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## Flumethrin pour-on application for control of *Haematobia* fly infestation in dairy cows: A case study

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**Abstract**

*Haematobia* flies are the most widespread and economically important blood feeding ecto-parasite of cattle and buffaloes. The bite of flies' cause stress and restlessness condition that grossly affects the health of animals. The present communication reports occurrence of heavy infestation of cows with *Haematobia* flies in a newly established cattle farm of the Lakhimpur College of Veterinary Science, Assam. Cows affected with *Haematobia* flies were treated with Flumethrin (Flumitas) *Pour-on* solution (1% w/v), by application once on the back of the animals along the vertebral columns at a dose rate of 10 ml/100 kg body weight. This resulted not only rapid disappearance of the flies from the treated animals but also complete reduction of fly population from the cattle shed. The animals found free from fly attack were looked to have overcome the pre treatment stress. The *pour-on* treatment also resulted in total milk yield increase from 25 litres to 27 litres per day in the farm thus accounting 8% gain in the milk yield. Flumethrin *pour-on* appeared to have a strong repellent effect that helped in alleviation of stress in animals due to fly burden.

**Keywords:** *Haematobia* fly, cross breed cow, flumethrin

**Introduction**

*Haematobia* flies are the most widespread and economically important pests of cattle and buffaloes. The two species *Haematobia irritans* and *Haematobia exigua* are closely related and morphologically identical but recognized as distinct species [1] of which both the males and females with piercing and sucking mouth parts are blood suckers. The adults spend most of their time on the hosts around the base of the horns in the head region, neck, wither and on the sides and feed on blood 20-40 times a day [2]. Their constant presence and painful bites cause annoyance, irritation, blood loss, interference in feeding and restless condition of the animals. Animals under stress of fly burden repeatedly use their head, tail switch, hind legs and shake body coat to swat away the flies from the body surface. The resultant effects of fly infestation are the use up of energy, reduction in body weight gain and milk yield [3, 4]. Severe infestation causes skin wounds [5] which may attract myiasis producing flies and increase risk of secondary bacterial infection. Additionally flies are known to spread *Stephanofilaria stilesi* [6], *Staphylococcus aureus* [7], trypanosomosis [8, 9] and anaplasmosis [10] among the host animals. Since the *Haematobia* flies spend their entire adult life on the body surface of animals, the use of insecticides by different techniques such as ear tag, sprays, pour-on, spot-on, dust bag or back rubbers has been considered to be the major component of fly management programme [6]. However, literature on the use of chemical treatment against fly infestation compared to other arthropods such as ticks, mites, lice and fleas are very limited. The present communication reports occurrence of heavy *Haematobia* fly infestation on the lactating cows in a newly established cattle farm and effect of Flumethrin *pour-on* treatment on the flies and treated cows there on.

**Materials and Methods**

The newly set up cattle farm of the Lakhimpur College of Veterinary Science, Assam Agricultural University, Joyhing, witnessed a severe fly infestation following introduction of 4 Jersey and 2 Holstein-friesian cross bred milking cows in the month of April, 2018.

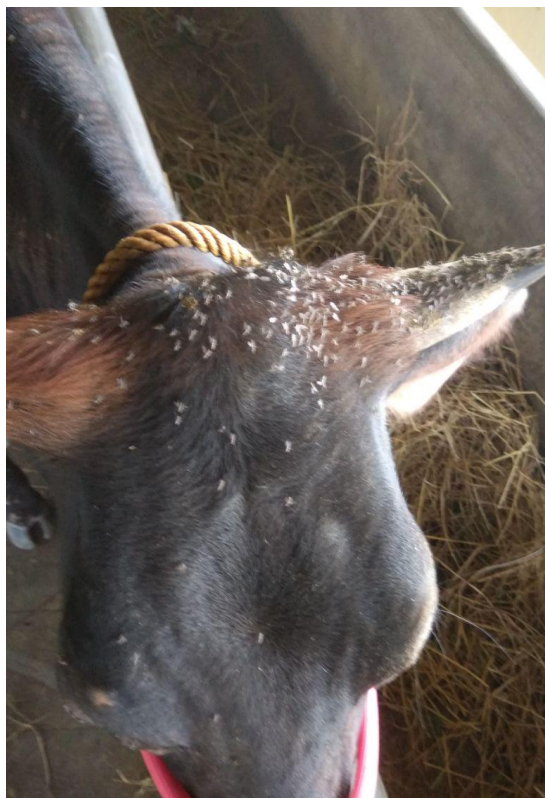
Dense population of flies was seen mostly on the fore head (Fig. 1) at the base of horns, along the vertebral column and side body surface (Fig. 2). The animals developed skin lesions on the back and sides. When counted by conventional visual method <sup>[11]</sup>, there were approximately 200 flies per animal. The animals were found to be under constant stress of fly attack. The flies were collected by a fly catching net and morphological identification was done with the help of a magnifying lens as per available literature <sup>[8]</sup>. Two severely affected cows with skin lesions were selected for the treatment with Flumethrin (Flumitas) *pour-on* solution, 1% w/v. The synthetic pyrethroid compound was applied once on the back of the two cattle along their vertebral columns at a recommended dose of 10 ml/100 kg body weight. The behaviors of the animals, milk yield and the fly population in the shed following insecticide treatment were recorded and compared with the respective pre treatment records.

### Results and Discussion

Morphological identification revealed the flies were silvery grey in colour and were found indistinguishable from *Haematobia* sp. No attempt was made to identify the species of the fly involved in the present investigation. However, previous reports establish prevalence of *Haematobia exigua* in India <sup>[12, 13]</sup>. Heavy fly burden with skin lesions on the body of the animals invited treatment strategy in the present investigation. The flies were seen started disappearing from the body of the treated animals and also from other animals of the shed within minutes of *pour-on* treatment. The animals were found totally free from fly attack and looked to have overcome the pre treatment stress. Daily milk yield of the animals in the shed also increased from pre treatment 25 litres to 27 litres per day post treatment with an increase of 8% milk yield. The above behavioral response, gain in milk yield of animals and fly protection effect of flumethrin *pour-on* were consistent with previous records made by several workers who recorded 20% decline in milk yield due to horn fly infestation <sup>[3, 14]</sup>. Besides decline in milk yield, the flies are known to cause reduced body weight gain in beef cattle <sup>[14]</sup>. Observation of skin lesions in the horn fly infested cows of the present investigation was in agreement with Foil and Hogsette <sup>[6]</sup> who recorded pain, irritation and skin damage due to adult flies with piercing and sucking mouth parts when constantly present on the body of the animals.

Several communications exist on the use of insecticides for the control of horn flies without development of resistance <sup>[15, 16]</sup>. Presence of more than 50 flies per lactating cows was considered to be important for their management <sup>[17, 18]</sup>. An insecticide treatment is suggested where economic benefit is possible <sup>[6]</sup>. Earlier studies on application of pyrethroid compounds as spray provided 93% protection against horn flies and the efficacy of *pour-on* was normally equal or greater than that of spray application <sup>[6]</sup>. Rapid disappearance of the flies from the cattle shed and achievement of complete control as observed in the present pilot study implied that the flumethrin *pour-on* has a strong repellent effect which is in conformity with the repellence reports of flumethrin and other similar synthetic pyrethroid compounds against ticks <sup>[19]</sup>, honey bees <sup>[20]</sup>, horn flies and midges <sup>[21, 22]</sup>. The flies reacted to the odour of flumethrin by their avoidance which persisted upto 10 weeks <sup>[21]</sup>. This shows that the synthetic pyrethroids have a repellent effect besides their contact insecticidal property.

Conclusively it appears from the present investigation that Flumethrin *pour-on* may prove efficient in immediate control of *Haematobia* and possibly other nuisance flies to provide protection to the dairy cows and benefit in terms of cattle health and production.



**Fig 1:** *Haematobia* fly infested animal (Head region)



**Fig 2:** *Haematobia* fly infested animal (Back region)

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