



Mapping the research publication trends among ICAR-Animal Sciences Research Institutes in India: Web of Science-based scientometric study

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Supplementary Table 1. Year-wise research publications of ICAR-Animal Sciences Research Institutes

Year	Publication metrics*				Citation metrics*			
	TP	% Share	RGR	Dt	ACPP	STC	WSC	<i>h-index</i>
1998	303	2.3	5.71	0.12	8.08	2448	2435	17
1999	345	2.6	0.76	0.91	7.09	2445	2431	24
2000	312	2.3	0.39	1.76	8.19	2556	2551	23
2001	336	2.5	0.30	2.31	8.69	2921	2907	25
2002	313	2.3	0.22	3.20	12.26	3838	3818	33
2003	274	2.1	0.16	4.41	8.7	2383	2377	26
2004	327	2.5	0.16	4.33	11.34	3709	3692	31
2005	375	2.8	0.16	4.42	12.82	4806	4783	34
2006	377	2.8	0.14	5.09	13.14	4953	4935	33
2007	519	3.9	0.16	4.29	10.89	5651	5625	34
2008	635	4.8	0.17	4.14	8.93	5669	5634	37
2009	531	4.0	0.12	5.71	13.16	6988	6962	35
2010	546	4.1	0.11	6.24	11.17	6099	6060	36
2011	575	4.3	0.11	6.60	10.6	6095	6057	35
2012	640	4.8	0.11	6.59	9.65	6176	6127	32
2013	694	5.2	0.10	6.74	8.31	5767	5732	31
2014	780	5.8	0.10	6.65	9.99	7791	7705	34
2015	874	6.6	0.11	6.59	8.07	7049	6956	37
2016	932	7.0	0.10	6.85	6.29	5865	5775	30
2017	973	7.3	0.10	7.24	5.02	4885	4790	27
2018	927	6.9	0.08	8.31	3.64	3376	3271	21
2019	872	6.5	0.07	9.55	1.7	1484	1389	12
2020	882	6.6	0.07	10.13	1.58	1393	1175	12
1998-2020	13342	100	-	-	-	104347	103187	-

*TP-Total Publications, RGR-Relative Growth Rate, Dt-Doubling Time, ACPP- Average Citations per Paper, STC-Sum of Times Cited, WSC-Without Self Citations.

Supplementary Table 2. Co-authorship characteristics of research papers from ICAR-Animal Sciences Research Institutes (N= 13,342)

Year	Papers with all authors from India					Papers with at least one author from outside India					h-index		
	Papers		Citations*			Papers		Citations*					
	Total papers	% of respective years	% of 13342	TC	SC	ACPP	Total papers	% of respective years	% of 13342	TC		SC	ACPP
1998	299	98.68	2.24	2378	13	7.95	4	1.32	0.03	70	0	17.50	3
1999	331	95.94	2.48	1702	11	5.14	14	4.06	0.10	744	2	53.14	9
2000	305	97.76	2.29	2341	5	7.68	7	2.24	0.05	216	0	30.86	5
2001	331	98.51	2.48	2875	13	8.69	5	1.49	0.04	46	0	9.20	3
2002	293	93.61	2.20	3229	12	11.02	20	6.39	0.15	614	6	30.70	11
2003	261	95.26	1.96	2098	6	8.04	13	4.74	0.10	290	0	22.31	9
2004	315	96.33	2.36	3515	17	11.16	12	3.67	0.09	197	0	16.42	4
2005	349	93.07	2.62	3845	19	11.02	26	6.93	0.19	967	1	37.19	15
2006	347	92.04	2.60	4295	14	12.38	30	7.96	0.22	663	3	22.10	15
2007	483	93.06	3.62	4788	20	9.91	36	6.94	0.27	867	0	24.08	15
2008	592	93.23	4.44	4687	32	7.92	43	6.77	0.32	988	1	22.98	19
2009	492	92.66	3.69	5228	24	10.63	39	7.34	0.29	1770	1	45.38	21
2010	509	93.22	3.82	5314	36	10.44	37	6.78	0.28	793	1	21.43	14
2011	523	90.96	3.92	5171	31	9.89	52	9.04	0.39	928	2	17.85	16
2012	564	88.13	4.23	4704	32	8.34	76	11.88	0.57	1485	9	19.54	22
2013	646	93.08	4.84	4884	30	7.56	48	6.92	0.36	886	2	18.46	16
2014	691	88.59	5.18	6400	73	9.26	89	11.41	0.67	1409	8	15.83	23
2015	802	91.76	6.01	5815	80	7.25	72	8.24	0.54	1257	6	17.46	21
2016	850	91.20	6.37	4765	70	5.61	82	8.80	0.61	1124	8	13.71	19
2017	860	88.39	6.45	3753	68	4.36	113	11.61	0.85	1172	10	10.37	19
2018	831	89.64	6.23	2490	65	3.00	96	10.36	0.72	909	18	9.47	17
2019	758	86.93	5.68	998	68	1.32	114	13.07	0.85	501	12	4.39	11
2020	723	81.97	5.42	357	78	0.49	159	18.03	1.19	1074	106	6.71	11
Total	12155	92.35	91.10	85632	817	7.79	1187	7.65	8.90	18970	196	21.18	-

*TC, Total Citations; SC, Self Citations; ACPP, Average Citations per Paper.

Supplementary Table 3. Institute-wise publication characteristics of research papers

Name of the institute	Papers with all authors from India including those with single author				Papers with at least one author from outside India			
	TP	h-index	TC	ACPP	TP	h-index	TC	ACPP
ICAR-Central Avian Research Institute	528	25	3290	6.23	24	12	435	18.13
ICAR-Central Institute for Research on Buffaloes	295	20	1543	5.21	38	13	503	13.24
ICAR-Central Institute for Research on Cattle	105	9	284	2.7	2	0	0	0
ICAR-Central Institute for Research on Goats	582	24	3247	5.58	48	16	889	18.52
ICAR-Central Sheep and Wool Research Institute	743	27	4753	6.4	19	8	212	11.16
ICAR-Directorate of Poultry Research	309	23	2464	7.97	21	7	162	7.71
ICAR-Indian Veterinary Research Institute	5153	59	38944	7.55	617	45	9412	15.23
ICAR-National Bureau of Animal Genetic Resources	561	26	3642	6.49	51	13	1239	24.29
ICAR-National Dairy Research Institute	3507	55	25002	7.12	302	34	4994	16.54
ICAR-National Institute of Animal Nutrition and Physiology	477	31	4023	8.43	57	13	810	14.21
ICAR-National Institute of High Security Animal Diseases	132	18	1063	8.05	37	15	663	17.92
ICAR-National Institute of Veterinary Epidemiology and Disease Informatics	169	15	845	4.97	31	7	177	5.71
ICAR-National Research Centre on Camel	284	16	1140	4.01	10	4	64	6.4
ICAR-National Research Centre on Equines	307	23	2442	7.95	35	14	512	14.63
ICAR-National Research Centre on Meat	135	18	1375	10.19	15	8	173	11.53
ICAR-National Research Centre on Mithun	198	11	585	2.92	14	5	124	8.86
ICAR-National Research Centre on Pig	143	10	374	2.62	6	4	50	8.33
ICAR-National Research Centre on Yak	243	14	830	3.42	10	6	92	9.2
ICAR-Project Directorate on Foot and Mouth Disease	152	20	1427	9.39	15	8	197	13.13
Total	14023	-	97273	-	1352	-	20708	-

*The papers with authors from more than one ICAR animal sciences research institutes are counted against each of the respective institutes and hence the total exceeds the actual number of papers published (N=15,375.) TP, Total Publications; TC, Total Citations; ACPP, Average Citations per Paper.

Supplementary Table 4. Authorship pattern of publications from ICAR-Animal Sciences Institutes during 1998-2020

Year	Single	Two	Three	Four	Five	Six	Seven	Eight	Nine	Ten	> Ten	TP	TA
1998	14	92	86	63	34	7	5	2	0	0	0	303	519
1999	9	99	95	75	41	19	6	1	0	0	0	345	534
2000	3	89	92	69	38	15	3	2	0	1	0	312	509
2001	11	98	84	79	42	15	5	2	0	0	0	336	587
2002	7	93	73	63	42	23	5	1	3	0	3	313	631
2003	8	57	83	50	45	18	10	1	0	0	2	274	548
2004	7	65	77	74	48	38	8	7	0	1	2	327	675
2005	13	72	93	72	59	31	18	5	4	5	3	375	788
2006	6	53	96	72	68	39	23	10	4	2	4	377	770
2007	12	83	87	119	81	64	33	21	11	2	6	519	1031
2008	21	103	112	121	109	74	50	17	11	6	11	635	1227
2009	13	71	102	108	90	66	36	17	14	6	8	531	1413
2010	8	71	101	120	89	60	33	25	20	7	12	546	1206
2011	5	70	92	96	105	70	55	29	25	11	17	575	1382
2012	4	61	89	123	95	92	69	37	24	18	28	640	1592
2013	6	63	76	110	128	114	87	48	22	13	27	694	1848
2014	7	57	102	123	132	118	80	51	48	27	35	780	1976
2015	8	44	98	154	149	128	92	72	54	28	47	874	2077
2016	7	49	111	158	159	133	110	74	39	33	59	932	2350
2017	5	50	114	154	161	142	106	82	54	35	70	973	2467
2018	10	62	91	134	162	135	90	73	70	30	70	927	2436
2019	7	43	84	117	131	149	81	88	50	52	70	872	2492
2020	2	38	80	125	120	136	95	87	73	46	80	882	2685
Total	193	1583	2118	2379	2128	1686	1100	752	526	323	554	13342	31743
%	1.45	11.86	15.87	17.83	15.95	12.64	8.24	5.64	3.94	2.42	4.15	100	237.918

TP, Total Publications; TA, Total Authors.

Supplementary Table 5. Top fifteen countries which collaborated with India for animal sciences research during 1998-2020

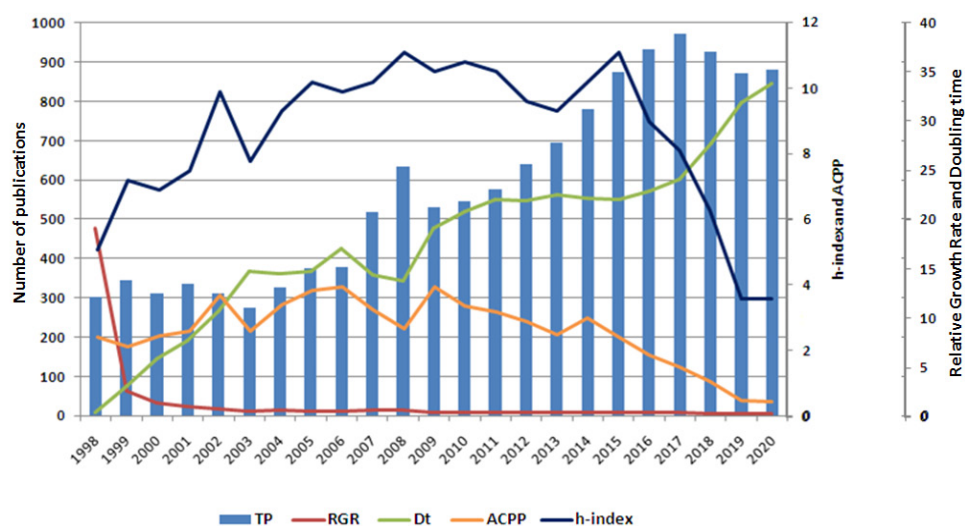
Countries	TP	% of 13342	<i>h-index</i>	ACPP	TC	WSC
USA	417	3.13	41	18.88	7890	7676
Germany	121	0.91	23	20.35	2462	2413
Japan	97	0.73	22	31.99	3094	3041
England	95	0.71	30	36.91	3506	3442
Australia	59	0.44	14	24.81	1464	1446
Iran	56	0.42	14	16.14	904	888
Canada	53	0.40	18	34.77	1843	1828
Egypt	51	0.38	17	16.29	847	785
Italy	49	0.37	20	45.31	2220	2213
Peoples R China	48	0.36	15	25.38	1218	1209
Pakistan	42	0.32	15	20.07	843	820
Colombia	35	0.26	10	42.86	1500	1466
Saudi Arabia	33	0.25	10	21.67	715	703
Mexico	32	0.24	18	38.5	1232	1213
Scotland	32	0.24	15	42.97	1375	1364

TP, Total Publications; ACPP, Average Citations per Paper; TC, Total Citations; WSC, Without Self-Citation.

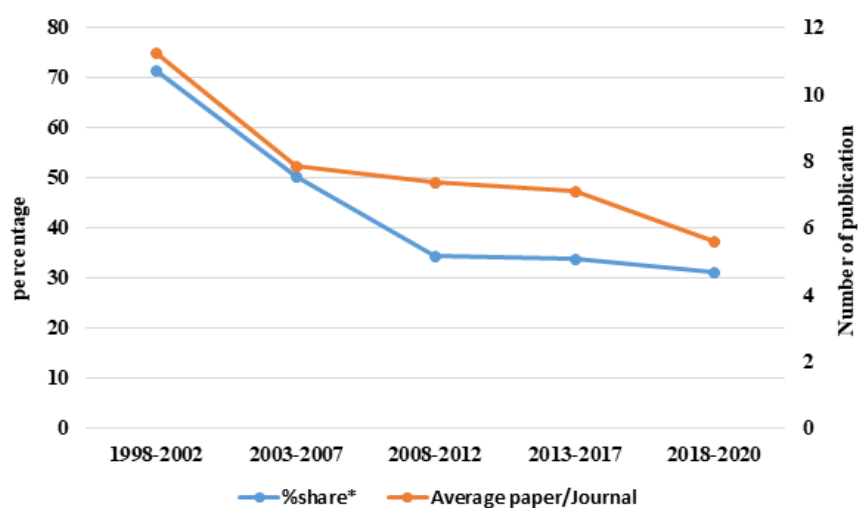
Supplementary Table 6. Top 5 Journals carrying research papers of ICAR-Animal Sciences Research Institutes (1998-2020)

	Journal Name	Total Journals	TP	% Share	IF*
1998-2002		143	1609		
1	Indian Journal of Animal Sciences#		683	42.4	0.29
2	Indian Veterinary Journal#		207	12.9	NA
3	Asian-Australasian Journal of Animal Sciences ^s		137	8.5	2.50
4	Small Ruminant Research		65	4.0	1.61
5	Journal of Food Science and Technology-Mysore#		58	3.6	2.70
2003-2007		238	1872		
1	Indian Journal of Animal Sciences#		521	27.8	0.29
2	Indian Veterinary Journal#		162	8.7	NA
3	Asian-Australasian Journal of Animal Sciences ^s		142	7.6	2.50
4	Small Ruminant Research		61	3.3	1.61
5	Journal of Applied Animal Research		58	3.1	1.63
2008-2012		397	2927		
1	Indian Journal of Animal Sciences#		691	23.6	0.29
2	Indian Veterinary Journal#		98	3.3	NA
3	Tropical Animal Health and Production		98	3.3	1.55
4	Journal of Applied Animal Research		63	2.2	1.63
5	Veterinary World#		60	2.0	NA
2013-2017		598	4253		
1	Indian Journal of Animal Sciences#		724	17.0	0.29
2	Veterinary World#		245	5.8	NA
3	Indian Journal of Animal Research#		218	5.1	0.44
4	Indian Journal of Dairy Science#		133	3.1	NA
5	Journal of Food Science and Technology-Mysore#		125	2.9	2.70
2018-2020		479	2681		
1	Indian Journal of Animal Sciences#		335	12.5	0.29
2	Indian Journal of Animal Research#		197	7.3	0.44
3	Indian Journal of Dairy Science#		157	5.9	NA
4	Biological Rhythm Research		90	3.4	1.21
5	Journal of Food Science and Technology-Mysore#		57	2.1	2.70

^s, Now renamed as Animal Bioscience; *, JCR 2020; #, Journals published from India; NA, Not available.



Supplementary Fig. 1. Year-wise research productivity of ICAR-Animal Sciences Research Institutes. ($N = 13,342$)



Supplementary Fig. 2. Publication characteristics in top 5 journals in the block period of 5 years. * Top 5 journals publications contributed to TP in 5-year block periods; Average number/Journal= total number of publications in 5 years block period/total number of journals in 5 years block period.