

PECULIAR VARIETIES OF AMARANTHUS RETROFLEXUS.

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The development of large numbers of new varieties from cultivated plants is a matter of general observation. The similar origin of varieties from species which are not under the control of man is still a question with some. However, that a great number of new forms appear in the wild state becomes evident whenever one begins to study a flora with which he is more or less familiar. A study of the varieties present in the weeds and other plants of our cultivated fields and gardens should be of some importance since we are here dealing with plants growing under like conditions as our domesticated species but which have not been subject to selection by man.

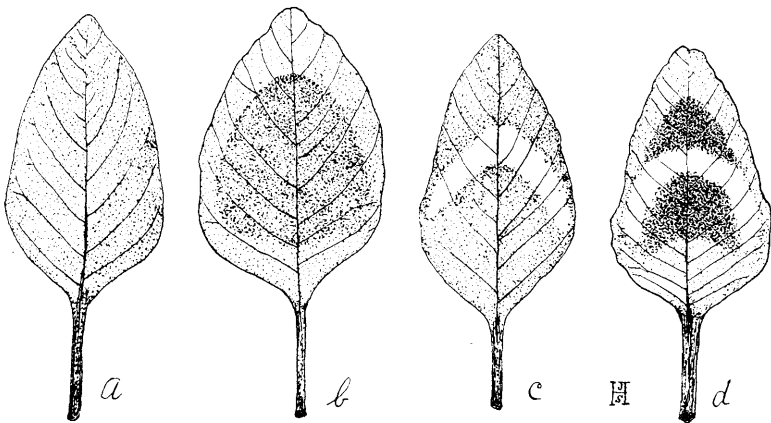


Fig. 1. Leaves of *Amaranthus retroflexus*.

The writer has made some study of our common weedy *Amaranthus* and finds that there are a number of species showing distinct varieties. One of the most interesting of these is the common Rough Pigweed, *Amaranthus retroflexus*. This plant has a wide distribution in North America and is abundant in fields, gardens, and waste places. It is considered as an immigrant from tropical America, but whether in historical times or not is not known to the writer. The leaf characters of this plant are very diverse. There are different types of texture as well as markings. It is only the most striking of the leaf markings that will be considered here.

The usual leaf type of the species is the uniform green, showing no markings whatever except occasionally some red on the veins beneath. (Fig. 1 a). This form is the common type, according to the observation of the writer, from Ohio to Kansas.

Several years ago a neighbor was showing his garden and casually made a remark about the abundance of weeds. An *Amaranthus retroflexus* was present which had large, red, oval or ovate spots of anthocyan on the leaf blades. The spot was more prominent on some plants than on others but was of striking appearance in all of them (Fig. 1 b). Some of these plants were dug up and transferred to flower beds on the university campus. In the summer the spots disappeared so that it was difficult to identify the plants in September. However, in the spring great numbers of seedlings appeared with the characteristic leaf marking and they have been growing each year since. Other plants of similar nature were also observed in a corn field near Columbus. This form was looked for in various parts of Kansas but no specimens were found.

In Clay County, Kansas, a different type of leaf marking was observed on numerous plants growing together with the ordinary green type. This variety had a silvery, curved band a little beyond the middle, the curve being toward the tip somewhat similar to the silvery spots seen on the red and white clovers (Fig. 1 c). This silvery white patch is very persistent and appears on all of the leaves up to the inflorescence. No such plants have been observed at Columbus and none were found by the writer at Topeka, Kansas. Some seed was brought from the Kansas plants and produced the characteristic markings in a garden in Columbus.

The fourth striking pattern was also first observed on a farm near Morganville, Kansas. This type had the silvery curved band and a red spot on each side of it. (Fig. 1 d). Only three such plants were seen during a whole summer altho diligent search was made for others in the surrounding country. However, last summer this variety was found to be very common along the streets of Manhattan, Kansas, about forty-five miles from Morganville. This peculiar form appears as tho it might be a combination of "b" and "c". But as stated the red spot form was not observed in Kansas.

What is the significance of such patterns? It will be observed that the markings have no fundamental relation to the structure of the leaf. A utilitarian explanation would be out of the question. No hybridization is apparent and no related species are known in these regions which could represent possible parents. These patterns have been found to be hereditary and constant for several generations. Whether they are Mendelian is not known, no crossings having been attempted, as the flowers are small and

monecious and the difficulties of making pure pollinations would be considerable. They appear to represent definite mutations which developed without the influence of a determining environment and without the accumulative effect of a purposeful selection. One thing is certain. Among the weeds of the cultivated fields are species that are of the same complex composition, as regards characters and varieties, as those domesticated forms which have been subject to continuous hybridization and selection by man.
