



**Dr. Saroj Kumar Swain**

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<b>Department</b>	Aquaculture Production and Environment Division
<b>Institute/ University</b>	Central Institute of Freshwater Aquaculture ( <i>Indian Council of Agricultural Research</i> )
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<b>Date of Birth</b>	11 <sup>th</sup> August 1963
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### **Educational Qualifications**

<b>1</b>	Ph.D (1997) in Aquaculture, Orissa University of Agriculture and Technology, Bhubaneswar.
<b>2</b>	P.G.D.F.Sc (1989), CIFE, Deemed University, Mumbai.
<b>3</b>	M.Sc. (1986) in Zoology from Ravenshaw College, Utkal University, Bhubaneswar.
<b>4</b>	Diploma in MAS from University of Chile, Santiago, Chile

<p><b>Awards &amp; recognitions</b></p>	<ul style="list-style-type: none"> <li>➤ Award for the team work (2000) for demonstration of industrial fishery &amp; fish-based mixed farming system in Punjab from M.P. Council of Science and Technology, Bhopal</li> <li>➤ Young Scientist Award (2000) On the occasion of National Conf. on Sustainable Rural Development from ISEP Science Academy, Gorakhpur</li> <li>➤ Fellowship Award (2004) For outstanding contribution in the field of Ornamental fish farming From Bioved Research Foundation, Allahabad</li> <li>➤ National Science Day Award (2004) for notable contribution in Research, Development and Popularisation of Science and Technology from The Science Association of Bengal, Kolkata</li> <li>➤ Best Young Scientist Award (2004) CIFA, Kausalyaganga, Bhubaneswar</li> <li>➤ Best Extension Worker Award for (2006) CIFA, Kausalyaganga, Bhubaneswar</li> <li>➤ Best Division Award (for team effort) 2007 CIFA, Kausalyaganga, Bhubaneswar</li> <li>➤ Fellowship award (2007) Zoological Society of India, Bihar</li> <li>➤ Krushak Bandhu Award (2009) for Contribution to dissemination of Ornamental fish farming in Odisha from Odisha Krushak Samaj, a farmer's forum through Honourable Governor of Odisha.</li> <li>➤ Sri Acharya Prafulla Chandra Roy Memorial Science day Award (2010) for popularising Science and technology from Science Association of Bengal, West Bengal.</li> <li>➤ Krushak Bandhu Team Award as a Team leader for NAIP ( 2011) Contributing to and disseminating various tech. in Sambalpur, Mayurbhanj and Keonjhar Districts of Odisha</li> <li>➤ Best Poster Award (2011) from World Aquaculture Society during Asian Pacific Aquaculture 2011</li> <li>➤ Best Poster Award (2011) during X Agril Science Cong., NAAS, Lucknow</li> </ul>
<p><b>Recognition in professional carrier</b></p>	<ul style="list-style-type: none"> <li>➤ Scroll of Honour (1998) In recognition of the valuable contribution to India's Science vision Exhibition, AGRASAR at New Delhi from DST, New Delhi</li> <li>➤ Certificate of excellence for best project work on the project work submitted to Hebrew University of Jerusalem (Faculty of Agriculture,</li> </ul>

	<p>Food and Environmental Quality Sciences), Div. for External studies, Rehovot, ISRAEL during 3<sup>rd</sup> Post- Graduate Course on Aquaculture Production and Management in 1999.</p> <ul style="list-style-type: none"> <li>➤ Appreciation from Convener, The Fifth Indian Fisheries Forum, CIFA, Bhubaneswar for R&amp;D in Freshwater Aquaculture in 2000</li> <li>➤ Appreciation from DDG (Fy) ICAR, New Delhi for Professional recognition for contributing to the participation of the CIFA Exhibition at National KVK conference, New Delhi in 2005</li> <li>➤ Special appreciation from CIFA for contribution on Institution building pyramid and taking forward the Institutes high reputation for all round excellence on the national plane in 2006</li> <li>➤ Chaired a technical session(2007) during International meet on shrimp, prawn aquaculture and ornamental fisheries held during 11-13 January 2007 at Chennai organized by Indaqua2007, MPEDA, COCHIN</li> <li>➤ Consultancy service on ornamental fish breeding and culture for Odisha for UNDP in 2006</li> <li>➤ Member expert on ornamental fish farming for Gramsat, ORSAC, Bhubaneswar</li> <li>➤ Honorary Advisory board member for Kolathur ornamental fish farmer co-operative Society, Kolathur, Chennai (2009)</li> <li>➤ Task force member for ‘Sustainable Farming System’ for India (2011) Network of Aquaculture Centres in Asia Pacific (NACA) Bangkok, Thailand.</li> </ul>
<p><b>Experiences</b></p>	<ul style="list-style-type: none"> <li>➤ 7 years research on Fish Nutrition (Diet development of various stages of carps, Fish bioenergetics)</li> <li>➤ 2 years experience in research and extension of carp, diversified species and catfish culture at Ludhiana, Punjab</li> <li>➤ Last 12 years involved in developing captive breeding technology of 15 indigenous ornamental fish species, 39 commercial varieties and popularized ornamental fish farming throughout the country through research and developments.</li> <li>➤ Development of Ornamental fish village as a new concept has been working as a successful model for livelihood security with women empowerment. Farming in SHG mode also proved successful by the rural tribal women of Odisha.</li> </ul>

<p><b>Current Research Interests</b></p>	<ul style="list-style-type: none"> <li>• Selective breeding &amp; stock improvement of ornamental fish species</li> <li>• Development of captive breeding technology of endangered ornamental fish species</li> <li>• Empowerment of women through popularizing ornamental fish farming for livelihood security</li> </ul>
<p><b>Current Research Projects</b></p>	<ul style="list-style-type: none"> <li>➤ Sustainable livelihood improvement through integrated freshwater aquaculture, horticulture and livestock development in Mayurbahnaj, Keonjhar and Sambalpur districts of Odisha under NAIP livelihood component-III</li> <li>➤ Development of Ornamental fish village Saruali and Landijhari in Barkote block of Deogarh district of Odisha</li> <li>➤ Seed production in agricultural crops and fisheries (Sub project on Ornamental fish production) Production</li> <li>➤ Development of captive breeding technology of <i>Puntius tambararni</i> (Tambararni barb)</li> </ul>
<p><b>Completed Projects</b></p>	<ul style="list-style-type: none"> <li>➤ Production of freshwater ornamental fishes with special reference to the family cyprinidae and poecilidae</li> <li>➤ Standardisation of breeding and rearing of some of the commercially important ornamental fishes with greater emphasis to indigenous species</li> <li>➤ Breeding and culture of ornamental fishes of Meghalaya</li> <li>➤ Development of breeding protocols and larval rearing of indigenous species <i>Puntius filamentosus</i> and <i>Puntius denisonii</i></li> <li>➤ Derivation and characterization of fish embryonic stem cells (DBT)</li> <li>➤ Studies on association of viral infections in diseases of koi carps by immunological and molecular Techniques (DBT)</li> <li>➤ Transgenics of Freshwater fishes</li> </ul>
<p><b>Scientific Research &amp; innovations</b></p>	<ul style="list-style-type: none"> <li>➤ Development of genetic stock developed for <i>Puntius ticto</i></li> <li>➤ Development of a new variety of Rosy barb (Shinning barb)</li> <li>➤ Commercialisation of product - CIFACURE for controlling of bacterial and fungal diseases occurring in ornamental fish species</li> <li>➤ Feed dispenser developed (a mechanical feeder for larval rearing of ornamental fish, other fin fishes and prawn).</li> </ul>

	<ul style="list-style-type: none"> <li>➤ A diesel operated new aeration device developed for large aquaculture ponds (Patent filed)</li> <li>➤ Ornamental fish hatchery designed &amp; developed (for small and large scale production)</li> </ul>
<b>Other contributions</b>	<ul style="list-style-type: none"> <li>➤ Creation of ornamental fish villages at deogarah district of Odisha</li> <li>➤ Establishment of ornamental fish hatcheries in NE region-</li> <li>➤ Establishment of 30 Ornamental fish farming units under NAIP involving rural women, ST, SC and other backward class</li> <li>➤ Women SHG involvement in ornamental fish farming at Pachim Medinapore, West Bengal</li> <li>➤ Development of ornamental fish breeding and culture unit at CIFA</li> <li>➤ CIFA aquarium - An unique biotope based aquarium in the country</li> </ul>
<b>Collaboration/ Consultation with</b>	<ul style="list-style-type: none"> <li>➤ Government of Odisha, Meghalaya, Nagaland, Sikkim, Assam, Arunachal Pradesh, Mizoram, West Bengal, Tamil Nadu, Andhra Pradesh, Madhya Pradesh, Fisheries Colleges in India and MPEDA</li> </ul>

## Publications

<b>List of Publications</b>	<p><b>International and National</b></p> <ol style="list-style-type: none"> <li>1. P. Bandyopadhyay, <b>S.K. Swain</b> and S. Mishra (2004) Growth and dietary utilisation in goldfish (<i>Carassius auratus</i> Linn.) fed diets formulated with various local agro-produces, <i>Bioresource Technology</i>, 96(6):731-740.</li> <li>2. <b>SK Swain</b> and P.K Sahoo (2004) Effect of feeding 3,3,5-triido-L thyroxin (T<sub>3</sub>) on growth, food conversion and disease resistance of goldfish, <i>Carassius auratus</i> (Linn.). <i>Journal of the Asian Fisheries Society</i>, Philippines 16 (3&amp;4)</li> <li>3. P. K. Nanda, P. Swain, S. K. Nayak, S. Dash, P. Routray, <b>S.K. Swain</b> and B. C. Patra (2008). Goat serum as an alternative to establish cell culture from Indian major carp, <i>Cirrhinus mrigala</i>. <i>In Vitro Cellular and Developmental Biology- Animal</i> 45: 148-159</li> <li>4. P. Routray, C. Dash, S.N.Dash, D. K. Verma, P. K. Meher, <b>S.K. Swain</b>, P. Swain, B. C. Guru (2009). Cryopreservation of isolated blastomeres and embryonic stem like cells of Leopard danio,</li> </ol>
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- Brachydanio frankei. *Aquaculture research*, 1-11.
5. Padmanav Routray, Chidananda Dash, Surjya N Dash, Seema Tripathy, Dhananjay K Verma, **S. K. Swain**, Priyabrat Swain, Bhikari C Guru. (2010) Cryopreservation of isolated blastomeres and embryonic stem-like cells of Leopard danio, *Brachydanio frankei*, *Aquaculture Research*. Vol. 41, No. 4: 579-589
  6. Dillip Bej, L. Sahoo, Sofia, P. Das, Subrat Swain, P. Jayasankar, P. C. Das, P. Routray, **S.K. Swain**, J. K. Jena, P. Das. (2012). Complete mitochondrial genome sequence of *Catla catla* and its phylogenetic consideration. *Mol Biol Rep*, Vol-39, issue-12, pp. 10347-10354
  7. Dillip Bej, L. Sahoo, Sofia, P. Das, Subrat Swain, P. Jayasankar, P. C. Das, P. Routray, **S. K. Swain**, J. K. Jena, and P. Das. (2012). Complete mitochondrial genome of *Labeo rohita*. *Mitochondrial DNA*, 2012; Early Online: 1-3
  8. **S. K. Swain** and R. K. Jana (2005) Freshwater Ornamental fish farming in India: Present status, prospects and constraints, *Bioved*, 16(1,2): 139-146.
  9. **S.K Swain**, GS Saha, HK De, Kuldeep Kumar, AK Roy and N Sarangi. 2007. Steering entrepreneurship among rural youths impact of ornamental fish farming training. *Agricultural situation in India*, Directorate of Economics and Statistics Department of Agriculture and Cooperation *LXIV*( 7):419-422
  10. Dash, S, P. Swain, S.K.Nayak, P.K. Nanda, P.V. Rangachariulu, B.K.Mishra and **S. K. Swain**. 2008. A survey of some major bacterial diseases in key freshwater aquaculture zones of India; Andhra Pradesh, West Bengal and Orissa. *e-planet*, 6(2):2, 12-17.
  11. Dash. C. S. Tripathy, D.K.Verma, P.K.Meher, **S. K. Swain**, P. Routray and B.C. Guru.2008. Existence and derivation of embryonic stem cell like cells in Indian Major Carp, *Catla catla* (Ham.) *e-planet*, 6(2): 2, 7-11
  12. **Swain, S.K.**, S.K. Singh, P. Routray and N.K. Barik 2008. Indigenous ornamental fishes:status, Issues and strategies for propagation and conservation. *e- planet*, 6(2): 2, 20-22.
  13. S. Swain, A. Patel, Sofia, P. Das, D. Bej, P. Jayasankar, B.K. Choudhury, J.K. Jena, P.Routray, **S.K. Swain**, P.C. Das, A.E. Eknath, W.S. Lakra and P. Das (2011) Genetic variation of *Labeo fimbriatus* population using heterologous primers.
  14. **S. K Swain** and B.K.Das (2001) Captive breeding of dwarf



	<p>Gourami <i>Colisa lalia</i> in the cement cisterns. Contributed a paper in a Workshop “Captive breeding of prioritized cultivable and ornamental fishes for commercial utilization and conservation” NBFGR, Lucknow, NBFGR-NATP Publ.No.3 (paper no.10), 29-30 July2001</p> <p>15. B.K.Das and <b>S. K. Swain</b> (2001) Saprolegniasis of dwarf Gourami, <i>Colisa lalia</i> (Hamilton- Buchanan) brood stock during acclimatization for captive breeding. Contributed a paper in a Workshop “Captive breeding of prioritized cultivable and ornamental fishes for commercial utilization and conservation” NBFGR, Lucknow, NBFGR-NATP Publ.No.3 (paper no.45), 29-30 July2001</p> <p>16. P. Bandyopadhyay, B.K. Das, <b>S.K. Swain</b> and B.C. Patra (2003) Pathobiology of <i>Aeromonas</i> infection in Gold fish (<i>Carassius auratus</i>. Linn) <b>Aquacult.</b>, 4(1): 129-13</p> <p>17. H.K. Barman, Mohanta, V. Das, P. Jayasankar, R.P. Panda, C. Mohapatar, S.D. Mohapatra and <b>S.K. Swain</b>, 2011. Laubuca laubuca myocin light polypeptide chain 2(mylz2), gene, promoter region and partial cds. <b>GenBank Acc.No.:HQ283473 (data submitted to Gene bank)</b></p> <p>18. B.K. Baliarsingh, <b>S. K. Swain</b>, Oliver King E.D., D. Nandi and B. Rath, 2020. Distribution and Status of Freshwater Fish Fauna and its Habitat in the Water bodies of Kendrapara District, Odisha, India <b>Biological Forum - An International Journal</b> 12(2): 44-50</p>
<p><b>Books written for ICAR</b></p>	<p>1. <b>S. K. Swain</b>, N. Sarangi and S. Ayyappan 2010 Ornamental fish farming, DIPA ( ICAR),145p (ISBN:978-81-7164-061-4).</p>
<p><b>Books/ Souvenir/ Annual report edited</b></p>	<p>2. P. Jayasankar, N.K Barik, J.K Jena, P.K Sahoo, <b>S.K Swain</b>, BK Das, B.L Dhir and S Chnadra. (Eds) CIFA 2010, Annual Report, 2009-10. CIFA, Bhubaneswar, India.pp148.</p> <p>3. P. Jayasankar, <b>S.K. Swain</b>, P.K. Sahoo, B.K. Das, N.K. Barik, B.L. Dhir, D.K.Verma, (Eds) CIFA 2011, Annual Report, 2010-11. CIFA, Bhubaneswar, India.pp148.</p> <p>4. P. K. Sahoo, <b>S.K. Swain</b>, B.K. Das, K.C. Das, N.K. Barik, (Eds) CIFA 2012, Annual Report, 2011-12. CIFA, Bhubaneswar, India. pp146.</p> <p>5. <b>S.K. Swain</b>, Swain, P., Pillai, B.R., Raghunath, M.R., Jayasankar, P. (Eds) 2012 Lead papers on strategies for Aquaculture Development, National Conference on Aquaculture; Fish for Billion , in commemoration of silver jubilee year celebration of CIFA, 16-17 March, 2012, CIFA, Bhubaneswar, India 150p. <b>(ISBN; 978-93-</b></p>

	<p><b>5067-472-7).</b></p> <p>6. S. Felix, A. Mercy and <b>S.K Swain</b> (Eds) Ornamental Aquaculture, Technology and Trade in India, pp150</p> <p>7. <b>S.K. Swain</b>, P Swain, B.K Das and S.C Rath, (Eds) 2012. Aama Krushak (We and Our Farmers), Souvenir in observation of World Food Day 16<sup>th</sup> October, Orissa Krushak Samaj, Bhubaneswar, Vol-31, 128pp.</p>
<p><b>Book chapter</b></p>	<ol style="list-style-type: none"> <li>1. <b>Swain. S.K.</b> (2006) Ornamental fish breeding and culture, In hand book of Fisheries and aquaculture, ICAR, New Delhi, DIPA publ, 354-377 pp (<b>ISBN;81-7164-061-3</b>)</li> <li>2. <b>S.K. Swain</b>, A.K. Roy and N. Sarangi (2007) Ornamental fish farming, trade - Present Scenario and scope for upliftment of rural livelihood. In Bioinformatics and Statistics in Fisheries research. Vol-III Pp. 188-208. First author <b>ISBN: 978-81-904422-0-6</b></li> <li>3. <b>S.K. Swain</b>, D. Mallik, S. Mishra, B. Sarkar and P. Routray, (2007). Ornamental fish-as model animals for biotechnological research. In environmental Biotechnology (Ed. Mishra and Juwarkar) APH publ. corp. Delhi.293-328. First author pp <b>ISBN81-313-0185-0</b></li> <li>4. <b>Swain, S.K.</b>, Chakrabarty P.P and Sarangi, N 2008. Export and breeding protocols developed for the indigenous fishes of North east India, In Book on Ornamental fish breeding, farming and trade. Kurup, B.M., Boopendranath, M.R., Ravindran,K., Saira Banu and Nair, A.G., (Eds). Department of Fisheries, Govt. of Kerala, India: pp. 114-134</li> <li>5. <b>Swain S.K.</b>, 2008. Present scenario of ornamental fish farming. In Applied bioinformatics statistics and economics in fisheries research (Roy, A.K. and Sarangi, N., eds.), pp.165-184. (<b>ISBN 10:81-89422-86-3</b>)</li> <li>6. <b>Swain, S.K.</b> and N.K. Barik 2008. Breeding and Culture of Ornamental Fishes in India:An Emerging Cottage Industry. <i>New Frontiers of Zoology</i> (Ed: B.N. Pandey and P.N. Panday) Pp 111-129, Narendra Publishing House, Delhi, 359 pp.</li> <li>7. <b>S K Swain</b>, Rajesh N and Ambekar E Eknath (2010) Captive breeding and conservation of Indian freshwater ornamental fish - Experience of CIFA: National seminar on technology and trade prospects in ornamental aquaculture (Proceedings) Edt. Felix. S pp 39-48.</li> </ol>



	<ol style="list-style-type: none"> <li>8. <b>S K Swain</b>, S Mishra, Rajesh N and Ambekar E Eknath (2010) Ornamental fish breeding for biotech study. Innovative and viable biotechnological techniques for ornamental aquaculture system management pp 152-163.</li> <li>9. <b>S.K Swain</b>, K. Madhu, Rema Madhu, G. Gopakumar (2011) Ornamental fish breeding &amp; culture, In: <i>Hand book of Fisheries and Aquaculture</i> , ICAR, New Delhi,500-532pp. (ISBN;978-81-7164-106-2</li> <li>10. <b>S. K. Swain</b>, (2012) Freshwater ornamental fish farming and trade: A roadmap for India, In: Anna Mercy <i>et. al</i> (Eds) Ornamentals Kerala, Dept of Fisheries, Govt of Kerala, India, <i>Souvenir</i>, xiv+102p</li> <li>11. <b>S.K.Swain</b> and Rajesh N, 2012, Ornamental fish culture in Sahoo P.K <i>et.al</i> (Eds) CIFA: 25 years of freshwater aquaculture research, CIFA, Bhubaneswar, India. Pp 57-60</li> </ol>
<p><b>Training Manuals/ Compendium developed</b></p>	<ol style="list-style-type: none"> <li>1. <b>S.K. Swain</b> (2000) Training on Refresher Course in ‘Freshwater Aquaculture’ organized by (CIFA) TTC, Kausalyaganga, 23-30 May, Co-ordinated by, 97 pp.</li> <li>2. <b>S.K. Swain</b> (2000) Compendium of Lecturers on Ornamental Fish breeding and Culture’ Training organised by TTC, CIFA, Kausalyaganga, 18-21 July, 2000. 66 pp</li> <li>3. K. Gopakumar, C. Saha, Kuldeep Kumar and <b>S.K. Swain</b> (2000). Compendium of lectures on ‘Aquaculture development’ a International training organised by MASHAV centre for International Co-operation, Israel and CIFA, Kausalyaganga, 12-22 Sept.89p</li> <li>4. <b>S.K. Swain</b> and Kuldeep Kumar (2001) Compendium of lectures on Refresher Course on Freshwater Aquaculture.137 p.</li> <li>5. <b>S.K. Swain</b> and Kuldeep Kumar (2001) Compendium of lectures on Refresher Course on Freshwater Aquaculture. 147 p.</li> <li>6. <b>S.K. Swain</b> (2001) Compendium of lectures on Ornamental fish breeding and culture. <b>82p.</b></li> <li>7. <b>S.K. Swain</b> and P.K. Aravindakshan (2000) Compendium of Lecturers on “Ornamental Fish Breeding and Culture” Training rganized by TTC, CIFA, Kausalyaganga, 18-21 July. 66 pp“</li> <li>8. <b>S.K. Swain</b> (2001) Ornamental Fish Breeding and Culture” during 26-29 November 2001. organized by CIFA, 88 p</li> <li>9. <b>S.K. Swain</b> and G.S. Saha, (2003) Empowerment of women through ornamental fish farming. Training manual TTC, CIFA,</li> </ol>

- Kausalyaganga, 24-28 March, 42 pp
10. **S.K. Swain**, (2003) Compendium of Lecturers on “Ornamental Fish Breeding and Culture for entrepreneurship development” Training manual by TTC, CIFA, Kausalyaganga, 16-19 Sept.. 83 pp.
  11. **S.K.Swain** (2004) Ornamental fish breeding and culture at Nongpoh, Ri-Bhoi Dist of Meghalaya during 17-19, August 2004 (29 participants)
  12. **S.K.Swain** 2006 Ornamental fish farming for entrepreneurship development, 18-22 Dec. Organised jointly by NFDB and CIFA, 97pp
  13. **S. K. Swain**, Kuldeep Kumar and S.K.Sarkar (2002) Ornamental fish farming for entrepreneurship development among farm women. A special training programme for the women folk of district Midnapore, West Bengal during 6-11 September. 84p
  14. **S. K.Swain**, Kuldeep Kumar and S.K.Sarkar (2002) Ornamental fish breeding and culture for entrepreneurship development, 17-20 September. 84p
  15. **S. K.Swain**, G.S.Saha and Kuldeep Kumar (2003) Empowerment of women through ornamental fish farming- A special training programme sponsored by NATP during 24-28 March. 42p.
  16. **S.K. Swain** , Kuldeep Kumar and S.K.Sarkar (2003) Ornamental fish breeding and culture special training programme for North Eastern States of India during 2-6 July , 84p.
  17. **S.K. Swain**, G.S. Saha., Rajesh N, and A. E .Eknath 2010. National training programme on Ornamental fish breeding and culture, CIFA, pp 98.
  18. **S.K. Swain** and A.E. Eknath, 2009. Short course on recent advances in ornamental fish breeding and culture, ICAR sponsored programme, CIFA, pp 129.
  19. **S.K. Swain**, Kuldeep Kumar, G.S. Saha and N.S arangi, 2006. Ornamental fish farming for entrepreneurship development, NFDB sponsored programme, CIFA, pp 97
  20. **S.K.Swain**, P.K. Meher, Rajesh N, A.K.Sahu and P. Jayasankar, 2011. Training programme on ornamental fish farming for Madhyapradesh farmers, CIFA, pp 64.
  21. Kuldeep Kumar, P.P. Chakraborti, **S.K. Swain**, P.L. Lalrinsanga A.E. Eknath, 2011. Aquaculture for livelihood and nutritional security in Mizoram, CIFA. pp 57.
  22. **S.K.Swain**, Kuldeep Kumar, D.K. Pradhan, A.K.Sahu and A.E.Eknath, 2011. Ornamental fish farming for entrepreneurship

	<p>development in Sikkim, CIFA, pp 98.</p> <p>23. <b>S.K.Swain</b>, Kuldeep Kumar, Rajesh N, A.K.Sahu and P. Jayasankar, 2012. Ornamental fish farming for entrepreneurship development for Sikkim, CIFA, pp 98.</p> <p>24. Kuldeep Kumar, <b>S.K.swain</b>, P.P. Chakraborti, P.L.Lalrinsanga, A.K.Sahu and P.Jayasankar, 2012. Aquaculture for entrepreneurship development in Mizoram, CIFA. pp 1.</p>
<p><b>Popular publications</b></p>	<p><b>English</b></p> <ol style="list-style-type: none"> <li>1 <b>S. K. Swain</b> and Basant K. Das (1996). Effect of Micronutrients in Immune Response and Disease Resistance of Fish. <i>Fishing Chimes</i>, October, 16(7): 21-23.</li> <li>2 <b>S. K. Swain</b>, Hardial Singh and B. K. Das (1999). Aflatoxins in feed ingredients and their effects in fish. <i>Fishing Chimes</i> 18(10): 67-69.</li> <li>3 H. Singh and <b>S.K. Swain</b> (1998). Record production of carps in punjab ponds-New possibilities. <i>Indian Farming</i>. 48(6): 21-23.</li> <li>4 <b>S.K.Swain</b>, J.K.Jena and S. Ayyappan (2001) Prospects of export oriented freshwater ornamental fish culture in India, <i>Fishing Chimes</i>, Jan-Feb vol 20. no. 10&amp;11, 99-101</li> <li>5 <b>S. K. Swain</b> and Partha Bandyopadhyay (2002) Commercial live bearing ornamental fish breeding: a beginner's delight. <i>Fishing Chimes</i> (June) vol.22, no. 3, 56-60 pp.</li> <li>6 <b>S.K.Swain</b>, 2002, Ornamental fish breeding and culture- a new dimension to aquaculture enterpreunership in India, SAIC news letter, SAARC, Vol 12, No IV, 10 p.</li> <li>7 <b>S.K.Swain</b> , J.K.Jena and S. Ayyappan (2003) Prospects of export oriented freshwater ornamental fish culture in India , <i>Fishing Chimes</i>, vol. 22, no. 10 &amp;11, 111-113pp.</li> <li>8 <b>S. K. Swain</b> (2003) Gold fish in home aquarium. <i>My pet</i>, Apr-Jun, 2(1): 18-20pp</li> <li>9 J.P Sahu and <b>S.K.Swain</b> (2003) Freshwater commercial ornamental fish sector in India: present scenario and future prospects, Souvenir, National seminar on Responsible Fisheries and Aquaculture at College of Fisheries, OUAT, Bhubaneswar: 71-78pp</li> <li>10. <b>S.K. Swain</b>, Snehasish Mishra and Hardial Singh (2004) Aeration in Aquaculture, <i>Fishing Chimes</i>, vol.24 no. 8 27-30 and 64pp</li> <li>11. <b>S.K. Swain</b> (2004) Captive breeding of exotic ornamental</li> </ol>

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## Development of Documentary film

- Ornamental fish breeding and culture for SAIC, Dhaka telecasted in SAARC countries.
- Ornamental fish breeding & culture for Gramsat programme in Odiya telecasted by ORSAC.
- Ornamental fish farming by women self help group of NAIP project.
- CIFA aquarium- A paradise for ornamental fishes in Odia and English languages.
- Aquaculture development at Keonjhar, Sambalpur and Mayurbhanj districts for livelihood development under NAIP programme in English, Hindi and Odiya.
- Facilitated an Odiya documentary film 'Prospects of ornamental fish farming in Odisha telecasted by O TV, Bhubaneswar
- The Gate way of Aquaculture CIFA 2011&12 in Odiya, Hindi and English.
- Ornamental fish farming for empowerment of women' documentary on ornamental fish village by CIFA, Bhubaneswar