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HORSE BOTS AND BOTFLIES

Horse bots are the maggots or grubs of botflies, which are commonly known to many farmers as nitflies or gadflies. Three kinds are common in Nebraska, and although they resemble each other in appearance and life history, their habits differ considerably. All have the four stages commonly found in the life cycle of flies and similar insects. First of these is the adult botfly of late spring, summer and early fall. Second is the egg which is found glued to the hairs of the horse throughout late spring, summer, and the entire fall. Third is the grub or bot, found in the stomach and intestines of the horse throughout most of the year, and fourth is the pupal stage found in the soil during the spring, summer, and early fall. It usually changes to the adult fly in a few weeks. While these stages overlap greatly and thus render control difficult throughout most of the year, the insects are in such condition during late fall and through about two-thirds of the winter that control measures may be used very effectively.

Common Botfly

The common botfly, Gastrophilus intestinalis, is the most numerous species throughout the state. It is the largest of the three, and is commonly distinguished by a smoky crossband or patch on the wing. Throughout the summer and early fall it may frequently be seen hovering around the legs, belly, or breast of the horse. It prefers to deposit its eggs on the hairs along the inside of the front legs, but may deposit them anywhere on the hair of the legs, belly, or breast. The eggs are slender, yellowish white in color, and are glued tightly to the hairs.

Throat or Chin Botfly

The throat or chin botfly, Gastrophilus nasalis, is well distributed over the state, but is found in much smaller numbers than the common botfly. It is smaller and darker than the common botfly, and the wings are clear. It does not hover around the horse, but darts under the chin, jaw, or throat, deposits an egg, darts away for a short time, and then returns to deposit another. The eggs resemble those of the common botfly and are attached to the hairs in the same way.

Nose Botfly

The nose botfly, Gastrophilus hemorrhoidalis, first appeared in northwestern Nebraska in 1913 and has spread over the entire state, although it still is uncommon in some localities. It is dark in color, and has the abdomen tipped with red or bright orange. It quite often may be seen hovering between the forelegs of the horse, from which position it darts to the lips and deposits its eggs. The eggs, which are black in color, are glued to the fine hairs on the lips.

The Bots or Grubs

The bots or grubs of the three kinds of botflies are much alike in appearance. They range from five-eighths to seven-eighths of an inch in length, and vary in color from white or yellowish to grayish and dark pink. The skin is tough, and the body is ringed with small sharp spines that are very irritating to the tender membranes of the horse's stomach and intestines. They have well developed mouthparts

containing hooks that enable them to attach to, and bore into, the walls of the stomach or rectum.

Life History of Botflies

The first adults usually appear in May, but seldom become numerous before late June or early July. They are present in large numbers throughout July, August, and early September, but disappear after the first severe freezes. Female botflies begin egg-laying almost immediately after appearing, and one female may lay from one hundred to five hundred eggs. Although the life of the adult is rather short, new adults continually appear until severe freezes occur in the fall. Thus eggs are laid continually from mid-spring until at least the middle of the fall.

The eggs may hatch in as short a time as five days, but under unfavorable conditions hatching may be delayed for many weeks. Most of the eggs of the common botfly apparently do not hatch until they are rubbed or licked by the animal, and thus the newly hatched grubs enter the mouth. Eggs of the throat or chin botfly hatch without rubbing or licking, and latest observations indicate that the tiny maggots crawl into the animal's mouth. Eggs of the nose botfly hatch among the fine hairs of the animal's lips and the grubs crawl directly into the mouth.

The grubs of the common botfly and nose botfly work their way back to the horse's stomach, although a few of the nose botfly grubs may attach to the membranes of the mouth and throat where they sometimes make it difficult for the animal to swallow. The common bot usually attaches to the white part of the stomach wall where it remains until fully grown. It then releases its hold and passes from the animal. The throat or chin bot prefers to attach to the lining of the stomach near the outlet to the intestine, or to the wall of the intestine just outside the stomach. Like the common bot, it remains attached until matured, and then loosens its hold and passes out of the animal. The nose bot attaches in the same locations as the chin bot, but when nearly mature, it passes back and attaches to the walls of the rectum and anus where it remains for a short time before leaving the animal. All three bots require from eight to twelve months to attain full growth. Practically all mature bots pass from the animal before October 1, and only the immature forms overwinter there.

After passing from the animal, the bot penetrates the soil for a slight distance and enters the pupal stage, becoming shrunken, hardened and black. The adult fly may emerge in from four weeks to several months, depending upon the temperature and season of the year.

Damage by the Adult Flies

Throughout the summer botflies are very annoying to horses and mules. Although they apparently cause no pain by their egg-laying activities, their hovering, buzzing, and darting cause the animals to become restless, excited, and often unmanageable, thus frequently causing runaways and serious accidents. Animals on pasture, when annoyed by the pests, usually crowd together and try to shield their heads, or scatter to different parts of the pasture in an effort to escape. The nose botfly is a much more serious pest than the others, as animals frequently become frantic from its attacks. Horses and mules attacked by it often rub their noses and lips on fence posts, barbed wire or other sharp objects until those parts are bleeding and sometimes badly injured.

Damage by the Bots or Grubs

Bots, when present in large numbers, are likely to do more or less serious damage to the horse. In rare cases, death may be caused by perforations of the walls of the stomach, or rupture of that organ when exceptionally large numbers of bots are present. Some horses seem to be subject to frequent attacks of colic when badly infested by bots. A heavily infested animal fails to get the full value of the food consumed, and is quite likely to present a rough-haired, unthrifty appearance. Badly infested animals often lack normal endurance and may fail to stand up well under the strain of steady hard work. Damage is likely to be in proportion to heaviness of infestation, but even moderate infestations may cause a noticeably unthrifty condition. In the worst cases, hundreds of bots may sometimes be found in a single animal. Such an animal is practically certain to be considerably weakened.

Getting Rid of Bots

Carbon bisulphide has proved to be an effective remedy for bots. Not only is it highly effective, but it is comparatively cheap, and when administered by a competent veterinarian there is very little danger attached to its use. Its use is increasing rapidly, and each year many thousands of horses and mules are treated with it with uniformly satisfactory results. Even in cases where the work is done only on individual farms, the results indicate that benefits are many times greater than the cost. Best results are secured by treating during December and January, but results are quite satisfactory throughout February.

Preparation of Animals

Animals to be treated should be allowed no hay, straw, bedding, grain, or other food of any kind for from 18 to 24 hours preceding treatment. It is necessary that most of the bulky contents of the stomach and intestines be eliminated before treatment, thus making it possible for the carbon bisulphide to come in contact with the parasites. Water may be allowed during this fasting period before treatment. Both water and food of all kinds should be withheld for five or six hours after giving the treatment.

Treatment with Carbon Bisulphide

The carbon bisulphide treatment should be given by a qualified veterinarian. Its use by incompetent or careless operators is attended with danger, and a licensed veterinarian is best fitted by training and experience to make the required diagnosis and administer the treatment in the safest and most effective manner. The average dose is 1.5 fluid drams for each 250 pounds of weight, but as this varies with the age and condition of the animal, the treatment should be given by a veterinarian who is competent to judge these things. Oils and purgatives should not be given with, nor immediately following, the carbon bisulphide treatment, as they are likely to prove injurious. Carbon bisulphide is inflammable and its vapor is explosive. Consequently, it must be kept away from all fire.

Destroying Botfly Eggs

Botfly eggs, attached to the hairs, are likely to remain alive for a long period. At the time the carbon bisulphide treatment is administered, the horse should be treated with an egg-destroying agent. A two per cent solution of any standard coal tar-cresote dip is good, and fine results have been secured by using a two per-cent solution of carbolic acid. The treatment may be applied with a rag or sponge.

The important thing is to see that every egg receives its coating of the solution. Swabbing the legs, belly, breast, throat, and lower jaw with this solution at six-day intervals throughout the botfly's egg-laying season will do much to keep down the infestation, but is not fully effective, especially if the animals spend some time on pasture.

Stomach Worms and Intestinal Roundworms

These pests are commonly found in horses of all ages. General unthriftiness, lack of vigor, and failure to make normal use of the food consumed are the outstanding symptoms. The carbon bisulphide treatment is almost as effective for the large intestinal roundworms as it is for bots, and it is at least partly effective for stomach worms. This is an added benefit attending the treatment for bots, and is one more reason why that treatment should become general among horse and mule owners of the state.

Preventing Re-infestation

While it is not possible to prevent some re-infestation by bots, it has been found that a general systematic treatment of all horses and mules of a community or township will greatly decrease succeeding infestation for at least two or three years. If horses and mules throughout such an area were systematically treated with a two per cent coal tar-creosote or carbolic acid solution to destroy eggs, as was explained above, it certainly would reduce the danger of re-infestation to a minimum. Prevention of re-infestation by stomach worms and roundworms is largely a problem of sanitation. Clean quarters and yards, and the prompt removal and spreading of manure will be of help as infestation comes largely from eating of infested foods and bedding, and in many cases apparently is spread by flies that breed and feed in manure and filth about stables and corrals.

Mechanical Devices to Lessen Annoyance by Botflies

Screen-wire baskets placed over the horses' noses and attached to the bridles, are used by many drivers where nose botflies are troublesome. They are quite satisfactory in most cases, but should not be fitted too closely to the horse's nose, and the mesh should not be fine enough to clog easily. Another cheap and effective protector is made from a strip of leather or other durable and flexible material from four to six inches wide. This is attached to each end of the bit with snaps or wire, so that it hangs over the mouth when the horse's head is held in the normal position. One end of a strip of canvas should be attached to the throat latch, and the other end to the bit rings to protect against the throat botfly. Where these devices are used along with the coal tar-creosote or carbolic acid wash used to destroy the eggs of the common botfly, they will be found very useful in preventing infestation, as well as protecting the animal from annoyance.

Animals in pasture should be provided with a darkened shed to which they can go during the middle of the day, when botflies are bad. Nose botflies seldom if ever bother animals in such a place, and at least partial protection is secured from the others. However, all of these devices are only makeshifts, and actual control of bots can be secured only by systematic use of the carbon bisulphide or similar treatment.

(Prepared by O. S. Bare, Extension Entomologist)