

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<sup>1</sup>. 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<sup>2</sup>. OA is considered to be able to accelerate the production and dissemination of knowledge. Backed by dominant research funders across the world<sup>2</sup>, it has fundamentally changed the landscape of scholarly publishing<sup>3</sup>.

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<sup>4</sup>.

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

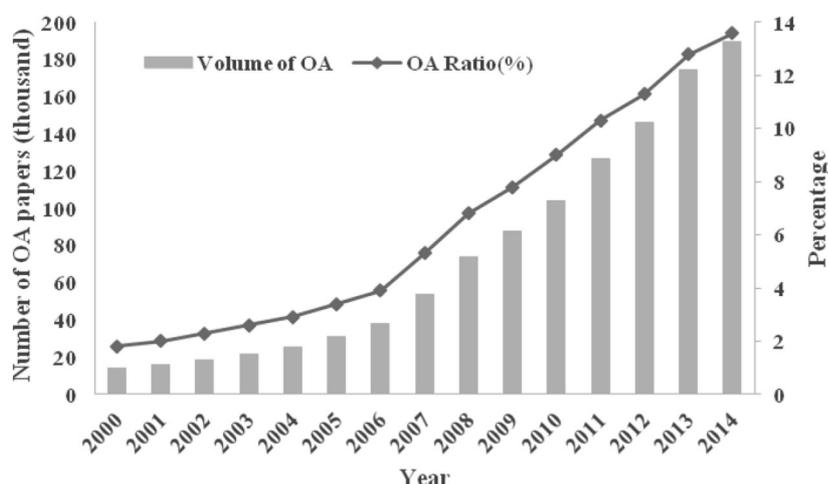
Language	#	S (%)	P (%)
English	1,029,542	91.8	6.8
Portuguese	42,513	3.8	89.4
Spanish	29,946	2.7	44.6
Turkish	4221	0.4	52.8
Chinese	2627	0.2	2.7
Japanese	2525	0.2	9.7
French	2410	0.2	2.5
Polish	2091	0.2	11.6
Czech	1874	0.2	43.8
Serbian	1139	0.1	94.3

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

**Table 2.** Geographical distribution of OA publications

Phase/Country	2000–2004			2005–2009			2010–2014				
	#	S (%)	P (%)	Country	#	S (%)	P (%)	Country	#	S (%)	P (%)
USA	16,506	17.4	1.3	USA	51,022	17.9	3.5	USA	144,763	19.5	8.6
Japan	12,479	13.1	3.3	Brazil	33,065	11.6	27.6	China	110,058	14.8	11.5
Brazil	10,038	10.6	15.3	Japan	22,964	8.1	5.9	Brazil	61,735	8.3	33.8
India	7199	7.6	7.1	China	20,624	7.2	4.3	UK	45,250	6.1	9.7
South Korea	4660	4.9	5.0	India	19,786	6.9	11.8	Germany	44,960	6.1	9.5
UK	4053	4.3	1.1	UK	14,977	5.3	3.8	Japan	43,225	5.8	11.0
Germany	3989	4.2	1.2	Germany	14,934	5.2	3.8	India	36,766	5.0	14.4
Poland	3758	4.0	6.3	France	10,760	3.8	3.7	France	28,823	3.9	8.5
China	3653	3.8	1.7	Spain	10,554	3.7	5.8	Spain	28,489	3.8	11.4
Spain	3447	3.6	2.7	Turkey	9905	3.5	11.1	Italy	27,635	3.7	9.4
World	95,006	100	2.3	World	284,767	100	5.6	World	741,162	100	11.5

#Number of OA publications; S, Share in the world's total OA publications; P, Percentage of OA publications in a specific country.



**Figure 1.** Open access publications identified in *Web of Science–Science Citation Index Expanded*.

largest producers of OA publications, as well as high OA ratios. China as a rising power<sup>5,6</sup>, in contrast, has a relatively low OA ratio, although it features fast growing OA publishing activities.

Our observation may be just a tip of the iceberg of the booming of OA publications. Owing to the limitation of database, this study has not been able to capture those OA publications from traditional journals, or self-archived (i.e. Green OA) publications. With such categories taken into account the picture would appear more complex, but the trend towards OA is undoubtedly over-

whelming. This trend has enormous implications on scientific research. How can research/researchers using different publishing channels be evaluated justly? What funding schemes should be adopted? How can various OA models be financially supported? All stakeholders (including but not limited to researchers, research institutions, funders and publishers) involved in this trend would have to reflect and refine their strategies.

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