

The Honorable Bernard P Carvalho, Jr.  
Mayor, Island of Kauai

October 13, 2014

Good Morning Sir,

My name is Carlos White. I am an entomologist living with my wife in Princeville II. I graduated from the University of Illinois where I did my Master's thesis research on the common house fly, *Musca domestica* L.

I have been asked to write a short letter to you giving my opinion of the proposed dairy operation near Po'ipu in relation to my area of expertise. I am pleased to do so.

The house fly developmental cycle is remarkable in both its speed and frequency of generation turnover. Due to the warmth of the medium (manure) in which fly larvae (maggots) develop, and the fact that insects develop at the rate of the temperature of their environment, one fertile fly can result in billions of descendants within a few months time. Under ideal conditions, which we have in Kauai, each generation of flies can be as short as 12 days. Multiply this by the number of generations, and the 300 eggs laid per fly, the numbers become astronomical. In a climate that is always conducive to their development in both temperature and rainfall, this translates into even greater fly production. Those are the conditions we face in Kauai.

Another factor is the types of flies that develop in manure. Among these are horn flies, stable flies, deer flies, and horse flies (all piercing, sucking flies that exist on blood meals). These are present on Kauai and cause grief not only to the cows but will, given the opportunity, bite people. We can expect the development of all these species of flies in the exceptionally moist, massive amounts of manure defecated by this large number of cows in such a small area. The only realistic control for flies in cow manure is through moisture control. I did not notice any mention of moisture control measures to reduce flies in the HDF protocol. There is only the hope that the concentrated manure in these small paddocks will be dried naturally by the sun and wind. The proposed overhead irrigation to bring the grass back for suitable grazing is definitely a boon to fly production. Added to the wetness from these irrigations are the frequent rains we experience on Kauai. If the manure is sufficiently concentrated and compacted, as in the proposed HDF concentrated dairy farm, the manure remains in a moist condition much longer than would be the case from a more scattered herd of animals. This condition is what we are dealing with here in the dairy model proposed by HDF.

I have worked in the capacity as a fly control entomologist in the San Joaquin Valley of California. The above situations I have outlined are the realities of fly control in farm animals. Any other entomologist engaged in the field will verify and validate these facts.

Since the house fly is capable of at least a 5 mile dispersal from its origin, and probably more with the winds of Kauai, this would include much of the Po'ipu area. This lovely coast line, with some of the loveliest resorts in the world, would be subject to clouds of very high fly populations throughout the year. I can't help but believe there would be litigation over this. These resorts would certainly react to this harm to their business model. Not only would there be a surge in flies but, when the wind is in the right direction, odors could be very intense. This would certainly affect many residents, as well.

I believe these are the facts and I speak from the research I have done in the field. Kauai is lovely and to place it's reputation in peril is not only foolish, but certainly doesn't make good business sense, especially when Kauai's business is tourism!

Carlos White, Industrial Entomologist  
4080 Aloalii Drive, Princeville, HI 96722