

Climate change: a prolonged dry spell has weakened the Nepali beekeeping industry and threatened Nepal's precious honey crop

Climate driven weather changes are having a detrimental effect on Nepal's bees and honey production. In the prolonged dry spell from October 2008 to April 2009, plants in the Terai, the 'honey basket' of Nepal, did not produce enough nectar to support the bee colonies. Beekeepers were forced to move their hives to Indian butter tree areas to survive. Honey production went down 50 per cent on average, and half of the 12,000 commercial bee colonies have probably been lost. Estimates put the total loss of investment and productivity at about half a million USD. A recent rapid survey conducted in the eight main honey producing districts of the Terai this year among commercial beekeepers from the Federation of Nepal Beekeepers revealed these and other alarming facts.

The facts: Survey on honey production and nectar flow rhythms

1. As a result of the unusual prolonged dry spell from October 2008 to April 2009, nectar producing plants in the Terai like *Brassica spp.*, *Murraya koenigii*, *Pogostemon spp.*, *Dalbergia sissoo* and *Eucalyptus spp.* were unable to produce sufficient nectar and forage to support the commercial bee farms and emerging beekeeping industry.
2. The Asian Brown Cloud further impacted on the situation and bees were not able to collect precious nectar from mustard flowers; the bee farms in the region lost their economic viability.
3. Beekeepers were forced to move their farms to Indian butter tree plantations from November to January to sustain bee populations.
4. Beekeepers who were not able to move their farms have lost their bees while trying to move them from one area to another in search of nectar.
5. In the absence of nectar, bees collected more and more propolis: an unusual phenomenon confirming the inability of surrounding flora to produce the required quantities of nectar.
6. Honey production went down by 50 percent on average.
7. Most nectar producing plants flowered two weeks before their regular time of flowering, a further indication of changed climate.

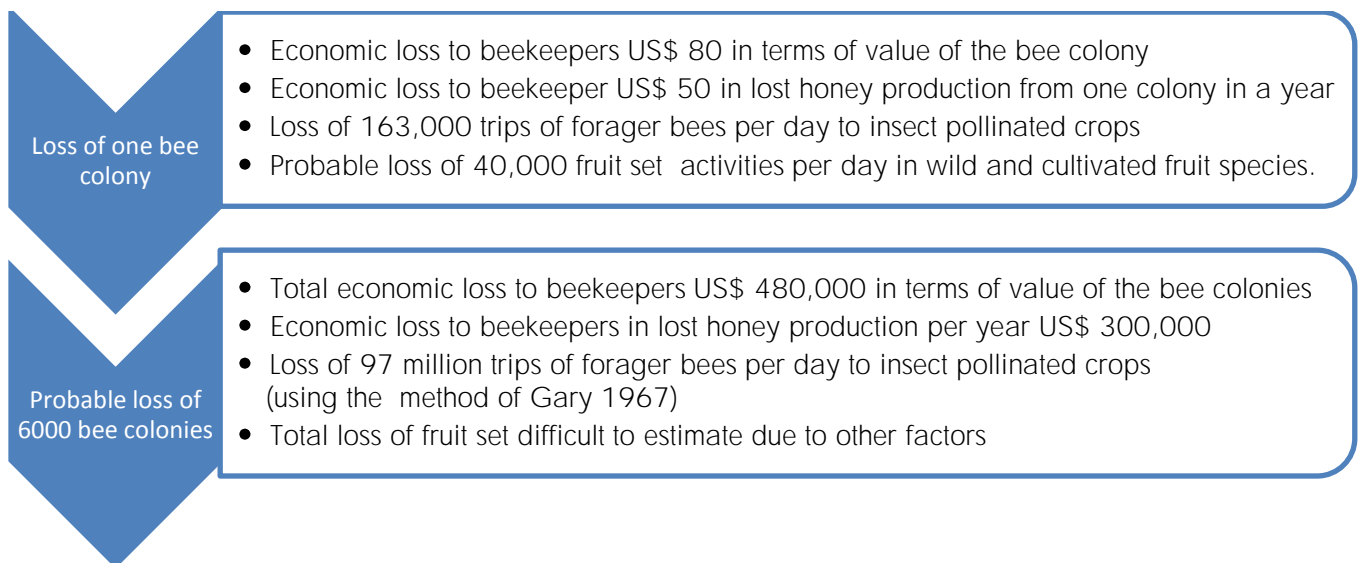
The economic impact

The story started in late 2008 when dull skies caused by the Asian Brown Cloud hindered bees from venturing out to collect nectar from the mustard flowers. The amount of nectar in the flowers was already very low due to the dry spell and absence of moisture. It usually rains in the Terai in October and November, and the remaining dampness helps plants in the coming months to produce enough nectar to support local bee populations. The absence of moisture triggered the loss of two crops of honey. Desperate, beekeepers moved their bees to Indian butter tree plantations where they were able to harvest four crops of honey. The bees were then moved back to other forest sources like *Murraya koenigii*, *Pogostemon spp.*, *Dalbergia sissoo* and *Eucalyptus spp.* But the dry conditions from February to April 2009 meant that these plants also produced little nectar. The major nectar producing wild plants *Murraya koenigii* and *Pogostemon spp.* also flowered two weeks earlier than normal, indicating a change in climate. Beekeepers in the eight Terai districts estimate that they have lost 50 per cent of their honey harvest – more than 300 metric tons of honey with a total value of more than US\$ 360,000. At the same time they incurred additional expenses for migrating their colonies. They also expect to lose half their bee colonies this season due to lack of nectar and forage, adding US\$ 150,000 to their losses. The total loss of investment and productivity will be more than half a million USD.

The impacts will ripple out into the broader industry. Honey processing and marketing companies will lose money as their processing units lie idle; they will lose orders from marketing and production companies. Up to 200 part-time jobs will probably be lost.

The decline in the number of bee colonies (both managed and wild) will also have implications for oil seed production. According to statistics published by the Government of Nepal, 134,268 metric tons of oil seed was produced in 2007/08 (valued at around US\$ 17 million). The reduction in the number of bee colonies threatens this production. Other crops will also be affected. Estimates suggest a 15 to 20 per cent loss in the mustard crop due to lack of effective pollination, which will increase Nepal's dependence on imports.

Economic and ecological implications of the dry spell



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