

A note on the occurrence of leeches in paddy fields and their control.

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Leeches (Group *Hirudinea*) are well known for their sanguivorous habits and the annoyance they cause to man and animals. Both terrestrial and aquatic forms are met with in this group. Ponds, pools, irrigation water and marshlands are frequented by these annelids. Leeches have also been known to occur in paddy fields as recorded by De Jesus (1934) in the Phillippines.

This note is meant to record, probably for the first time, a similar occurrence of leeches in paddy fields in South India.

Leeches differ from other Annelidan worms in their oval shaped and dorso-ventrally flattened body, in the possession of two suckers, one at either end of the body, in the lack of body setae and a few other anatomical features. They are distinctly segmented like the other typical annelids, but with a smaller number of somites, usually 34 in number. The suckers are used as organs of attachment and locomotion. The mouth cavities of some leeches, as for example the medicinal leech *Hirudinaria manillensis* (Lesson) are provided with jaws armed with chitinous teeth. By making incisions on the skin of the host, the blood and lymph are allowed to flow freely and at the same time the salivary secretions are introduced into the wound thus preventing the clotting of blood. The blood is sucked by the muscular pharynx and passed into the long crop provided with lateral pouches. It has been stated that a medicinal leech can take in several times its own weight of blood and this supply will last for several months. The stored up blood is passed on from time to time into the stomach where it is digested and then sent into the intestine for absorption.

De Jesus (l. c.) has studied the habits of the common medicinal leech with the main object of devising suitable methods of control. He found copper sulphate at 1:50,000, tobacco infusion at 1:400 and *Derris elliptica* at 1:1000 deleterious to the leeches, the

last two causing mortality within 12 — 24 and 24 — 75 hours respectively. A 5% solution of common salt was found to be useful in dislodging the leeches from any part of the body. Raising the duck (*itek: Anas boschas*) in leech infested areas has also been recommended by him as a measure of control.

An interesting instance of outbreak of aquatic leeches in paddy fields was reported from the Rice Research Station, Ambasamudram during November-December 1955. The specimen concerned has been identified as *Hirudinaria granulosa* S. the common cattle leech. It is found to occur in all sheets of water frequented by cattle. This leech was found in a pest form in the paddy fields causing considerable nuisance to the farm labourers who refused to get into the fields for fear of leech bites. Leech bites are dreaded because, besides the tickling sensation and itching at the point of the bite, the victim may lose much blood and the open wounds may also serve as points of entry for other disease carrying bacteria. In addition to the Rice Research Station Farms, the fields round about Ambasamudram were also said to have been affected. However, the leeches, it may be stated here, caused no direct harm to the crop. Availing of this opportunity, a consignment of live leeches was obtained from Ambasamudram and a series of laboratory trials were conducted on methods of their control at the Entomology Laboratory at Coimbatore. Well known leech poisons like tobacco, copper sulphate and common salt, fertilizers like Ammonium sulphate and super phosphate and also some of the common insecticides in vogue (synthetic as well as those of vegetable origin) were tried.

In all cases, wide-mouthed cylindrical jars of the museum type were utilised for the experiments with standing water up to a minimum depth of 6"-8". Five medium to large sized leeches were released in each jar. The chemicals and other insecticides under trial were used as one would use it in a paddy field viz., mere sprinkling in the case of dust formulations and spraying in the case of liquid formulations. Continuous observation was maintained for the first two hours after starting the experiments so as to record the exact number of minutes during which they show symptoms of death. Subsequently the leeches were kept under observation every two hours, later on every six hours and so on. The data collected during these trials are summarised below :

Treatment	No. introduced	Time taken for mortality.
1. Tobacco dust.		
4 gms. per gallon	5	5-10 minutes
2 gms. do. } 1.2 do. } 1 gm do. }		10-15 minutes
2. Tobacco waste :		
8 gms. per gallon } 4 gms. do. } 2 do. }	5	30 minute
3. Copper sulphate :		
4 gms. per gallon	5	2 hours.
4. Common salt :		
40 gms. per gallon	5	No effect.
5. Ammonium sulphate		
4 gms. per gallon	5	72 hours.
6. Superphosphate :		
4 gms. per gallon	5	No effect.
<i>Insecticides of vegetable origin etc. :</i>		
7. Pyrethrum dust } 8. Derris dust } 9. Acorus dust }	4 gms. per gallon	5
10. Thevetia decoction (used as spray)	5	Not effective.
11. Fish oil rosin soap	5	24 hours.
12. Crude oil emulsion (used as spray)	5	48 hours.
<i>Synthetic insecticides (used in the form of spray on the surface of water).</i>		
13. D. D. T. 0.1%	5	No effect even after 72 hours.
14. B. H. C. 0.1%	5	48 hours.
15. Folidol 0.025%	5	24 hours.
16. Aldrin 0.1%	5	48 hours.
17. Dieldrin 0.1%	5	24 hours.
18. Endrin 0.05%	5	3 hours.
19. Bordeaux mixture (used as spray)	5	72 hours.

Results showed that tobacco dust even at a very low dosage of 1 gm. per gallon of water was highly effective, killing all the leeches within 10—15 minutes. Even tobacco waste cut into bits and scattered over surface of water at 2 gms./per gallon brought about a complete kill within half an hour. Copper sulphate came next in the order of efficacy killing the leeches in 2 hours and Endrin 0.05% in 3 hours. *Acorus* and *Derris* were not as effective as tobacco. Folidol, Dieldrin and fish oil rosin soap caused very slow kill, taking about 24—72 hours. Common salt was not found effective unless made into a saturated solution.

In conclusion, it may be stated that the authors did not have the opportunity of conducting any field trials and the present laboratory trials can at best be considered only of an indicative nature. Tobacco in any form is a well known leechicide and the trials have confirmed the efficacy of this material for leech control. Waste tobacco including mid ribs, cut bits etc., which will otherwise go to waste, can be utilised by broadcasting them preferably in a powder form in paddy fields to kill the leeches.

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LITERATURE CITED

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