the following words concerning this question: "Intermisceri satureias, quoniam melius proveniat." (Lib. XIX, cap. 32). The reference to Palladius bears most probably on the "De Re Rustica Libri XIV" (Leyden, 1541) by this author, but I had no opportunity to verify this myself.

Savory has been cultivated as a condiment since many centuries; already Pliny mentions it as such and therefore it may be taken for granted that the "saturreye" meant here is identical with our *Satureja hortensis* L., although we have no absolute proof for it (Plinius, Lib. XIX, cap. 50; C. Bauhin, "Pinax", 1623, p. 218; R. Dodoens, "Cruydtboek", 1644, p. 465; C. Linnaeus, "Species plantarum", 1753, p. 568; C. Pickering, "Chronological history of plants", 1879, p. 470).

In order to verify the assertion of Pliny and Dodoens I sowed *Allium cepa* ("Rijnsburger gele") on three plots of one square meter each; this took place on May 11th, 1942. On one of those plots (I) savory was sown simultaneously; on another the same quantity was sown after the onions had germinated, viz. on June 1st (II); on the third the onions remained alone (III). The onions germinated readily on all three plots. The same can be said of the savory on plot I and this latter species had to be thinned four times during June and July in order to keep the number

of its specimens more or less equal to that of the onions. On plot II the germination of the savory was slow and the number of plantlets remained far below that on plot I. I estimated roughly that on 3 onions there was not more than 1 specimen of savory; their development, moreover, was less vigorous and they produced only a small number of flowers, whereas those on plot I were in full flowering since the middle of August. I see no reason at hand why the savory on this plot showed such a poor growth but for the presence of the onions themselves. Plots II and III got more shade from a tree nearby than I; the latter, therefore, was in slightly better conditions, but for the rest these were equal for all three.

Since the end of July it became clear that the onions developed best on plot III, where they grew alone, and least on plot I; plot II was intermediate between the others. They were harvested on September 29th. The number of plants and other particulars are recorded in the following table.

	number of plants	weight of plants	number of bulbs	% plants with bulbs	weight of bulbs	weight per bulb
onions sown simultaneously with savory	214	305 g	109	51	125 g	1.15 g
onions sown 3 weeks earlier than savory	246	535 g	146	59	208 g	1.42 g
onions alone	236	1100 g	139	59	342 g	2.46 g

This table shows that the number of plants developed is practically equal on each plot; the same holds true approximately for the percentage of specimens which have formed bulbs. The rate of growth, however, differs widely according to the presence or absence of the savory. This species appears to have exerted a most injurious influence on the onions, on the organs above ground as well as on those below. The differences are greatest between plots I and III, but they become of special interest when we compare II and III. On plot II the onions had a 21 days start on the savory; the latter, moreover, developed poorly. One could imagine that on plot I the composition for space and light had prevented the onions from full development, although the continuous thinning of the savory and the tenuous habitus of this species make this supposition unlikely; this holds the more for plot II, where, moreover, conditions for

the onions were a little more favourable than on III as has been said above. There is still another point to be considered: owing to the small number of savory plants which developed on plot II, their distribution was unequal with the consequence that in some places on this square meter, groups of onions grew without any specimen of savory among them and these were on the whole as tall as those on plot III (this occurred even on plot I); the others, however, were so injured by the proximity of the savory that the average of plot II remained considerably below that of plot III.

These preliminary results indicate that, quite contrary to the ancient idea, *Satureja* is harmful to onions (and *vice versa*?) and the question arises what is the cause of its deleterious action (and whether other species are sensitive to it). B. L. Hartwell (Jour. Am. Soc. Agron., 19, 255—259, 1927) reports that preceding crops injurious to onions are those which are physiologically acid because they remove more cations than anions from the soil (mangels, cabbages, rutabagas). This injury can be corrected by the use of lime and phosphate fertilisers. The soil on which my experiment was done was rather rich in lime and the year before a small number of peas and beans had been grown on it. It is hardly acceptable that these plants should have caused such acid conditions as to injure the onions to the degree I observed; moreover, if this were true, the effect ought to be perceptible on plot III as well as on I and II, and we saw that this is far from being the case. The possibility remains that savory is a physiologically acid species, but the results on the limy soil, and especially those on plot II, make this very unlikely.

Although we may be satisfied that our *Satureja* is identical with that of Pliny, it is possible all the same that I used a variety unknown to him; the same holds true for the onions. A botanist had better leave it to historians and philologists to solve this problem; for us the facts remain which have been mentioned here and these point to the possibility that there really exists some sort of (reciprocal?) antagonism between the savory and the onion, the nature of which is worth while to be examined more thoroughly.

•SUMMARY.

Contrary to what Pliny and Dodoens assert, *Satureja hortensis* appeared to be very deleterious to onions when these species were sown together.

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