Swadeshi Nobel Prize

The letter 'Second Swadeshi Nobel Prize – a mirage?' by Sharma[1] raises a question that has been asked many times before. While I largely agree with Sharma on several points, let me add a few as well.

(1) There was a noteworthy news item in the *Times of India* a while ago (http://timesofindia.indiatimes.com/india/Indian-nominators-for-Nobel-Prize-letting-invitations-rot/articleshow/28205597.cms), which however seems to have been neglected by the scientific community in India. It makes for quite startling reading: 'Indian institutes, academics and scientists, invited to nominate Indians for the Nobel Prize, are "letting invitations rot in their drawers". ' Also, '[Sven] Lidin said Indian universities do not take the nominations seriously. "In some cases, they aren't even aware of breakthrough work being conducted by individuals, scientists or groups and hence don't know whom to nominate", said Lidin, who is visiting India to look for nominators.' Lidin said institutes with Nobel laureates are usually very good with nominations. 'That is why universities in the UK, the US, Germany and France nominate a large number of scientists and end up winning the most prestigious prize more often.'

Therefore, a large share of the blame also lies with the bureaucracies that strangle institutions in India, particularly the inept administrators and departmental heads who do not take any interest in promoting meritorious talent, so that 'all those who have experience, expertise, dedication, and daring for reaching new horizons have been elbowed out or marginalized' as noted by Valdiya[2].

(2) Academics in India are constrained by archaic bureaucratic rules and limitations that make little sense. Perhaps the foremost among these are the restrictions on funding international travel, a holdover from the thinking of an earlier era when a foreign trip was a luxury that most Indians could hardly even dream of. Most funding agencies such as the DST support (that too in quite a limited way in most cases) one trip every three years, hardly enough to give a budding scientist the exposure needed. By contrast, researchers (even graduate students) in many countries are actively supported, even pushed, to travel internationally to understand what their peers elsewhere are doing.

(3) Funding for scientific research is in general nowhere near international standards, both in terms of quantity and flexibility. Not only do we compare with nations in sub-Saharan Africa in terms of per-capita funding, we also lag behind Israel in terms of total research funding. What funds are made available (often after long delays and arduous and non-transparent granting processes that do not promote quality) come with stringent limitations on use. Scientists are known to complain that it is easier to get funds for a whole new building (which a committee of bureaucrats can understand) than one small piece of equipment or software that is not easy to justify to a bureaucrat but is critical to the success of a project.

1. Sharma, O. P., *Curr. Sci.*, 2015, **109**(2), 238–239.
2. Valdiya, K. S., *Curr. Sci.*, 2012, **102**(4), 581–589.

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Pitfalls in ICAR mode of germplasm conservation

India may be the only country where every plant and animal taxon has got a research institute in its name and most of these are under the control of the Indian Council for Agricultural Research (ICAR) and their subsidiaries, the State Agricultural Universities. The nature of work that is being carried out and the mandate of each institute are questionable as per modern scientific standards. One of the chief mandate crops of ICAR is rice. There are many traditional varieties of rice cultivated in different parts of India and many of these are becoming extinct day by day. A biodiversity-rich state like Kerala alone boasts of nearly 160 varieties of rice. In spite of concerted efforts by ICAR agencies, more than 50% of these varieties have almost become extinct. The seeds of the traditional varieties like Chennellu, Kanni Chennellu, Chettuveliyan, Marathondi, Chembakam, Chenthadi, Vella Chenthadi, Mundakan, Chennal Thondi, Chomala, Velumpala, Atukkan, Kothandan, Gandhakasala, Kayama, Uruni Kayama, Jeerakasala, Palthondi, Onamottan, Onachanna, Kotuveliyan, Palthondi-Vella, Cheriyakuruva, Thavalakannan, Kalladiaryan, Okkapuncha, Thonnuram Thondi, Thonnuram Puncha, Punnadan Thondi, Karuthan, Kurumbali and Palveliyan, which were once predominant in the biodiversity-rich Wayanad region are not at all traceable. Similar is the case with many endemic varieties which were cultivated in the ecologically sensitive Kuttanad region, where farming is carried out at areas below sea level.

Many of these traditional varieties have been procured by the ICAR agencies and at present, the local farmers do not have a single seed. Once the ICAR scientists gather the seeds, they neither supply it to the farmers nor to the academicians. They just keep the germplasm in their custody. Will this act serve the purpose of germplasm conservation? If ICAR is genuinely interested in conserving the germplasm, it should promote the cultivation of such traditional varieties by providing incentives to the farmers. Instead, the scientists of ICAR are promoting the cultivation of hybrids developed using the traditional varieties. For example, the Rice Research Station, Monkompu, which is located in the Kuttanad region of Kerala, has so far released 12 rice hybrid cultivars. But till date the scientists from this research station have not taken any initiative to promote cultivation of traditional varieties which were once predominant in the area.

If they are not promoting cultivation of traditional varieties, the question is how long can they keep the seeds in their germplasm? The wetland areas are depleting day by day due to urbanization and farming is not considered as a profitable business any more. The best way of conserving a variety that is under threat of extinction is to popularize its cultivation in its native habitat. But for this the farmers have to be taken into confidence and provided with monetary incentives.

Unfortunately no such initiatives are taken either by ICAR or its state subsidiaries. It seems that the scientists want to keep the gene under their custody so that they can produce new hybrids using them. They are only interested in journal publications and not in the restoration of species. For restoration of a lost variety the scientists have to gain support from the local people. As most of our agricultural scientists sit in the air-conditioned rooms of research intuitions, this will not happen. There are very few scientists who understand the pulse of the public.

Another problem with our agricultural scientists is the lack of coordination among themselves and with other members of the scientific community. They are reluctant to share information with others. Even scientists associated with other agencies of the Government find it difficult to procure seeds (germplasm) from ICAR agencies for research purpose. It is highly unethical on part of the ICAR scientists to keep the germplasm procured from the farmers in their custody without sharing it with other members of the scientific or academic community. Germplasm is a public property and every farmer and academician should have a right over it. Moreover, no conservation efforts will become successful until and unless the specific species or varieties are propagated in their natural habitat. Current focus on promoting cultivation of hybrid varieties alone will not solve the problems in the agricultural sector in the long run. It will only push the extant variety to the verge of extinction.

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The booming of open access publications in science

The last decade has witnessed a significant growth of open access (OA) publications[1]. The existing forms of OA include OA options of traditionally closed-access journals (such as the Green and Gold OA routes) as well as a substantially different publishing model, known as OA publishing[2]. OA is considered to be able to accelerate the production and dissemination of knowledge. Backed by dominant research funders across the world[2], it has fundamentally changed the landscape of scholarly publishing[3].

The *Web of Science* (*WoS*) started to provide identifiers for articles from OA journals in 2014, offering an opportunity to explore the development of publications generated from the OA publishing model. This study uses the *Web of Science–Science Citation Index Expanded* (*WoS–SCIE*) to illustrate the trajectories of OA publications in science. We collected data on 30 June 2015 with the time span set as 2000–2014. Four document types (articles, letters, notes and reviews) were included[4].

As shown in Figure 1, the volume of OA publications was relatively low in 2000 in terms of both absolute number and relative share in total *SCIE* publications. The following six years saw a steady growth of OA publications from 14,138 in 2000 to 37,735 in 2006, and the doubling of relative share from 1.8% to 3.9%. The number of OA publications after 2006 grew at a much faster pace, rising from 37,735 in 2006 to 189,822 in 2014 with an annual rate of 22.4%, accounting for 13.6% of the total *SCIE* publications.

Table 1 captures the language distribution of OA publications being studied. Undoubtedly, English is the dominating language with a share of 91.8%, followed by Portuguese (3.8%) and Spanish (2.7%). In different language environments, the share of OA publications varies significantly. For instance, 89.4% of Portuguese publications are from OA journals, while only 34 out of 115,470 publications in German are published in OA journals.

Table 2 shows the geographical distribution of OA publications being studied. We looked at the top 10 most productive countries of OA publications in these three successive phases. The USA has been the largest producer throughout, contributing to nearly one-fifth of the world total production in OA journals. Yet it is noteworthy that the share of OA publications within USA has been much lower than the world average. Three of the BRIC countries, Brazil, India and China, play active roles in OA publishing. Brazil and India share similar trends in the sense that both feature among the

Table 1. Language distribution of OA publications

Language	#	*S* (%)	*P* (%)
English	1,029,542	91.8	6.8
Portuguese	42,513	3.8	89.4
Spanish	29,946	2.7	44.6
Turkish	4221	0.4	52.8
Chinese	2627	0.2	2.7
Japanese	2525	0.2	9.7
French	2410	0.2	2.5
Polish	2091	0.2	11.6
Czech	1874	0.2	43.8
Serbian	1139	0.1	94.3

#Number of OA publications; *S*, Share of OA publications of the total OA publications; *P*, Percentage of OA publications in a specific language.