

Vultures: The growing concern

Joel Lyall's article, 'The vultures are vanishing' in the *Times of India* (TOI; 28 February 2000) had urged all concerned to take necessary action before it is too late. When I was reading this article, my brother-in-law who teaches law in a college at Sultanpur, Uttar Pradesh, commented, 'Main to kab se kah raha hun ki giddha ab dikhai nahi parate' (vultures are not seen as often as usual). On 22 September 2000, a small news item appeared in the TOI soliciting international support to find out the cause for the decline. This prompted me to contact Asad R. Rahmani (Director, Bombay Natural History Society (BNHS), Mumbai) to know the facts behind the news.

Rahmani promptly clarified that the BNHS had surveyed the vulture population at Keoladev National Park (KNP), Bharatpur during 1986–87 and again during 1998–99. It found surprising decline in the population of two most common species (*Gyps bengalensis* and *Gyps indicus*) of vultures which had gone down by 90%. The same trend was noticed in two other species of *Gyps* as well, though they were not that common even before the crisis. Surveys con-

ducted at different places in the Indian subcontinent reaffirmed the same, so much so that at a few places the species had become extinct.

The decline in population is ascribed to many factors such as pressure from human population, felling of big trees – the nesting sites, general air pollution, heavy use of insecticides and pesticides and their harmful effect on these birds, intentional killings of these high-flying birds, etc., but these reasons are more of a speculative nature, without scientific support. Surveys conducted by BNHS found that there was neither dearth of habitat nor food at KNP and elsewhere too. The toxicological studies did not find accumulation of toxicants in the tissues. However, preliminary microbiological studies have suggested involvement of unidentified virus which may probably be the cause of some strange disease. The early symptoms include hanging neck of the affected vulture while resting. After approximately a month, the afflicted bird dies. There is not only the danger of disappearance of the species, but its extinction may lead to serious natural scavenging problems, including even

the disposal of the dead bodies on 'Towers of silence'. After realizing the gravity of the matter, 'vulture alert' was issued by BNHS in November 1999.

Now, there are hectic activities to help the bird to survive. There have been meetings to thrash out plans of action, international seminar and discussions involving foreign agencies, but the final word on the cause of decline is yet to come. The strength of BNHS lies in field work and as far as my information goes, it lacks expertise in microbiology. I, therefore, feel it is high time for organizations dealing with microbiology, within and outside the country, to supplement the ongoing efforts of BNHS and other agencies, since the problem deserves to be dealt on a war footing. It may be noted that there have been no publications on this important Indian bird and its possible extinction in *Current Science*.

BHANU PRATAP SINGH

*Department of Science and Technology,
Technology Bhavan,
New Delhi 110 016, India*

Future challenges in food grains production in India

R. R. Daniel (*Curr. Sci.*, 2000, **79**, 1051–1053) is to be complimented for drawing attention of the scientific community to the challenges facing the country in achieving the projected requirement of 350 to 375 million tonnes (mt) of food grain production per annum over the next 2–3 decades, as against the current production level of 200 mt annually and seeking their views and perceptions of the challenges and threats as to our preparedness to face these.

While the assumptions underlying future food grain production needs might lead to varying projections, the fact remains that (a) India's population continues to grow @1.8 to 1.9%; (b) A large fraction of our population is poor

and malnourished and does not have the capacity to buy food; (c) Apart from food grains, demands for milk, oilseeds, poultry, fish and horticultural products will continue to rise in response to population growth and rising incomes; (d) With the livelihoods of nearly 70 per cent of its population dependent on the agriculture sector which generates about 28 per cent of its GDP and over 15 per cent of its exports, the country's economy is particularly dependent on healthy agricultural growth; (e) Opportunities for agricultural export are expected to continue to grow.

The challenges facing Indian agriculture today are more serious, complex and exceed those that we encountered prior to the Green Revolution period.

- Productivity gains during the Green Revolution era were largely confined to the relatively well-endowed irrigated areas of north-western plains and the deltaic irrigated areas and only to a few crops, notably rice and wheat. Further growth needs to be more rapid, more widely distributed and better targeted.
- There is a growing realization that previous strategies of generating and promoting technologies have contributed to serious and widespread problems of environmental and natural resource degradation. Problems of resource degradation in high-production areas relate to depletion of soil fertility, declining groundwater table in some areas and rising

water tables causing spread of salinity/alkali problems in other areas, negative effects on excessive use of fertilizers and plant protection chemicals on water and environmental quality and a reduction in the bio-diversity. In the rainfed areas, acceleration of processes of erosion of surface soils is leading to reduced soil productivity, siltation of reservoirs and increased runoff-related adverse effects. In future, the technologies must result in increased productivity levels and ensure that the quality of natural resource base is preserved and enhanced.

- Our past research and development efforts to increase production focused on use of inputs for maximizing production. This focus will now have to shift to increase the use-efficiency of inputs for optimum and sustained production.
- New technologies are needed to push the yield frontiers, utilize inputs more efficiently and diversify to more sustainable and higher value-cropping patterns. These are all knowledge intensive and would require not only a strong research and extension system and skilled farmers, but also a dynamic interface for regular exchange of information, bringing advantages to all.
- These new approaches will constitute a distinct departure from our past approach of developing and promoting a set of recommendations where farmers were conceived as passive receivers of technologies and not ones who have a large reservoir of knowledge upon which the scientists needed to depend. This approach must now change. Farmers must have access to information based on sound

science, which will help them take right decisions on how best to use management options in an efficient and effective manner.

- Most of our research programmes are currently organized either with a commodity orientation or address issues in a disciplinary manner. Scientists from different disciplines/areas must come together as a team in a 'problem-solving mode'. For generating future technologies, our knowledge base has to be much wider and deeper. This will call for bringing in the best of science to bear upon the process of technology generation. These inputs can be available from within the country through institutional linkages and must extend to institutions which are traditionally not agriculture related.
- There is a compelling need to understand and anticipate the challenges and opportunities in agriculture and agricultural research and development to be unleashed by the processes of globalization and to articulate a strategy by way of response to those new developments. An important consequence of these changes will be necessity for the scientists to work in partnerships: numerous, diversified, innovative and more substantive than in the past to avail opportunities for greater synergies, complementarities and closer working relationships leading to reduced overlaps, less redundancy and effective and efficient use of limited resources.

To successfully meet the challenges posed by complexity of the problems facing Indian farmers and Indian agriculture, the community of agricultural

scientists will have to change the way they identify and prioritize problems and the way in which they seek solutions and adoption of new technologies. Problems facing poor farmers must be conceived in totality and solutions attempted keeping a system's perspective in view, such that chances of finding appropriate solutions are high. Team work will be a necessity. Scientists from basic sciences will need to be increasingly involved in advancing the frontiers of knowledge, which will have a bearing on solving agricultural problems of the country. Advances in remote sensing and computer-based technologies, geographic informative system, communication skills involving networking, etc. will need to be routinely used.

To conclude, India's agricultural research and education system has grown to be large and varied over the past decades. The changes needed to make the system responsive to the needs of this century call for a fundamental change in our thinking and approach – a new paradigm. The changes will need to be conceived and implemented in the perspective of a vision of the future and a road map carefully weighing pros and cons of each step. To move in this direction the system needs to have in place mechanisms to think and change directions. As of now these mechanisms do not appear to be in place.

I. P. ABROL

*Centre for Advancement of Sustainable Agriculture,
C-9/9564, Vasant Kunj,
New Delhi 110 070, India
e-mail: iabrol@vsnl.com*

Earthquake observation

I was in Gujarat for about a week with a team of eight young doctors to offer succour and solace to the earthquake victims in the Kutch region. A confused opinion of the scientists and perhaps(!) overemphasis on the quake-resistant structures to mitigate such a disaster reported in the print media provokes me

to give a brief account of my observations. I neither have resources and training to provide a technical report nor was the survey our mission. However my observations, though put naively in this note may benefit the experts.

We hired a Tata 407 that served as a mobile hospital-cum-shelter for us. In

spite of the hardships and strenuous journey across the Kutch from Bhuj, Anjar, Bhachou to Gandhidham, the young doctors were willing to serve the affected villagers in the interiors. We went up to Veera near the sea-shore on one side, and Kankhoi and Ekalma villages near Rann of Kutch on the other.