Small farmers in Malaysia and Indonesia confront rising heat and rising costs to cool their sheds

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This year's crisis over wildfire smoke in Malaysia and Indonesia has added to the heat woes squeezing livestock farmers there as they struggle to keep their animals cool, fed and productive. While it is difficult to separately assess the effects of haze-related smoke from heat, water shortages, feed and disease, farmers and industry groups say the cumulative strain is severely affecting animal health, productivity and their finances.

In Selama, Perak, poultry keeper Zaiful Zakaria, 42, began installing ventilation fans at his open-sided chicken sheds before the haze hit Malaysia in August. The fans were meant to draw out heat accumulating inside the sheds and protect the well-being of his mainly ornamental and heritage-breed chickens. Zaiful later also began installing a water-misting system.

For a basic fan-and-mister arrangement, Zaiful estimates he spent about 500 ringgit (US$120) per shed. Other refinements, such as solar panels and an automatic feeder, would cost more – up to 2,000 ringgit per shed, but these could save him money and effort in the long term.

Another breeder, Mohd Hazarulhizam Mohd Shafie, shared a photo of his newly renovated shelter for his heritage chickens in Alor Setar, Kedah. He estimated the total cost to be 50,000 ringgit, including built-in exhaust fans, solar panels and auto-misters. "The figures are not final, but the haze and the weather were definitely reasons I rebuilt my *reban* [coops] to better protect my birds," Mohd Hazarulhizam said.

The haze followed weeks of hot, dry weather across parts of the region, with forest wildfires and agricultural fires in Indonesia sending smoke billowing into Malaysia. The poor air quality, heat and lack of water and feed have all stressed livestock.

Against such a backdrop, it can be difficult for farmers and veterinarians to determine why an animal is ill, not putting on weight, or producing fewer eggs or less milk. Farmers and industry groups have reported significant changes in animal health and productivity during the hot and hazy period.

Zaiful, who heads the newly established Malaysian Poultry Association focusing on heritage breeds and small-scale farms, says the association has received several reports of breeders losing large numbers of birds. "There were no veterinary reports to establish whether it was the smoke, weather or other reasons for those deaths. Many might keep silent out of embarrassment," Zaiful said.

Small-scale farmers with fewer than 500 birds, as well as backyard poultry keepers, were particularly exposed because their birds were often kept in basic, open-air sheds, he explained, adding that these owners typically had less access to veterinary and animal husbandry advice

compared to commercial producers, many of whom have climate-controlled sheds, specialist consultants and tighter biosecurity.

Small-scale breeders are not required to register with Malaysia's Department of Veterinary Services.

Livestock veterinarian Vijay Jayam says a similar divide exists among cattle, dairy and goat farms. Larger dairies are generally better equipped with ventilation and biosecurity, while smallholders might only be able to douse their animals with water to help them cool down, he said.

A worker inspects eggs at a poultry farm in Malaysia's Pahang state (photo by AFP)

"Farmers should prioritise ventilation and clean drinking water," Vijay said, adding that he would not attribute lower milk yields or slower growth to haze alone without considering other factors, such as feed, housing, disease and the animal's stage of growth.

Ari Ramash Supramaniam, a dairy and goat farmer, said milk production from the five milking cows out of his 23 Australian Friesian-Jersey crossbreeds has fallen by four litres to six litres (by 8½ US pints to 12½ US pints) per day. He estimates that lost milk output has reduced his daily earnings by up to 60 ringgit (US$15).

"For a small farmer, that is a lot," says Ari, who started his farm about six years ago. He links the decline to his cattle grazing less due to the daytime heat.

Ari said he was giving his animals clean water mixed with molasses and ice to help them regain their energy and beat the heat, as well as increasing the amount of concentrate feed and mineral

supplements in their fodder. Once the animals return to the barn, they finish their food and drink "within a few minutes", he said.

The extra supplements needed to ride out current conditions can prove costly, as Ari uses about 5kg (11lbs) of molasses a day, at 1.80 ringgit per kilogram. The price of a 50kg bag of feed had risen by between 3 ringgit and 5 ringgit during the El Nino period, he said.

He also buys eight 30kg bags of fresh grass each day at 12 ringgit each (US$3) to feed his animals at night, once temperatures have eased.

Ari built his shed above ground level to allow natural airflow without having to use fans or turbines. He says he is working harder and spending more just to maintain productivity. "Still, I have noticed saliva around the mouths of the goats and cows from the heat stress; stressed animals will not contribute to expected results for farmers."

Jeffrey Ng, an adviser to the Federation of Livestock Farmers' Associations of Malaysia, said the organisation had begun recording weaker production up to two months ago. Some broiler chicken producers reported that birds were taking up to an additional week to reach their normal sale weight.

The heat and haze were overlapping pressures, Ng said, adding that the federation has not received any reports of a rise in poultry mortality associated with the current haze.

Malaysia's Ministry of Domestic Trade and Cost of Living has received reports of hot weather increasing mortality rates among laying hens, causing egg production to drop, deputy minister Fuziah Salleh has told local media. With demand unchanged, the tighter supply has contributed to higher egg prices, she said, adding that the increase remained under control.

Across the border in Mempawah regency, West Kalimantan, Sakiman has been struggling to cope with the drought. He said he had spent two whole weeks in August trying to find enough grass and water for his six animals. The cattle farmer keeps six head of cattle and sells male calves and bulls for racing and mea. He says much of the grass that is normally available has dried out, forcing him to look for fodder or buy it by the bundle early in the morning.

"They are not eating as much as they used to, but it's enough to keep them going," Sakiman said of his animals.

Water from the Mempawah River had also turned brackish and is no longer flowing strongly enough to reach the irrigation ditch he relied on, he said. "Now I buy about two drums [of water] at a time – one for household use and another for the cattle. They last about five days, and each drum can cost about 150,000 rupiah (US$8.50)," Sakiman said.

Smoke particles may pose an additional risk, particularly in open-sided poultry sheds. A modelling study by researchers at Thailand's Chiang Mai Rajabhat University projected that three days of exposure to PM2.5 – particulate matter 2.5 micrometres or less in diameter – at 150 micrograms per cubic metre could reduce a broiler chicken's average daily weight gain by 5.2 per cent.

Kulisara Marupanthorn, a veterinarian and project supervisor for the research, stresses that these were “predictions, not observed farm losses”. In study currently being prepared for publication, her team measured PM2.5 levels at bird-breathing height across three 35-day broiler cycles. Birds in the higher-pollution cycle had poorer respiratory health, weaker immunity and lower egg production. However, the researchers could not attribute these outcomes to PM2.5 alone, as there were also variations in temperature, humidity and rainfall.

Marupanthorn advises small-scale farmers to keep their water clean and curb dust levels, but warns that closing curtains against smoke could backfire if it traps heat and humidity.

Zaiful, meanwhile, said he is worried about mounting financial losses because of lower production. “Sometimes some breeders only have 500 ringgit (US$120) (with which) to start their breeding business; if they lose their chickens to heat stress or illnesses, that is a lot of money to them.”