July 2017

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James Wilson

Iowa State College

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The Russian Thistle.

(Salsola Kali; variety, Tragus.)

JAMES WILSON.

The last General Assembly of the State of Iowa made a law regarding the Russian thistle, section four of which provides as follows: That a bulletin shall be prepared by the professor of agriculture of the State Agricultural College, briefly describing, by words and cuts, the Russian thistle, with the best known means of staying its progress and effecting its extermination. Said bulletin shall be printed by the State printer at public expense, from time to time, in such numbers as the Secretary of State and said professor of agriculture may deem necessary to supply the demand. A sum of money sufficient to pay for the cost of printing and making of suitable plates for illustrating said bulletin, is hereby appropriated from any funds in the State treasury not otherwise previously appropriated.

Immediately upon the passage of this act steps were taken to obey its requirements. Different gentlemen of the station staff were consulted with regard to the best means of getting information for the people on the subject. Professor Pammel, the botanist of the station, undertook a study of the thistle from his standpoint; Professor Patrick, the chemist of the station, agreed to make repeated analyses of it at different stages of growth so as to get information regarding its value as a grazing or fodder plant; Professor Budd promised a descriptive article covering his observations of it during his travels in Russia, among cultivated farms, and on the unoccupied territory of that empire. It was considered wise to procure seed and grow the plant on the college grounds, so that it could be studied by our scientists, and practically, to learn its behavior under varying conditions. In order that the identity of the seed might be certain, it was procured from the botanist of the Agricultural College of South Dakota, Professor Williams,
and from Professor Bolley, of Fargo, North Dakota, to whom this station is under obligations. It was sown in rod square plats alone, with timothy, and with red clover, on April 21st, and on high gravelly land May 2d. The soil varied from a deep, black, sandy loam, to a light sandy gravel on a dry hillside. It was planted two inches deep and covered by hand. The soils were all sufficiently moist at that time to insure germination. It was sown thinly on three plats, and thickly on the fourth, so as to give opportunity for observation under both conditions. The plats were kept free from weeds during the entire season, but, the soil was not hoed or otherwise disturbed. It grew in single plants, and in dense condition, covering the ground. I found that where it was cut off by the hoe it did not grow again and was very easily killed. It has one tap root that does not sprout again when cut at the surface.

Plat No. 1 is a deep, sandy loam; the thistle seed was planted three inches apart in rows in this plat, but very few grew, confirming Prof. Pammel's observations that the vitality of the seed is low. The few that grew on this plat made the largest plants of any, having room and the richest soil.

Plat No. 2 is a light, sandy soil; the thistle seed was planted the same as in plat 1, two inches deep and about three inches apart. Red clover seed was raked in on this plat, but the season has been so dry that it did not grow. The thistle seed came up thinly, but what did germinate grew vigorously, although the rainfall was very light.

Plat No. 3 is still drier land than the two others, being gravel with a little loam; it was planted as the other two were and timothy seed raked in. The thistles made a thin stand and all grew to maturity that germinated; the timothy seed never made any growth, owing to the drought.

On May 2d a rod square plat was planted very thickly with thistle seed still farther up the hill; the soil on the fourth plat is so gravelly that it rarely matures a crop of any kind. The thistles promptly came up as thickly as they were sown, seemingly, and through the driest season ever seen in Iowa they have grown to maturity. They made a growth from twelve to twenty inches high, and at August 1st were in flower or bearing seed after flowering, and a month before had been in the thorny condition.

When the thistle first comes up it is the color of young pines and resembles them very much. It is soft and velvety to the
touch. Sheep and cattle eat it readily in its young stage, but our horses and hogs refuse it; no doubt they would eat it with usage.

The most striking economic feature concerning it from the farmer’s standpoint is the shortness of the time when it could be grazed by animals. It is an annual and must begin growth every spring. Observing men know that we get our first grazing from perennials like timothy and blue grass, or from biennials like the clovers, and winter rye that makes a growth the year previous, having roots established they send up leaves as soon as it is warm enough; the Russian thistle must start from the seed and its growth is quite slow for several weeks, when stock is grazing perennials and biennials.

Prof. Patrick found the plants five and a half inches high to eight and a half, June 12th. June 1st is as soon as stock could have had a full bite of it as half its height at June 12th had grown after June 1st. He reports that samples taken June 26th were not prickly but became so upon drying, and on July 12th he reports the plants very prickly at the time of gathering. These facts give us a very short grazing period, not longer than six weeks, or two months at longest. As a grazing plant the Russian thistle is of no use in Iowa; it is fit to eat only at a time when other pasture plants are most abundant. Its prickly condition at or near maturity renders it useless for hay. On deeper soils I observe that the prickly state does not come so soon, and in seasons of greater rainfall no doubt, the plant would mature and become a thistle later. Most of the current information concerning this plant traces to Bulletins 10-15 of the Department of Agriculture, Washington D.C. The writers for the Department give us Dakota conditions and August and September as times of ripening and seeding. We may expect earlier maturity in central Iowa where the thistle grows on gravelly or sandy land, particularly in dry seasons. We found the plant growing along the Northwestern railway where it crosses the College farm. It grows between the “surfacing,” that is kept free from weeds by the section men, and the sodded banks, and in such situation we find it does not mature so early. It grows there on a bank of gravel twenty feet high, and solitary plants in such conditions make most vigorous and healthy growths. I could not find the plant growing on sodded lands. The Northwestern extends into the Russian thistle district of the Dakotas from which the thistle seed has been carried in stock cars along the line. It will inevitably be carried by stock cars all over the western states.

I do not anticipate more annoyance from it in fenced up localities
than from some other weeds. It cannot be compared with the morning glory or Canada thistle in perniciousness, because, cutting off at the surface kills the Russian thistle, and it requires broken soil to grow in. It will be a great annoyance in neglected fields, and town lots, along public and private roads and along the lines of railway. Whenever it reaches the arid regions of the west and southwest it will find everything congenial and if steps are not taken to eradicate it, it will soon be there.

With regard to remedies, it is easily killed. When cut off at the surface of the ground before seeding it dies. This is the best remedy. If a field is neglected until it is seeded, repeated plowings will clean it of this and most other weeds. When the plant is not more than six inches high careful plowing with a drag chain from the end of the doubletree to the plow beam dragging back so as to have every plant dragged under the furrow, with harrowing to fill every crevice between the furrows will kill every plant that cannot get its leaves to the surface. Every farmer should keep the thistles off the right of way of a railroad going through his land, and away from the public and private highways, and fence corners; if this is done the only source of danger to the fenced localities of the State will be from neglected or badly managed farms. Considerable amounts of land are farmed in Iowa without fences. This thistle will roll over such lands and scatter seed that will not grow on the native or tame sod, as far as we have observed or can learn, but wherever the sod is broken by domestic or wild animals or the plow, the seed will sprout and grow. These places should be watched and the plants cut in June or earlier. Around corn fields and in potato patches the Russian thistle is likely to make great growths if permitted. Where they become well established in a field burning is not an effective method of extermination, as the plant will not burn until it has borne seed and then all the seed cannot be destroyed by burning. Growing a crop of barley and plowing the land immediately after harvesting, in Iowa, would gather the immature thistles with the harvesters and destroy any that might be missed or cut too high.

Attention must be given to them before they assume the tumble weed shape as they not only scatter seeds while they roll but they pile up in groves and against fences and against snow breaks that are destroyed when fire comes.

In northwestern Iowa where the thistle has been introduced to some extent, care must be exercised to prevent threshing machines from carrying the seed to localities exempt from it. I quote from
Prof. Dewey in Bulletin No. 15, Department of Agriculture, regarding the "damage to crops" in Dakota:

"In fields it is especially troublesome to wheat and flax. If a late spring or rather early drouth checks the growth of these crops the Russian thistle growing at its best in dry weather crowds or starves out many of the weakened plants and the grade of those that are left is much injured. In many flax fields and in some wheat fields the crops of 1893 were left standing as not worth harvesting. The dry weather checked their growth, it is true, and aided the growth of the weeds, but had it not been for the thistle fair crops might have been obtained. Barley and rye, though less important products, are injured in about the same ratio as wheat. Oats, when properly grown, often choke out the thistles and hence escape injury. If, on the other hand, they are sown thinly or on poorly prepared land the thistles may completely ruin the crop. Millet, the only grass largely cultivated for hay in the Dakotas, is such a rank plant that it is injured very little by any weed."

It clogs the harvesters, headers, and harrows, injures the horses' legs so that boots have to be put on them, and is disagreeable to come in contact with, to man or beast. Its ability to grow vigorously during very dry conditions, and the facility with which it tumbles from the lands of a careless owner to those of the most careful, make it a dangerous addition to our noxious weeds. Its late start in spring, being an annual, and the early stage at which it becomes prickly, remove all hope of its usefulness as a grazing or hay plant. The cuts of the thistle, in its several stages of growth, will assist in its recognition. Specimens of the plant will be sent to the auditor of each county in the State so that all persons may be enabled to identify it.

The articles from the botanist, chemist, and horticulturist, following, deal with it from their standpoint.