



Food and Agriculture
Organization of the
United Nations



THE WORLD BANK
IBRD • IDA

Stakeholder Consultation on Progressive Management Pathway (PMP) to Improve Aquaculture Biosecurity

World Bank Headquarters, Washington, D.C. 10-12 April 2018

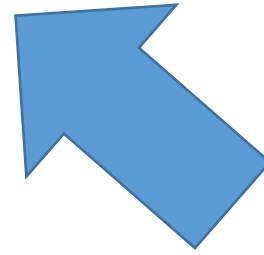
Effective extension services to support biosecurity systems

Larry Hanson, Professor, Aquatic Diagnostic Laboratory Director,
Mississippi State University.

hanson@cvm.msstate.edu

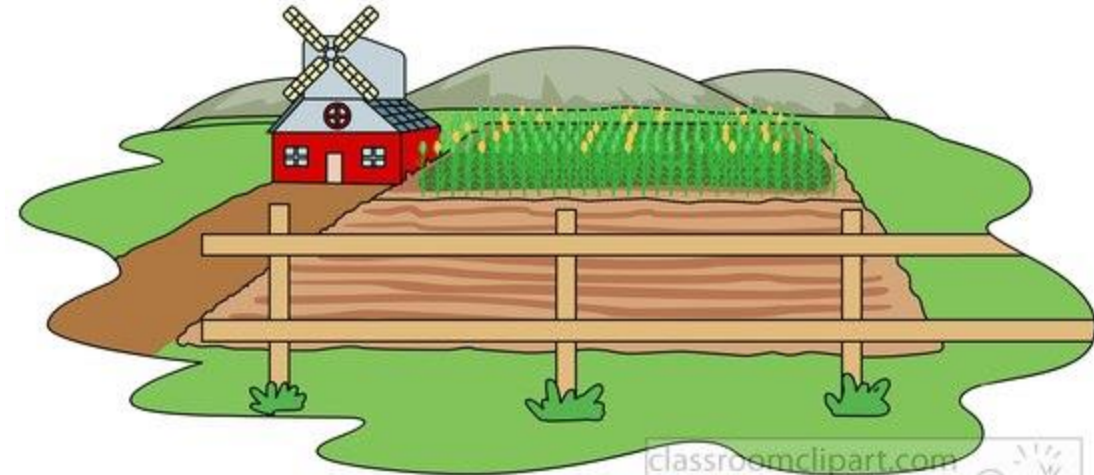
Aquaculture extension

- Overview of Extension in USA
- Role/Activities of Aquaculture Extension
- Qualifications of Aquaculture Extension specialists
- Role in biosecurity
- Limitations



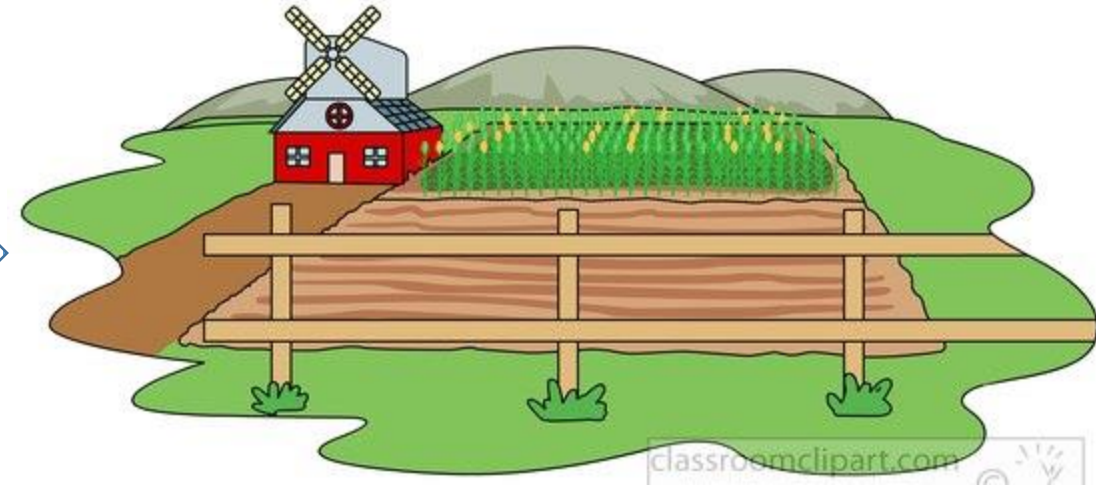
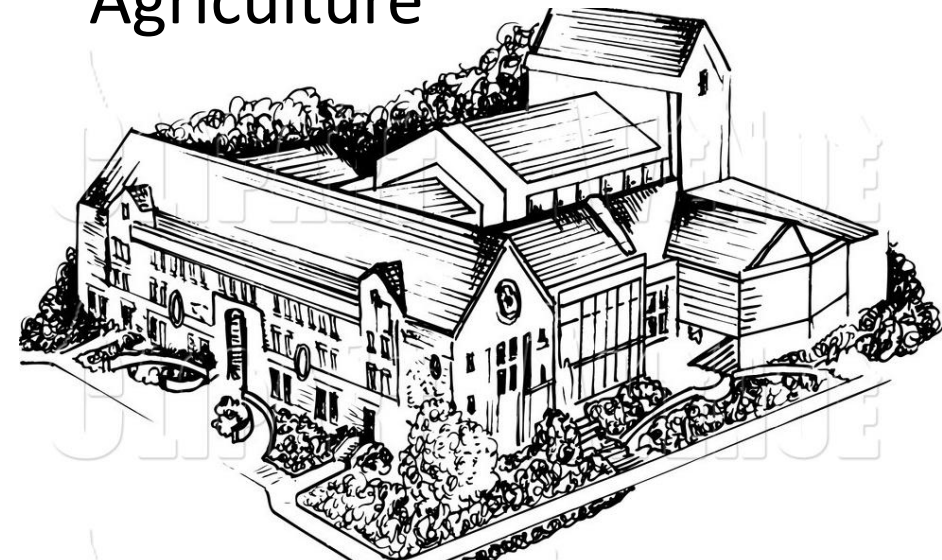
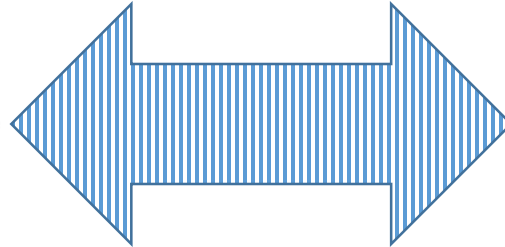
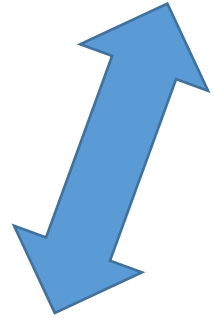
1700- 1800s

\$

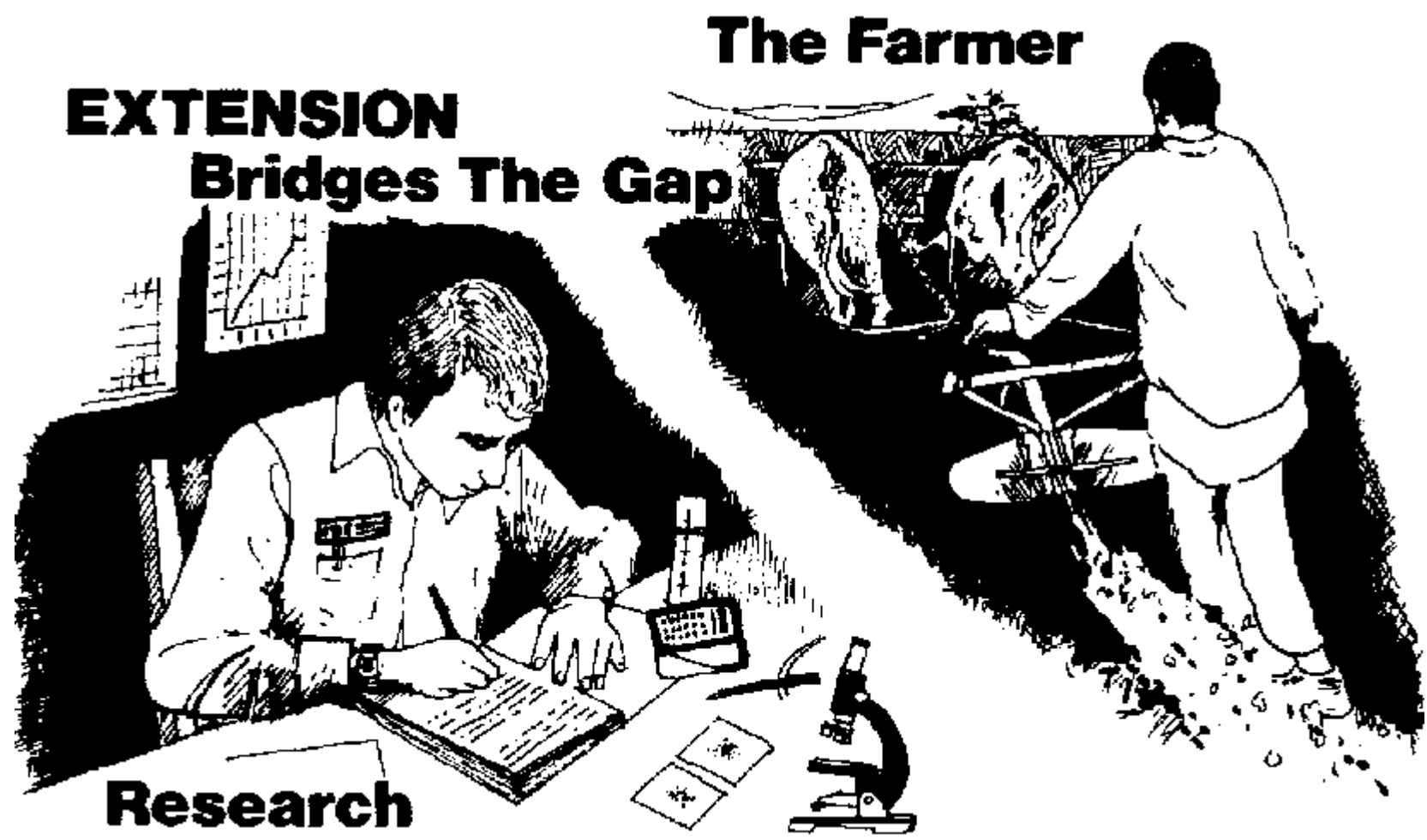




Land Grant
Universities
established in
1862 for
Agriculture







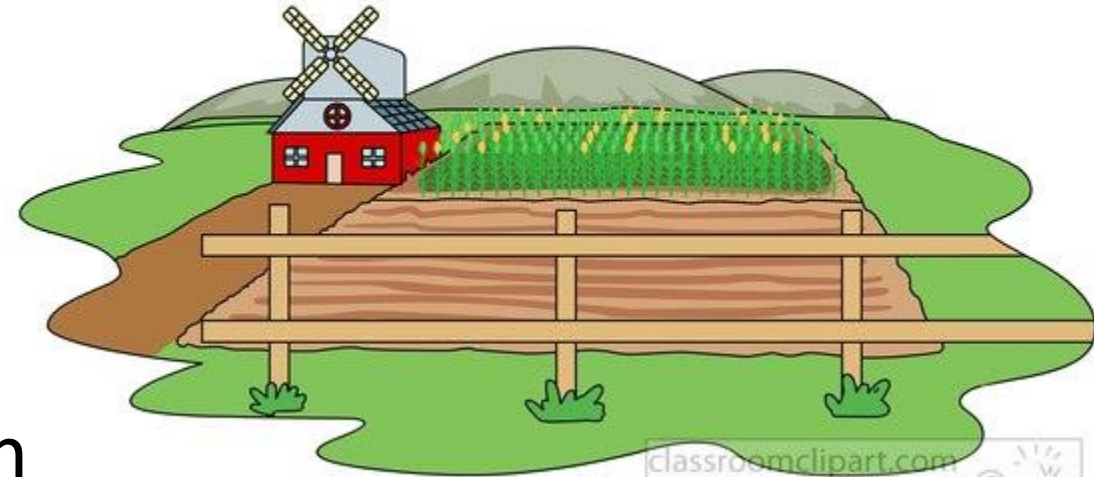
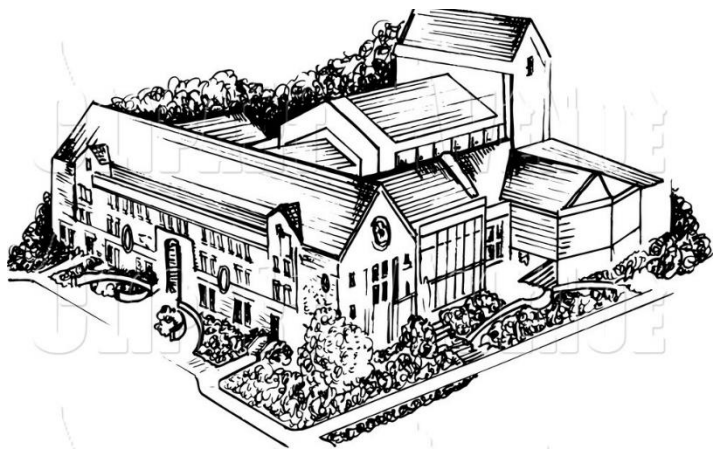
Cooperative extension service established in 1914



Extension service



communication



Economic stress gets producer's attention

This is the foot in the door for the extension specialist

- Provides the opportunity to suggest preventive management
- Help the producer recognize early warning signs
- Help the producer collect and transport usable samples
- Facilitate farmers with disease management options (Harvest, treatment, finding chemicals and applicators)



Farm Visits- Foundation

- Water quality
- Feeding
- Weed management
- Sampling for diseases
- Biosecurity
- Predator control



Establish trust and
channels for
communication

Demonstrations- New methods, equipment



Workshops



THAD COCHRAN
NWAC
NATIONAL WARMWATER AQUACULTURE CENTER

WATER QUALITY PRINCIPLES AND TESTING WORKSHOP

Wednesday, April 21, 2004

10:00 a.m. until 3:00 p.m.

B.F. Smith Auditorium, Delta Research and Extension Center

Agenda

Management of Off-Flavors
Craig Tucker, NWAC

Ammonia, Nitrite, and Chlorides
Jimmy Avery, NWAC

pH, Hardness, Carbon Dioxide, and Alkalinity
Jim Steeby, NWAC

Dissolved Oxygen
Les Torrans, USDA-CGRU

LUNCH
(on your own)

Water Quality Testing
Charlie Hogue, NWAC

Participants are asked to please fill out the program evaluations so that we may better plan future educational meetings.

Mississippi State
UNIVERSITY

Mississippi State University and U.S. Department of Agriculture Cooperating

Mississippi State University does not discriminate on the basis of race, color, religion, national origin, sex, age, disability, or veteran status.

Seminars for producers



Mass Media, newsletters and Websites

Popular Press Articles

Television



Page 14 THE CATFISH JOURNAL May 2006

Use of Fintrol® to remove scaled fish in catfish ponds

(Editor's Note: Portions of this article were inadvertently omitted in last month's issue. The full story is as follows.)

By Jimmy Avery
Mississippi State University

Fish other than catfish are sometimes intentionally stocked into catfish ponds for a specific purpose. For example, fathead minnows might be added to brood ponds to provide forage for broodfish. However, most catfish ponds are operated as monocultures, and fish other than catfish are a nuisance. In fingerling ponds, wild fish may eat fry or compete for food. In foodfish ponds, wild fish may compete for food, interfere with harvest, or cause economic losses as "weighbacks" at the processing plant. Accordingly, there are times when it may be necessary to remove wild fish from catfish ponds.

Two fish toxicants are registered by the Environmental Protection Agency for use in commercial catfish production. Rotenone is a non-selective toxicant and is typically used to eliminate the few remaining fingerlings from nursery ponds prior to stocking fry. Fintrol® (active ingredient antimony A) is effective in removing scaled fish from a pond without harming catfish.

Fintrol® has been in use since the late 1960s. The chemical is absorbed through the fish's gills where it then interferes with respiration leading to death. The attributes that make Fintrol® a desirable management tool are a wide difference in toxicity to catfish and scaled fish, a low toxicity to mammals, and how quickly it degrades.

Fintrol® can selectively remove scaled fish because they are much more susceptible to low concentrations of the toxicant. Problematic scaled fish (usually shad, carp, or sunfish) can be eliminated at concentrations of 5 to 10 parts per billion (ppb), while it may take in excess of 20 ppb to kill catfish under normal conditions. It should be pointed out that concentrations high enough to remove unwanted bullheads would also be fatal to catfish.

To determine an effective concentration of Fintrol®, you need to know the species of fish to be killed as well as the pH and temperature of the pond water. The toxicant is most effective when the pH of the pond water is 8.5 or lower and at water

Target Species	Effective Concentration of Fintrol® (in ppb of active ingredient)			
	pH is 8.5 or less		pH is 8.5 or higher	
	Water temp. above 60° F	Water temp. below 60° F	Water temp. above 60° F	Water temp. below 60° F
Gizzard shad, carp, minnows, sunfish	5	7.5	7.5	10
Catfish, bullheads	15	20	20	25

Publications

NWAC News

Thad Cochran National Warmwater Aquaculture Center • P.O. Box 197 • Stoneville, MS 38776-0197



Volume 10, No. 1, March 2008

Feed Price Risk Management Considerations for Catfish Producers

John Anderson¹, Terry Hanson¹, and Jimmy Avery²

¹ MSU Dept. of Agricultural Economics

² MSU Thad Cochran National Warmwater Aquaculture Center

Record high prices for catfish feed and fuel, coupled with significantly lower live fish prices, are having a significant impact on the financial stability of the U.S. farm-raised catfish industry. In an effort to assist farmers in making informed decisions concerning adjustments to farming operations, Mississippi State University's National Warmwater Aquaculture Center and the Department of Agricultural Economics will publish a series of articles on this subject.

Website

msucare Mississippi State University Extension Service
Coordinated Access to the Research and Extension System
Mississippi Agricultural and Forestry Experiment Station

- Biology
- Pond Construction
- Production Process
- NWAC 103 Line
- Feeds & Feeding
- Water Quality
- Diseases
- Harvesting
- Marketing
- Catfish Home
- Aquaculture Home
- MSUcares Home

Aquaculture: Catfish

Catfish is the leading aquaculture industry in the United States. Commercial catfish production generates over 46 percent of the value of aquaculture production in the United States. From the first commercial production in ponds in the 1960s, catfish production has grown rapidly to reach annual sales of 660 million pounds in 2003. The value of the catfish crop in the United States reached \$425 million in 2003. Mississippi, in accord with its acreage, reported the greatest value (approximately \$243 million in 2003).

The rapid growth of the catfish industry in the 1980s and 1990s led it to become one of the most important agricultural activities in states such as Mississippi, Arkansas, Alabama, and Louisiana. The combined production acreage of these four states makes up 94 percent of all catfish production acreage. Mississippi has had more acreage in catfish production than the other three states combined and has held this position since the late 1980s. The catfish industry generates an economic impact of billions of dollars and is the primary source of economic activity and employment in a number of Mississippi counties.

The two major catfish-producing areas in Mississippi are 1) a relatively well-defined geographical area of the Mississippi River alluvial valley in northwest Mississippi that is commonly referred to as the "Delta" and 2) a less well-defined area of east-central Mississippi.

In 2004, the Delta region accounted for 86 percent (85,600 acres) of the total land area devoted to catfish in

Tours and Special Events

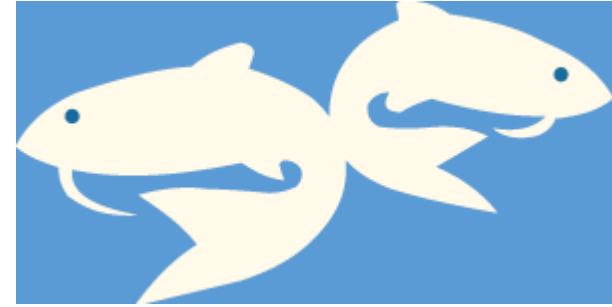


Facilitate field research



Commodity Support

- Catfish Farmers of Mississippi
- Catfish Farmers of America
- The Catfish Institute
- Mississippi Gamefish Suppliers and Consultants Association
- Mississippi Farm Bureau Federation
- Delta Council
- Mississippi Department of Agriculture and Commerce



Catfish Farmers of America

Activities in Commodity Support

- Association Formation
- Advisory Committee Members
- Strategic Planning
- Media Relations
- Product Marketing and Advertising
- Legislative Priorities
- Meeting Assistance

Qualifications of Aquaculture Extension Specialists

Training in Aquaculture- MS or PhD

Aquatic animal physiology and diseases

Aquatic animal Nutrition

Water Chemistry/ limnology

Aquaculture

Economics

Planning and Oversight

- Federal and state funded
 - Planning and evaluation involves stakeholder Advisory committees
 - Priorities of daily activities are established
 - Long term plans- meetings and events

Role of extension in Disease Risk Management

- Biosecurity- is part routine in discussions when diseases occur

Direct contact with farmers on daily basis

- Knows unusual mortality patterns and signs
- Can see patterns that farmer or veterinarians, diagnosticians and researchers may miss
- Can quickly alert industry of Biosecurity risks and needed modifications in management
- Can train and assist producers in implementing new biosecurity protocols through workshops and demonstrations

Limitations

- Extension system is effective in small to medium scale aquaculture systems that are open to sharing information. This applies to family operations.
- Extension service is often not welcome in Large systems- These systems may have there own researchers and veterinarians and are protective of trade secrets. Although biosecurity is often higher in large operations, disease situations may not be reported as rapidly.
- Extension must be well established and adequately funded so that the specialists routinely work with the producers on a personal level and establish trust.

Summary

Extension forms the bridge between the Local Aquaculture and scientist, Diagnostic Labs, government agencies

They can be the eyes, ears and voice of the industry; seeing threats as they develop and can relay findings of scientists and policy considerations of governmental agencies.

