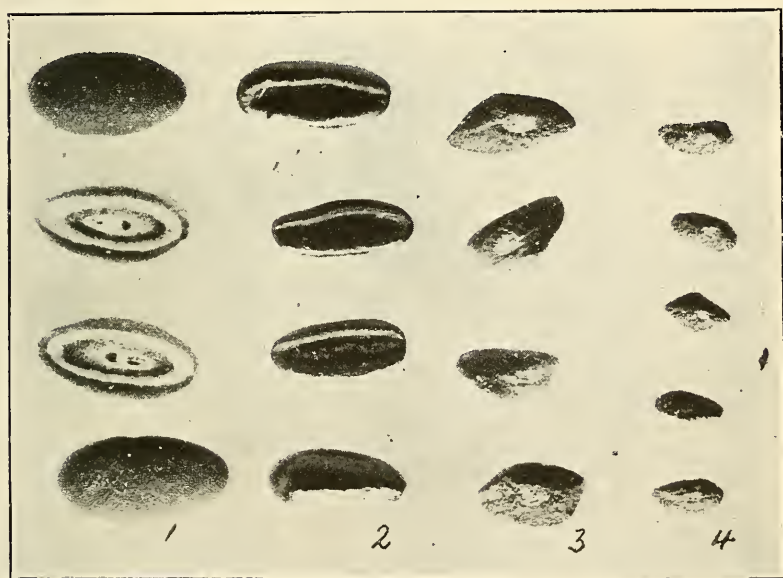


INDIANA WEEDS—THEIR CONTROL AND ERADICATION.

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The subject of weeds is one in which the people of Indiana are taking more and more interest each year. The farmers, who constitute a large percentage of the population of the State, are much concerned about the weed situation now confronting them. There are growing on the farms



1. Bracted Plantain.
2. Buckhorn.
3. Black-seeded Plantain.
4. Common or Dooryard Plantain.

of Indiana today, scores of species of weed pests, and in many cases enormous numbers of each species. This results in smaller crops and smaller profits. Weeds are robbers in a very distinct and definite sense. To the citizens of our town and cities they are unsightly and offensive, disfiguring

as they do lawns, gardens, streets and vacant lots. There are being received at the Agricultural Experiment Station, in ever increasing numbers, inquiries concerning weeds of the farm, lawn and vacant lot, their time of flowering, time of seeding, distribution, method or methods of propagation, prolificacy, means of control, or eradication, and similar queries, showing



Dog Fennel or Mayweed.

that there is a general desire and demand on the part of our people for information along this line. The following paragraphs will therefore attempt to take up in a brief and condensed way some of the important phases of the weed problem as we have it in Indiana today.

HOW WEEDS SPREAD.

Nature has provided in an interesting and wonderful way for the reproduction and dissemination of plants. A large number of common weeds, such as the dandelion, sow thistle, wild lettuce, groundsels, white-top, ironweed, boneset, joe-pye weed, true thistles, produce seeds to which are attached light, fluffy, parachute-like structures which very materially facilitate their dispersal by the wind. Other weeds, such as yarrow, ox-eye



Curled or Sour Dock.

daisy and curled dock, are either very light, or have light membranous attachments. There is a group of weeds, including old witch grass, Russian thistle, tumbling pigweed and others, which have the characteristic of breaking off when mature at or near the surface of the ground, and, rolling hither and thither, far and wide, over the fields, discharge thousands of weed seeds as they go, in this way inoculating our fertile soils with crop-reducing weed pests.

Another agency making for the spread of weeds, is water. The seeds or fruits of many plants, especially those growing in or near water, are

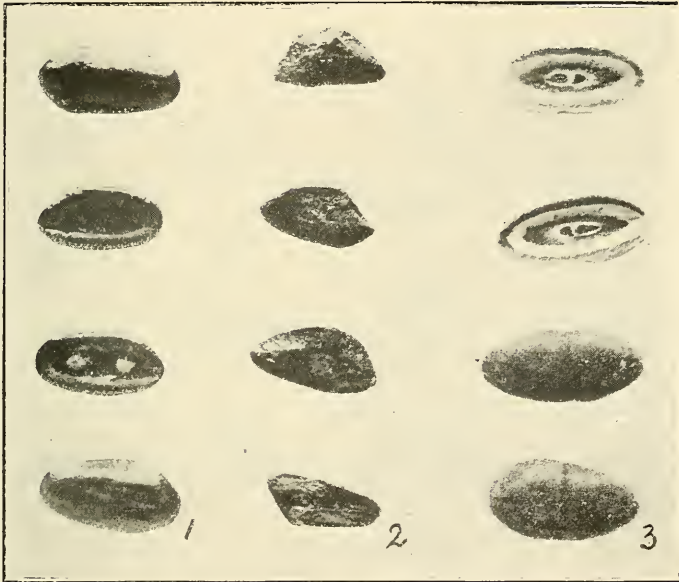
fitted for dissemination by this agency. Such fruits are those of narrow-leaved dock, showing a round, rough, spongy growth on the outside of each of the close fitting, persistent sepals; of the Asa-Gray sedge, with its inflated sack attached to the fruit; of the arrowhead, with its corky margined fruits which are able to float on the water.



Black-seeded Plantain

The seeds or fruits of many weeds are in one way or another carried by animals. Thus when slightly moist, the seeds of peppergrass, plantain, groundsel, dropseed grass, and many others, are sticky and will adhere to animals' feet or covering. Some sedges, chickweeds and catchflies have sticky glands, by means of which they cling to passing objects. The fruits of the avens, and the burs of the common burdock, are armed with hooks, and the fruits of the bidens or beggar's ticks with spines, by means of which

they cling to and are carried about attached to the covering of animals or the clothing of human beings. Similarly provided for are hounds-tongue, stick-tights, tick trefoil, bed-straw, cocklebur, sandbur, motherwort and many others. Further, birds and animals devour very large numbers of many kinds of weed seeds, not all of which are acted on by digestive juices to such an extent as to destroy their viability. These are scattered in bird and animal excrement, and grow into new and vigorous plants.



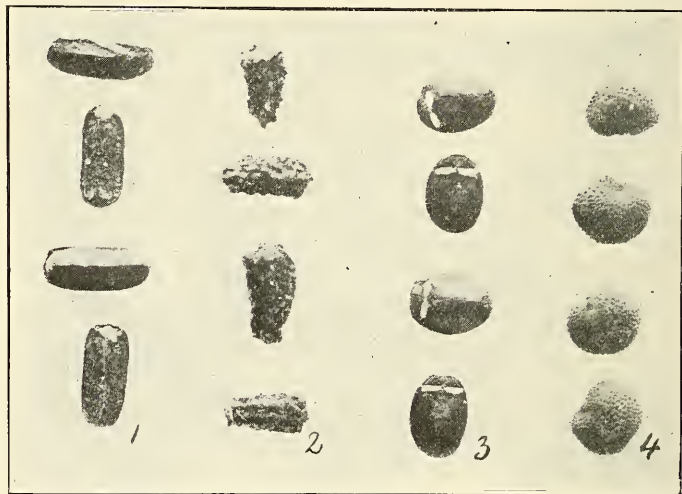
1. Buckhorn.
2. Black-seeded Plantain,
3. Bracted Plantain.

Noxious weeds are spread through the use on farms of manure and sweepings from stock and other cars, and by means of packing about merchandise and nursery stock. The moving of threshing and other machinery from place to place without first cleaning them out thoroughly, the use on farms of manure from livery stables in towns and cities, all help to spread noxious weeds. The use of impure and adulterated crop seed on our farms is responsible in a large measure for the spread of weeds. Much of the clover, alfalfa and grass seed used in Indiana today have

mixed with them considerable quantities of weed seed and other impurities, which, scattered on the land, means weedy fields and reduced crops. Many lawns are excessively weedy because of impure seed scattered on them.

THE INJURY WEEDS DO.

Indiana farmers are losing many hundreds of thousands of dollars each year because of the weed situation existing in this State. A continuous and strenuous effort to control weeds ought to be made, because—



1. Vervain.
2. Mayweed or Dog Fennel.
3. Catmint.
4. Night Flowering Catchfly.

1. They rob crops of plant food and moisture. Plants feed as really as do horses or cattle. As growing crops remove plant food from the soil, the farmer must count on the necessity of returning an amount of plant food to the soil at least equal to that removed, if he expects to continue to grow crops abundantly and profitably. Weeds require approximately the same kinds of plant food as do farm crops, and they require them in approximately the same amounts. Crops suffer when weeds use up a large share of plant food. To put this plant food into the soil the farmer expended money, time and labor. Further, an adequate supply of moisture in the soil is indispensable for the successful growing of crops. Weeds, like

other plants, are constantly, during the growing season, pumping water from the earth. Much of this ultimately goes off into the air, and, as far as crops are concerned, is wasted. For the formation of every pound of dry matter in a corn crop, there are required 300 pounds of water. Oftentimes crops suffer seriously for moisture owing to the presence of weeds, and as a result these crops are much reduced in quantity and value.

2. Weeds choke out the desired crops. No field can produce excellent crops of corn or wheat and a heavy growth of weeds at the same time. This, in agriculture, is as impossible as in physics it is impossible for two bodies to occupy the same space at the same time. When a heavy growth of weeds is present, corn, vegetables or any other crop, are likely to be weak and spindling.

3. Weeds furnish a refuge and shelter for the protection and propagation of insect and fungus enemies of crops. Fruit, vegetables and field crops have very many more such enemies than is ordinarily realized. The keeping down of weeds and the removal or plowing under of refuse material, will in no small measure reduce insect and fungus enemies of crops.

4. The presence of weeds in considerable quantity makes every operation on the farm—plowing, harrowing, seeding, cultivating, harvesting, marketing, etc., more expensive. Further, on a farm where weeds are not intelligently and continuously combated, machinery is more short-lived, and repairs are needed oftener.

5. Property overrun with weeds is less attractive, and will not sell as high as property giving indication of thrift, intelligence, and successful management. Moreover, weeds are an offense to one's æsthetic taste, and an eyesore to all passers-by.

In view of these facts, it is very plain that weeds are distinctly robbers, and should be controlled and, where possible, eradicated. To deal effectively with weeds, it is necessary to know something of their characteristics, their life history—are they annual or biennial or perennial? How do they propagate? When do they flower? When do they seed? Do they produce large quantities of seed? Does this seed retain its vitality in the soil for a long time or but a short time? To facilitate the gaining of information on weeds from reading, lectures or conversation it is a decided advantage to know common weeds at least by their commonly accepted names. In these later days it is not difficult to obtain a working knowledge of our Indiana weeds. Books and bulletins covering the subject are available.

The Agricultural Experiment Station or the U. S. Department of Agriculture will gladly furnish bulletins on weeds or weed seeds, or name specimens of weeds or seeds sent in.

It is not possible in this brief article to take up a consideration of a



Dodder on Clover.

large number of individual weeds. It must of necessity suffice to consider the larger groups into which all our weeds fall—annuals, biennials and perennials. Annuals are those which grow from seed, and in turn produce flowers and seed, all within the one growing season. They are, as a rule, fibrous rooted and propagate by seed only. Many of them produce seed in

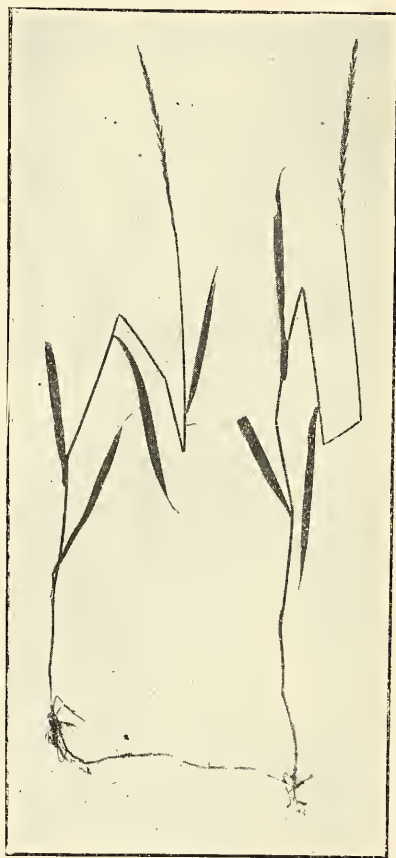
great abundance. The seeds of some annuals when buried in the soil retain their vitality for long periods. Mustard seed, for instance, has been known to lie in the soil for a quarter of a century and then when placed in a favorable environment, grow into vigorous plants. In this class we have such common weeds as dodder, foxtail, smartweed, Russian thistle, crab-grass, pigweed, lamb's quarters, dog fennel, barnyard grass, tickle grass, bracted plantain, ragweed, corn cockle, night-flowering catchfly, mustard and whitetop.



Buckhorn.

Biennials are those plants which spring from seed and produce only a cluster of leaves the first season. In these leaves are manufactured and stored large amounts of plant food for use during the second season of growth. During the second season, a flower stalk is sent up and many seeds formed, after which the plant dies. This group depends on seed for propagation. Here belong wild carrot, wild sweet clover, burdock and common evening primrose.

Perennials are those which live on indefinitely year after year, reproducing from seed, or, in addition, from buds near the crown of the plant, as in buckhorn, or from buds here and there along running underground parts as in Canada thistle. Many perennials are persistent and particularly



Twitch or Couch Grass.

noxious. Here belong horse nettle or sand brier, twitch or couch grass, sour dock, sheep sorrel, field bindweed or wild morning glory, ox-eye daisy, yarrow, wild barley, black-seeded plantain and others. Farmers and other property owners are urged to acquaint themselves with the common weeds, their names and characteristics, for on these latter in a large meas-

ure are based methods of control or eradication. The following suggestions in regard to weed control apply to all classes of weeds:

1. Buy seed which is the purest obtainable and of strong vitality.
2. Before buying, test a sample of it, or send a sample to the Branch Seed Laboratory, Experiment Station, Lafayette, to be tested for purity and germination. In this way only can any one learn the character of seed he proposes using, in regard to freedom from weed seed and in regard to viability.
3. As far as possible, prevent weeds about the farm from seeding. Pulling, the use of the scythe along ditches, roads, lanes and fences and about the yards and buildings and in the wood lot, as well as the use of the mowing machine where possible, will accomplish this in a large measure.
4. Thoroughly and repeatedly cultivate corn crops so as to keep weeds down.
5. Breaking weed-infested ground in the fall and harrowing at short intervals and repeating the harrowing in spring to encourage weed seed lying in the soil to germinate and to destroy the seedlings, is to be recommended.

For biennials repeated cuttings during the second season of growth, pulling or spudding where only a few plants are in evidence, together with the introduction of a hoed crop (corn or potatoes, say), are effective.

Perennials will need more extensive treatment than is indicated above. A treatment such as the following is suggested:

Plow in the fall and follow with frequent harrowings both in the fall and in the spring. About the end of May sow with rape in drills, or broadcast millet, cowpeas or Canada field peas and oats. When well advanced, use these crops for pasture, or feed in the yard to supplement other pasture crops. Animals, especially hogs and sheep, are very useful in destroying weeds on the farm. Plan to use them as extensively as possible. Follow the smoother crop (rape, millet, etc.) with wheat seeded heavily with clover. When wheat is off let a crop of clover grow up. Pasture this or plow it under. Follow this with a well-cared-for corn crop. This method is in addition to general suggestions given previously. Eternal vigilance, care and persistence is the price of a clean farm. That a clean farm, indicating thrift, intelligence and taste, is more attractive, satisfying and profitable than a weedy, carelessly operated one, there can be no question.

In cities and towns the least that can be done is to frequently cut weeds

with the scythe or other tools, so that they can not form seed. Street commissioners and other citizens possessed of a goodly amount of energy and civic pride can do much to create and maintain a "city beautiful" so far as neatness of streets, lanes, vacant lots, etc., are concerned. In connection with lawns, mention might here be made that it has recently been learned by experiment stations, that the use of iron sulphate on lawns and weedy areas is profitable, practicable, effective and cheap, if rightly applied. By it dandelions, plantain and other weeds can be controlled. It is coming into extensive use on farms in some parts of the United States. Suitable machinery is made for the application of iron sulphate either on a large or a small scale. The treatment of the subject of the use of iron sulphate can not be taken up in detail here, but the writer will be glad to furnish any information desired on the subject at any time.