emotional or environmental factors precipitate their migraine. The most often reported triggers include pesticides (sprayed fruits/vegetables), perfumes or fragrances (30% of sufferers) stress, over-illumination or glare, alcohol, food, too much or too little sleep and weather. Some women experience migraine in conjunction with monthly menstrual cycles. Sometimes migraine occurs with no apparent cause (http://psychology.wikia.com/wiki/Migraine_headache).

The genus *Calotropis* (Asclepiadaceae) is represented by two taxa, *C. procera* and *C. gigantea*. These have numerous uses and are of mythological importance among the Hindus[10,11]. The tender leaves of *C. procera* are used in the form of a capsule for the treatment of migraine along with water on an empty stomach for 3 days[12]. Mature yellow leaf juice is also inhaled by persons suffering from migraine[13].

The traditional medicinal information has been gathered from rural people in Chittoor District and some urban areas by recording the usage method of the drug and observing the curative effect of this herbal drug against migraine. Some residents of Bhakarapet Panchayat reported on the traditional use of the dried stem fumigations of *C. procera*. The dried stem which is hollow but closed at the nodes, is cleared using a needle. This hollow stem is burnt at one end to produce fumes from the other end of the stem. These fumes are inhaled from the left nostril if the migraine is on right side of the head and vice versa. Many people from rural areas and urban areas have thus been cured from migraine. Apart from extensive usage of modern medicine for migraine, people still depend on herbal medicines. Many people reported that migraine never recurred after they had used the stem fumes of *C. procera* once or twice. The fumes may be providing permanent cure against migraine. Further research will open new avenues for the application and improvement of traditional remedies and to develop a medicine in the form of an inhaler for migraine.

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Indian scientists and the archives of the American Institute of Physics

Indian men of science have been unable to create a central archive on the history of science. Also, most of the Indian historians of science do not give credit to archives or acknowledge the sources of their information. Thus, these sources remain obscure or unknown to future historians and in the worst cases, the material disappears forever.

As cases in point, I have reproduced two figures. The first (Figure 1) is from *M. N. Saha in Historical Perspective* (Gupta, J. (ed.), Thema Publishers, Calcutta, 1994; plate after p. 88). The reference for the photograph has not been acknowledged. This photograph seems to have been scanned from a Bengali journal and appears on the webpage of the American Institute of Physics (AIP) on typing 'Bose' in 'quick search' at http://photos.aip.org/.

Figure 1. (From left to right) Sitting: M. N. Saha, J. C. Bose and J. C. Ghosh; Standing: S. Datta, S. N. Bose, D. M. Bose, N. R. Sen, J. N. Mukherjee and N. C. Nag (Kolkata, 1930).

Figure 2. (From left to right) M. Alpine, M. Ismael, C. V. Raman, M. Born and E. Metcalfe.

On searching for 'Raman', a number of photographs appear. The one reproduced here (Figure 2) is from *C. V. Raman: A Pictorial Biography* (Ramaseshan, S. and Rao, C. R. (eds), Indian Academy of Sciences, Bangalore, 1988) and appears slightly different from the photograph on the AIP webpage in that B. Venkatesacher does not feature in it. The preface of the book says: 'What is unfortunate, however, is that all of the information regarding the original donors was lost' (p. 5).

As far as the AIP record is concerned, in both the above stated cases the credit goes to the AIP Emilio Segrè Visual Archives. Reproduction of images from the archives entails a payment of US$ 10–52 depending upon the size. Evidently, the material scanned from the Indian journal or appearing in the collection on C. V. Raman is the property of AIP.

I hope that influential scientists, policy makers, historians and maybe even journalists will make an effort to collect photographs and create a central archive to keep a record of Indian heritage and culture.

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Bt cotton: refuge in 'mixed bag'

Under the umbrella of cultivating refuge crops for delaying development of resistance in *Helicoverpa armigera* to *Bt* toxins, a questionable opinion of mixing non-*Bt* with *Bt* seeds in the same bag was recently proposed for adoption in India[1]. Insect Resistance Management (IRM) has been strongly emphasized ever since the commercial birth of *Bt* crops about 15 years ago in the US. One of the prominent IRM strategies is to cultivate a certain proportion of refuge crops (non-*Bt* crops of target pests) alongside *Bt* crops. Several theoretical reasons have been elaborated to promote the idea[2,3]. Nevertheless, just as every approach might not suit every society, Indian farmers, unlike their counterparts in the US, are observed to hesitate from conscious planting of refuge crops[1]. Subsequently, for India, an idea of enforcing unconscious planting of refuge crops by mixing non-*Bt* with *Bt* seeds in the same bag has been projected[1]. Here, we caution that the idea of 'mixed bag' may not only defeat the purpose of resistance management, but may also have undesirable socio-economic consequences on the society.

In simple words, functioning of the mixed bag is as follows. When a farmer in India purchases a mixed bag of *Bt* cotton seeds, 20% of the seeds contained in it will be the non-*Bt* version. As he cannot differentiate 'which is which', he will be planting all of them. As a result, non-*Bt* seeds get randomly distributed in his field. Thus, it would be ensured that the stipulated proportion of non-*Bt* plants is available for the pest to complete its life cycle.

While contemplating the idea of mixed bag, it would be important to realize that a caterpillar of *H. armigera* feeds on several bolls to complete its development, and, in the process, may have substantial probability of moving between plants, especially when canopies overlap (Figure 1). This probability increases with increasing impetus for high-density planting these days. Movement from non-*Bt* to *Bt* plants would be enhanced under the mixed-bag approach, as the probability for every non-*Bt* plant to neighbour a *Bt* plant would approach one. Its consequences on IRM plans can be summarized in two ways – (i) As the effectiveness of the toxin lowers with age of the caterpillars feeding on it, movement of older caterpillars from non-*Bt* to *Bt* will enhance opportunities for exposure to sub-lethal doses of the toxin. This can enhance risks of developing resistance. (ii) Movement of younger caterpillars from non-*Bt* to *Bt* plants may enhance their mortality and reduce density, which might culminate in reduced number of susceptible moths available for mating with the tolerant individuals emerging from *Bt* plants. This may also contribute towards developing resistance. Therefore, the mixed-bag approach can potentially defeat the concept of refuge crops for delaying resistance in *H. armigera*. These issues have been highlighted by others too[4].