



SOY FED AQUACULTURE PROVIDES A SUSTAINABLE SOLUTION



Development of Tilapia Aquaculture Industry in Pakistan

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Member: World Aquaculture Society (WAS)

Country Ambassador: WAS for Pakistan

Member: Fisheries Development Board, GoP

Life Member: Nutritionist Association of Pakistan

Life Member: Pakistan Nutritionist and Dietitian Society.

Member Zonal Executive Committee: Pakistan Poultry Association - SZ



WISHH Works in Over 25 Countries Around the World



If you believe, belong.



We Create commercially sustainable solutions and opportunities for U.S. soy protein by improving the health and nutrition of people in developing countries by addressing protein deficiencies.



The **World Initiative For Soy in Human Health (WISHH)** is a program operated by the American Soybean Association (ASA) to promote exports of U.S. soy protein for use in human diets in developing countries. Visionary soybean checkoff boards and other state soybean grower organizations founded **WISHH in 2000**.

Pakistan Sixth Populous Country: more than 195 Million → 300 Million by 2050

Pakistan Fifth Largest Milk Producer



PK in Top Ten
Largest Producer of
:

- Cotton (4th)
- Wheat (9th)
- Sugar (5th)
- Mango (5th)
- Guava (4th)
- Rice
- Citrus

World Champions

- Hokey
- Squash
- Cricket



World 2nd and 9th
highest mountain
peak in Pakistan .. K-2
and Naga Parbat

The Youngest Recipient of
Noble Prize in Pakistan...



The Youngest Microsoft
Certified Professional in
Pakistan.....



GLOBAL FOOD DEMAND

- **Large population countries and regions are growing faster than the world average. (China, India, Brazil, Indonesia, **Pakistan (195 Million)**, S. Africa, Middle East, etc.) Need to Feed:**

 - 7.25 billion people in 2014**
 - 8 billion people in 2030**
 - 9 billion people in 2050**

- **Have to produce 30 - 50% more food by 2050**

Source: United Nations

Pakistan Fisheries Sector

Pakistan has been blessed with vast & extensive expanse of both Marine and Inland resources, which support a wide variety of fish of nutritional significance and economic value, and possess an immense developmental potential. Fisheries sector in Pakistan is significant source of foreign exchange earning and potentially important source of protein for human beings. Located at Arabian Sea, it has a coastline of 1,120 km

	Freshwater	Brackish water	Marine
Sindh	63%	100%	71%
Punjab	34%	-	-
KPK	3%	-	-
Balochistan	-	-	29%

Production 2013 - 2014

Total Fisheries Production	952,735.00 MT	
Marine Capture	660,141.00 MT	65%
Inland Waters	292,594.00 MT	35%



Role of Fisheries in the Economy



GDP	01%
Contribution to Agricultural GDP	04%
Labour Force	01%
Number of Fishermen	400,000
Per Capita consumption:	2.0 kg
Fare behind the recommended consumption criteria (i.e., 16 kg per annum-FAO)	

FEEDing Pakistan

Promoting Aquaculture Sector



Capacity Building, Improved Farming,
Increasing Rural Incomes,
Economic Competitiveness,
Transfer of Aquaculture Feed Manufacturing Technology,
and Food Security in Pakistan

Support by:



FEEDing Pakistan

Promoting
Aquaculture Sector



Main Components of Program

- ✓ Conduct an assessment of the Pakistani fish farming industry (Prof. Dr. Kevin Fitzsimmons & Dr. John Woiwode)
- ✓ Conduct Tilapia Fish Feeding trials with Soy based Floating Extruded Feed , demonstrating the results
- ✓ Development of Soy-based Extruded Feed Production for Aquaculture locally in private
- ✓ To Provide Technical Assistance to establish Tilapia hatchery in private sector
- ✓ Provide technical assistance to industry stakeholders
- ✓ Organize Study tours/Training courses in USA
- ✓ Organize seminars, workshops, training program, and conference and Farmers Field Days and Test Marketing
- ✓ Hand Book on Aquaculture Nutrition

PAKISTAN

Feeding Demonstration Sites 2012



First Time: Feeding Trial with Soy-Based Extruded Floating Feed From USA



Feeding Trial with Soy-Based Imported Feed

THATTA
Khonbathai Fish Farm



Feeding Trial with Soy-Based Imported Feed

Naki Chatta
Chatta Fish Farm



Floating Cages



Feed Conversion Ratio (F.C.R.)

(Av. Stocking Wt.20 gram in Ponds)

Site No.	Farm	Date(S) harvested	# of fish recovered	Average size of fish (g)	Final biomass (kg)	FCR
01	Himalaya	31 Oct	1,600	770	1,232	1.18
02	Chatta	01, 04 ,05 Nov	4,406	596	2,626	1.96
03	Khonbhati	13 Nov, 19 Dec	2,991	480	1,445	2.20
04	Ejaz Maqbool	16 Oct, 13 Nov	2,838	460	1,566	1.60

Feed Conversion Ratio (F.C.R.)

(Av. Stocking Wt.25 gram in Cages)

Site No.	Farm	Date(s) harvested	# of fish recovered	Average size of fish (g)	Final biomass (kg)	FCR
01	Salli Dam *	15 Sept sample	1449	351	508	1.40
01	Salli Dam **	03 Nov	849	501	425	2.55
02	Keenjhar Lake	15, 27 Nov	3,447	663	2,286	1.37
03	Mangla Dam	22, 25 Nov	4,728	610	2,880	1.53

* Before fish escaped

** After fish escaped

Turing Point

The Best Result

F.C.R.: 1.18

Av. Wt: 770 gram

Yield/Acre (Kg): 7,392



Tilapia Farm to Plate

Farmers' Field Day

USDA

WISHH
WORLD INITIATIVE FOR SOY
IN HUMAN HEALTH

Fisheries Development Board

FISHING DEPARTMENT PUNJAB

1st Time
in Pakistan

US Soy-Formulated Feeding Trials

TILAPIA

SOYPAK



Game Changer -1



Major Bottleneck in Aquaculture Sector Development is resolved



INAUGURAL CEREMONY

U.S. Cutting Edge Extrusion Technology for Floating Aquaculture Feed

Soy Fed Aquaculture Provides a Sustainable Solution



TUESDAY, JUNE 18, 2013

Oryza Organics (Pvt.) Ltd., Near Japan Power Company,
Jia Bagga, Raiwand Road, Lahore.

1st Time in Pakistan



Game Changer -2

- ✓ **Development of First Private Sector Tilapia Hatchery in Pakistan (Live Gold mine)**



First Tilapia Hatchery Established in Private Sector with Technical Assistance under FEEDing Pakistan in Muzzafar Ghar - Pakistan



Technical Training Course in USA



**PK Aquaculture Training Teams
KSU and Arizona, USA**



**Three delegations to World Aquaculture
Conferences and US universities**





PK Aqua Team -1 July 1-14, 2012



Technical Training Course in USA

PK Aquaculture Training Teams KSU and Arizona, USA



PK Aqua Team -3 Feb 09 – 22, 2014



PK Aqua Team -2 Feb16 – March 02, 2013

Farmer Field Day 2013 Himalaya

Fed on First time Locally Produced Soy Based Extruded Floating Feed

Site-1



The Best Result 2013

First time Locally Produced Soy Based Extruded Floating Feed

Site-1

F.C.R.: 1.2 Av. Wt: 900 gram

**Yield/Acres (Kg):
5,000**





Shamsi Fish Farm - Jhang

Av. Wt. 785 gram of Total
Harvested Tilapia 15 Dec
2013 to mid Jan 2014

Site-2



Fed on First time Locally Produced Soy Based Extruded Floating Feed

Farmers Field Day 2013

Tawakal Fish Farm, Muzffar Gahr

Site-3

Fed on First time Locally Produced Soy Based Extruded Floating Feed



Case Study:
Economic benefit of using soy-based floating feed versus powdered home-mixed feed (mash) and impact on GIFT tilapia growth and yield per acre in Muzaffargarh

Case Study: 01 (2013)

Economic benefit of using soy-based floating feed versus powdered home-mixed feed (mash) and impact on GIFT tilapia growth and yield per acre in Muzaffargarh

Site-3

Pond Numbers	(Pond 4) (floating feed)	(Pond 9) (home-mixed powdered feed)
Stocking Detail (No. of Fish/acre)	5000	5000
Date of Stocking (avg. wt. 2 g) imported from Thailand	Mar-14	Mar-14
Date of first Harvesting	Nov 07, 2013	Nov 07, 2013
No. of days	221	221
Expenses (Rs)	430,520.00	412,888.00
Revenue (Rs)	690,000.00	486,000.00
Harvested Av. Wt. (kg)	0.69	0.54
Biomass (kg)	3,450.00	2,700.00
Cost per kilogram	124.79	155.51
Profit per acre (Pak Rupee)	259,480.00	73,112.00
Return on Investment (ROI)	0.60	0.15
Benefit Cost Ratio (BCR) = (B/A)	1.60	1.17

E.R., US \$ 1 = PKR 100.00



Case Study – 2014

Poly-culture (Labeo Rohita, Catla Catla and Tilapia)



Table #	Stocking (No. of fish / acre)	Av. Wt per fish (Gm)	BioMass Per acres (Kgs)
Table 11	Labeo Rohita , Catla catla 700	2200	1,540.00
Table 12	Labeo Rohita , Catla Catla 720 + Tilapia 650	2000 + 1000	2,018.00
Table 13	Tilapia 3,000 + Labeo Rohita, Catla Catla 800	750 + 1600	3,304.80
Table 14	Tilapia 7,200	670	4,345.60

Organize Seminars, Workshops, Training Program, And Conference



First International Aquaculture Conference in Pakistan April 2 & 3, 2014



Consultant Visit and Training Program



Funded by



Mian Chanoo Fish Hatchery



June 18, 2013
Tawakal Fish Hatchery –
Muzzafar Ghar





In 2012:

- Trained FRO (six months) : 06
- Aquaculture Associate (Female) : 01
(Female & two FROs are with FDB)

In 2013:

- New batch of FROs: : 04
- Aquaculture Associate : 01

In 2014:

- Training at Asian Institute of Technology : 06

Aquaculture Associate & FROs (Fresh Graduates)



Aquaculture Associate & FROs (Fresh Graduates)





PK Aquaculture Team

L-R: Kamran Maqsood (Fish Farmer), Shakeel Ahmed (Assistant Director-Hatchery Balochistan Fishery Department), Ms. Kanwal (Coordinator FROs- FDB), Dr.R.S.N. Janjua, ASA/WISHH/PK, Amir Shahzad (Hatchery Manager, Tawakal Tilapia Hatchery), Adnan Arif (Farm Manager, Laghri Fish Farm, D.I. Khan) Shoiab Ahmed (Student M. Phil)



SOY FED AQUACULTURE PROVIDES A SUSTAINABLE SOLUTION
SUSTAINABLE AQUACULTURE FOR A SECURE FUTURE

Documentary (Tilapia)

The Blue Revolution

[The Blue Revolution English Documentary mp4.mp4](#)

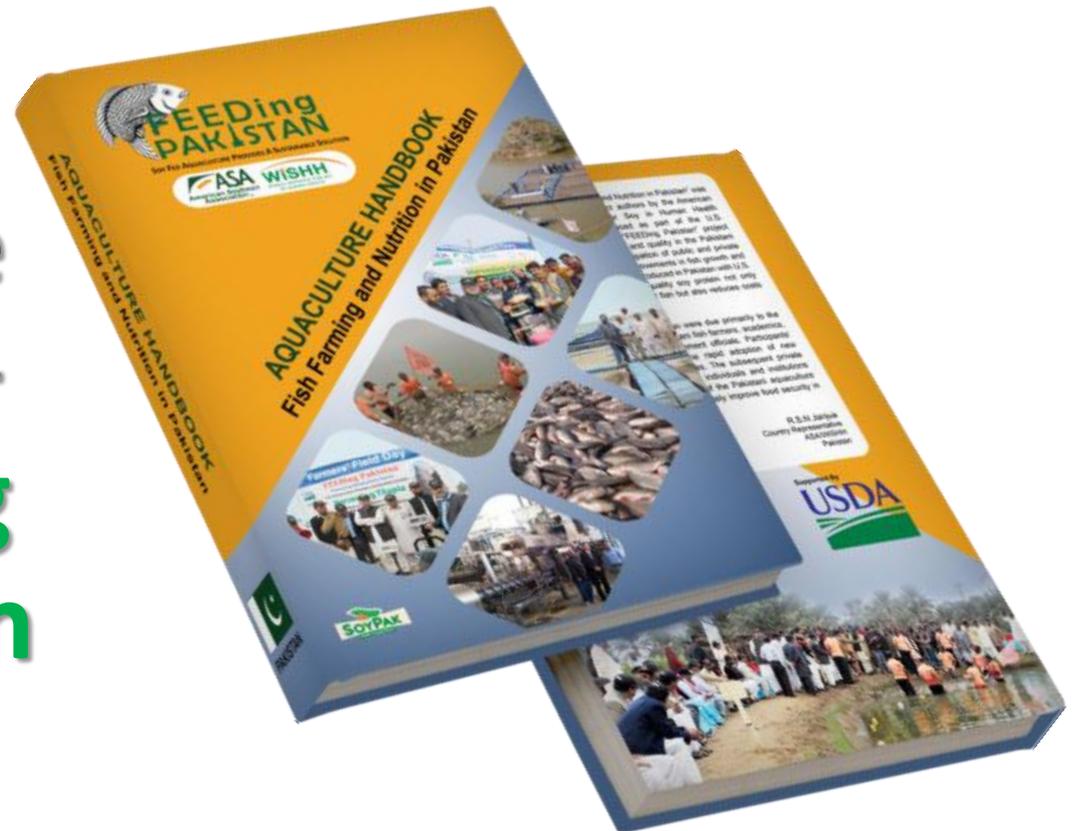


Congratulation !

Aquaculture Handbook – Fish Farming and Nutrition in Pakistan

Lead Editor:
Co-Editor:
Local Lead Author:

Prof. Dr. Kevin Fitzsimmons, UoA, USA
R.S.N. Janjua, Country Rep. ASA/WISHH/PK
Prof. Dr. M. Ashraf, Dean, UVAS



Reported



USDA launches aquaculture handbook

Pakistan/USA: The US Department of Agriculture (USDA) and American Soybean Association has launched the "Aquaculture Handbook – Fish Farming and Nutrition in Pakistan", a publication jointly written by Pakistani and American scientists. The Handbook is part of an ongoing USDA effort to expand farmed-fish yields and farmer incomes through better fish feeding and management practices.

Since 2011, USDA's Aquaculture Project has helped train hundreds of farmers through field demonstrations, seminars, and one-on-one site visits. Experts have also helped a local manufacturer to establish production of high-quality fish feed using soybean-derived ingredients, thus providing farmers with a ready supply of feed.

The US is helping Pakistani farmers make better use of water resources, providing an impetus for supply chain development, and generating demand for fish feed. The increase in the supply of farmed fish will expand the availability of protein for Pakistan's young and growing population.



Commercial Tilapia Production Is Recent New Phenomena

Year of Import	Import of GIFT tilapia fry from Thailand	Major areas of farming
2011	50,000	Thatta, Murdkee, Managla
2012	330,000	Bhawal Nagar, Pattoki, Alipur Chatta, Muzzafargarh, Shaikupura, Thatta, Mangla
2013	1,600,000	Bhawal Nagar, Pattoki, Gujranwala Muzzafargarh, Shaikupura, Thatta, Mangla, Rajan Pur, Rangpur, Jhang, Sarghoda
2014	3,400,000 (Including 1,700,000 locally produced)	Bhawalpur, BhawalNagar, Pattoki, Gujranwala Muzzafargarh, Shaikupura, Thatta, Mangla, Rajan Pur, Rangpur, Khadal, Jhang, Thatta, Sajawal

- **Located at Arabian Sea, having coastline 1,120 km – Per Capita Consumption less than 2 Kg.**
- **Foreign exchange earning about US\$ 300 million in 2013 (Marine Fisheries Department of Pakistan).**
- **Import of \$ 30-35 Million in 2014 (mostly Pangasius Fillet from Vietnam)**
- **Commercial Tilapia Production is relatively New Phenomena in Pakistan. It started from 50,000 fry stocking and reached to 3.4 million fry stocking in 2014 (\$ 4.5 million)**
- **Target is to increase Tilapia Culture with stocking of 10 Million fry in coming years.**
- **Ultimately increasing job, livelihood, and addressing Food Security of Country.**



INFOFISH



TILAPIA 2015

4th International Technical and Trade



THANK YOU



KANSAS STATE UNIVERSITY



LAHORE