

F. No. WII/TMP/CAMPA-GIB PROJECT/2016/13

Date: 30 May 2019

To

The Chief Wildlife Warden

Rajasthan

Aranya Bhawan, Jhalana Doongri, Jaipur- 302004

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Sub: Pesticide usage for locust control in Great Indian Bustard habitats- reg

Ref: Letter from your office No. F () Dev./CWLW/6524 dated 28-5-19

Sir,

You are well aware that, the Great Indian Bustard is survived by a very small population of 100-150 individuals globally, 75% of which is restricted to Jaisalmer district of Rajasthan. The species is Critically Endangered and also the State Bird of Rajasthan. The central and state governments are implementing urgent recovery actions to save the species with technical assistance of Wildlife Institute of India and other conservation agencies. To this end, a tripartite Memorandum of Agreement has been signed between Ministry of Environment, Forest and Climate Change, Rajasthan Government and Wildlife Institute of India to undertake conservation breeding and habitat restoration measures.

We are aware of the recent outbreak of locusts in the Great Indian Bustard habitats of Jaisalmer, Rajasthan, and the issue of order by the Collector, Jaisalmer to spray pesticides to control the population of locusts. We are aware of the impact of locusts on crops and the necessity to control their population. However, the spraying of pesticides will be highly detrimental to the conservation of this critically endangered species and will be counterproductive to the ongoing efforts of the Government to recover the Great Indian Bustard because of the following reasons:

1. The pesticide being used – Malathion (50% and 97% concentrations) – is an organophosphate. Organophosphates act on the nervous system by inhibiting the enzyme acetylcholinesterase which plays a similar role in all insects, birds and animals. **Many organophosphates are acutely toxic to birds at very low doses¹**. There have been documented bird kills caused by the organophosphates diazinon, isofenphos, and chlorpyrifos with one kill involving thirty to forty thousand birds^{2,3,4}. A review of aerial forestry applications showed that four organophosphates reviewed, phosphamidon, fenitrothion, acephate, and trichlorofon, caused reductions in the abundance of singing males, the number of birds present, or the number of species present⁵. In addition, organophosphate insecticides are known to cause anorexia (loss of appetite) in birds. The resulting starvation can be an important cause of death. An invitro toxicity study of malathion indicated a higher toxic potential of malathion than that is generally declared. The environmental consequences of delayed effects and embryotoxicity for bird populations in areas exposed to organophosphate insecticides, such as malathion, are obvious^{6,7}. Since Malathion has a half-life period of 2 – 18 days depending on the soil type, **any Great Indian Bustard feeding on Malathion sprayed crops is likely to suffer the above stated health hazards and possible mortality**.
2. The long term effects of the pesticide on the ecosystem and on birds that have ingested less than lethal dose would be insidious and very detrimental. Studies across the globe have conclusively shown that populations of many birds^{8,9} particularly agro-grassland species have declined due to the use of chemical pesticides and fertilizers and in turn causing severe cascading effects in the ecosystem.

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3. Great Indian Bustard is a large omnivorous bird that feeds largely on insects, fruits and harvested crops. It breeds during mid-summer through monsoon (April – October), when it largely depends on protein-rich insectivorous diets. Ecological studies conducted on this species^{10,11} clearly indicate that grasshoppers/locusts and beetles contribute significant portion of their diet, and their breeding activity is strongly correlated with the population bursts of grasshoppers/locusts. Studies on other bustards and birds indicate that such protein-rich diet stimulate birds to display and nest. Further, the survival of chicks and juveniles largely depend on the availability of insects and other food in the environment, particularly during the initial few months after breeding^{12,13,14}. Thus, without adequate grasshopper/locusts in the environment, the breeding activity of Great Indian Bustard will be severely affected.
4. Indiscriminate spraying of pesticides in Great Indian Bustard habitats will reduce the major food item for these birds. Since the pesticide used affect a large spectrum of insect taxa, food items other than locusts/grasshoppers will also be depleted. The ensuing food scarcity will be detrimental to the birds for reasons stated above, by reducing breeding activity and juvenile survival. Given that the current year has experienced an early onset of rainy season that is expected to benefit Great Indian Bustard breeding, such human induced depletion of food scarcity should be avoided to ensure the recovery of the species.
5. However, the Great Indian Bustard is range restricted and its distribution is currently patchy restricted to only about ~4500 km² area of the Jaisalmer district, and largely to grasslands interspersed with agriculture. Based on joint surveys of Wildlife Institute of India (WII) and Rajasthan Forest Department, the intensive use areas have been identified and overlaid on agricultural areas digitized by WII (See map in Annexure I). Based on the scientific evidence presented here (see list of references in Annexure II) and reasons stated above (SN 1-4), it is recommended that spraying of pesticides **should be strictly avoided in the identified intensive use areas of Great Indian Bustard**, apart from all other areas where such activity is legally restricted. The agricultural area identified for strict avoidance of pesticide use is less than 10% of the total agriculture area in Jaisalmer. Farmers with existing crops in these areas can be compensated for their foregone production cost, based on appropriate quantification, as an incentive for not using such pesticides, using State Government funds such as CAMPA allocations.
6. Any Great Indian Bustard site that has already been sprayed with pesticide should be cordoned off by temporary fence with patrolling teams to ensure that these birds are not feeding on toxic crops/ insects for a period of 15-20 days until the toxicity levels are reduced.
7. In areas adjoining the intensive usage of Great Indian Bustard, use of biopesticides may also be explored by the Ministry of Agriculture involving appropriate expertise. *Metarhizium anisopliae*, a biopesticide recommended by FAO for desert locust management has been tried extensively in Africa, Australia and Brazil with evidence of up to 90% control of the locust population^{15,16}. This biopesticide is available by the trade name of Green Muscle, BioMetaz, GreenMeta and Kalichakra that are available locally and internationally.

Yours faithfully

(Dr. V.B. Mathur)
Director

Encl: as above

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