



# Evaluating Costs and Benefits of Prophylactic Health Products and Novel Alternatives on Smallholder Aquaculture Farmers In Asia and Africa (IMAQulate)

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IMAQulate Second Annual Progress meeting, Ananda Inn - Bhimavaram - Andhra Pradesh, 9<sup>th</sup> -11<sup>th</sup> Jan, 2018

**Other team members:**

**Mary Opiyo - KEMFRI**

**Julius Nzeve – MACHAKOS UNIVERSITY**



# PRESENTATION OUTLINE

- Sample frame development: for systematic health management survey (patricia)
- Survey : Health management practices & PHPs usage (patricia)
- Value chain analysis for PHPs (Rezin)
- Inventory of commercial PHPs (Rezin)

# SAMPLE FRAME DEVELOPMENT: Systems overview

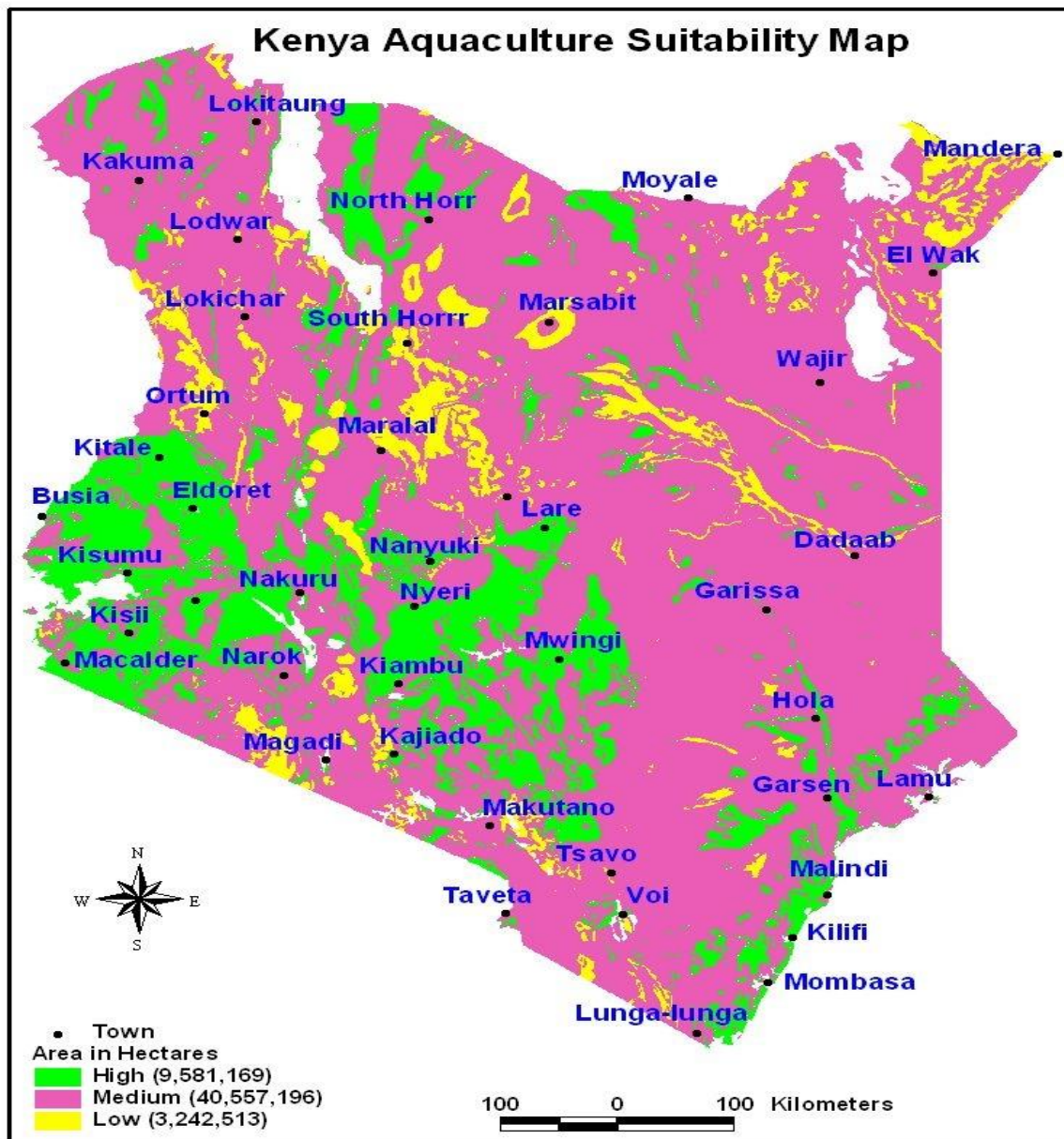
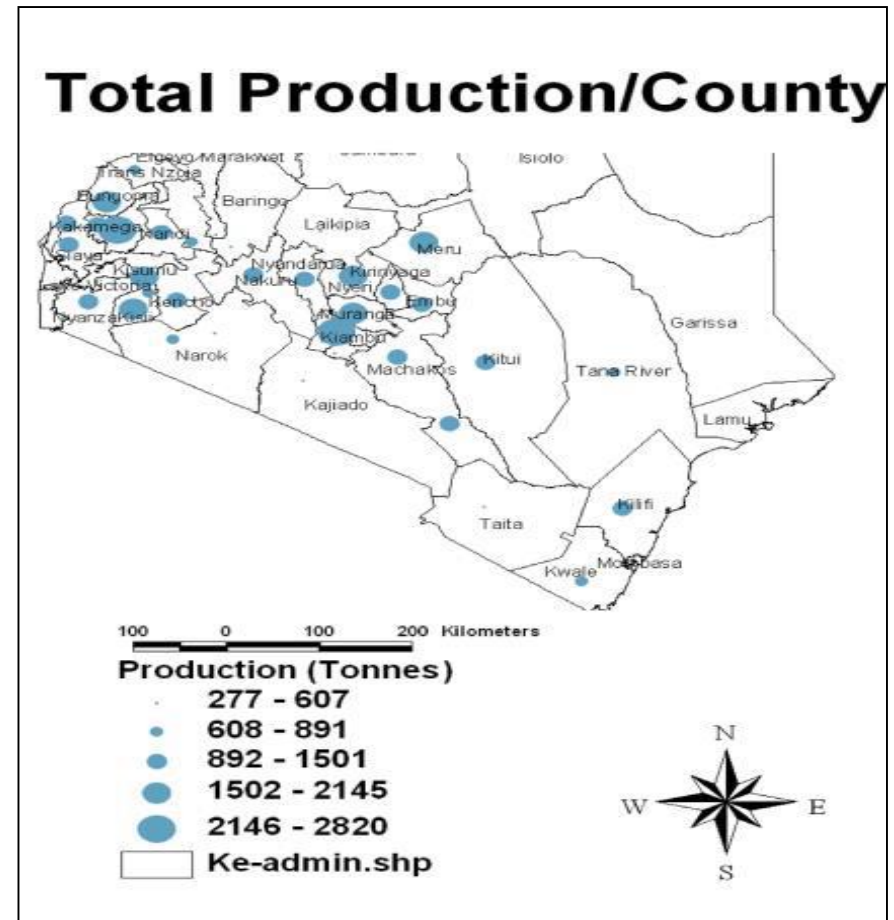
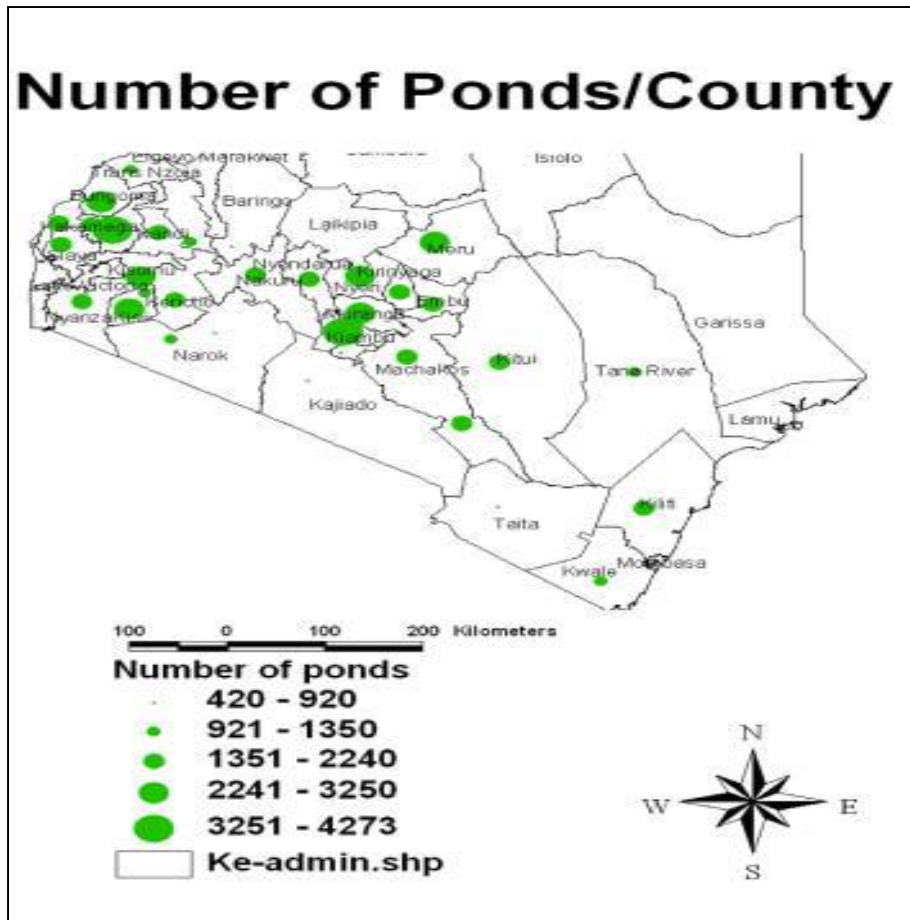


Fig1. Kenya Aquaculture Suitability Map (Source: SDF, 2009)

# SAMPLE FRAME DEVELOPMENT: Systems overview



High pond density and activities in : western and central Kenya: Kakamega, Bungoma, Kisii, Meru, Nyeri, Kisumu, Muranga, Embu, among others, (SDF, 2014: SDF 2016).



# SAMPLE FRAME DEVELOPMENT: Systems overview

Production systems **Mainly Semi intensive pond system**--Stocking 3 fish /m<sup>2</sup>

**Intensive Cages in Lake Victoria**--Stocking in cages (Density: 60 to 250 fish/m<sup>3</sup>; Sizes: 8 to 125m<sup>3</sup> )

**Intensive RAS** by hatcheries producing monosex fingerlings.

Small holder farmers: minimum of 1 pond; maximum of 60 ponds  
Stocking rate of 3/m<sup>2</sup>.

Culture periods: >6 months to get fish of 250 - 500g depending on the climatic zone/ region and management



# **SAMPLE FRAME DEVELOPMENT: stakeholder Database**

- Information collected from:
  - Government – state department of fisheries
  - Aquaculture Association of Kenya (AAK)
  - NGOs: GIZ & Farm Africa

# SAMPLE FRAME DEVELOPMENT: Stakeholder database

- Generated a list of 2910 farmers
- Random sample of 250 farms proportionately

County	No. of farms	Allocated Sample size
Kakamega	1230	99
Busia	909	77
Vihiga	458	32
Kisii	60	10
Homabay	61	9
Kisumu	32	5
Siaya	11	-
Bungoma	8	-
Nyamira	5	-
Kitale	1	-
Kiambu	66	9
Kirinyanga	58	9
Nyeri	9	-
Muranga	2	-
<b>TOTAL</b>	<b>2910</b>	<b>250</b>

## SAMPLE FRAME DEVELOPMENT: Summary

- Based on pond intensity and activity – focused on **western** and **central** Kenya
- Based on number of farmers in available data base – selected counties with highest number of listed farmers:
  - Busia, Kakamega, Vihiga, **kisii**, homabay & **Kisumu**
  - Kiambu & kirinyanga
- Based on production intensities – to do cages – 30 establishments exist in database – all to be surveyed



## **SAMPLE FRAME DEVELOPMENT:**

- List of selected farms for each county were send to the relevant county fisheries directors for verification and confirmation of activeness
- Where listed farms were not active, they provided replacements (in some cases over 50% of selected farmers were not active and were hence replaced)

# DEVELOPMENT OF SURVEY TOOL

- Draft questions were prepared by all IMAQULATE partners and send to IMAQULATE team coordinator
- Draft standard questionnaire was prepared
- Drafted questionnaire was revised and adapted to the Kenyan Situation (Kenyan team plus William Leischen)
- Questionnaire was piloted by UoS Msc student

# SURVEY: Enumerators

- Identification and selection of enumerators:
  - Graduate & post graduate Students – Aquaculture & fisheries programmes
  - KEMFRI - interns, extension and Technical officers n total there were 8 enumerators
- In total 8 enumerators
- All enumerators travelled to Western Kenya with two project staff (Patricia & Julius) where the first day was used to train them.



## SURVEY: implementation

- Advance contacts and facilitation were made to county directorates to contact the farmers and make appointments
- County directorates provided local guides who accompanied each enumerator. The guides were mainly extension officers and in some occasions fisheries officers
- Enumerators were transported to the respective sub-counties where they picked their local guides and moved to the various wards in each sub-county using local transport mechanisms e.g use of motorbikes, boats, or walking etc



# SURVEY: implemementation

- Surveyed 4 counties in W. Kenya and 2 counties in C. kenya.
- Survey in the cages and in 2 counties in western kenya were postponed due to political animosity/time constraints

County	No. of farms	Allocated Sample size	No. of farms surveyed
Kakamega	1230	99	49
Busia	909	77	63
Vihiga	458	32	31
Kisii	60	10	-
Homabay	61	9	32
Kisumu	32	5	-
Siaya	11	-	
Bungoma	8	-	
Nyamira	5	-	
Kitale	1	-	
Kiambu	66	9	7
Kirinyanga	58	9	14
Nyeri	9	-	
Muranga	2	-	
<b>TOTAL</b>	<b>2910</b>	<b>250</b>	<b>196</b>



# SURVEY: Observations

- Mortalities & Diseases – not a problem
- Diseases of fish – many not aware of them, do not know specialists (or refer to extension officers as the specialists)
- Fish treatment:
  - Change water
  - Quarantine
  - Salt / copper sulphate bath
- PhP usage:
  - not there and majority have no idea what these are.
  - A few (elite) farmers have heard about them, from internet/facebook and aware of use in Asia/middle east
  - Mixed feelings: One farmer (a vet - phd) – knows about them – do not rush to giving **probiotics** – many people running away from chicken cos of them; others want to



# SURVEY: Observations

- Feed is costly and unavailable - Some feed only when they have feed and can skip feeding even up to 2 weeks when they have no feed/stop feeding when feed is not available







# SURVEY: Observations

- Biggest challenges - **farmers perspectives:**
  - Feed cost/availability/quality
  - Market/low prices (not profitable)
  - Low quality fingerlings
  - Unreliable water supply/drought
  - Capital/unavailability of credits
  - Predators/theft
  - Lack of knowledge/who to consult or get advise from

## SURVEY: Observations

- Proposed interventions - **farmers perspectives**
  - Good feeds – quality, available, affordable
  - Good seed/breeds
  - Establishment of co-operative – to buy fish from farmers/linkage to markets/regulation of prices
  - Accessibility of trained people for consultations/functional extension offices
  - Training/empowerment on fish health diagnostics/management
  - Establishment of an e-link for farmers to share experiences and get help from each other
  - Establishment of farmer led training centers



# SURVEY: Experiences/challenges

- Dormant /neglected farms
- Some had not gone through a production cycle
- No effective communication for farmers to wait for the enumerators (absent).
- Some extension officers felt ambushed/were not cooperative



# **SURVEY: Experiences/challenges**

- Some holding/giving false information or out rightly refusing to give information on some questions
- Some Farm managers/spouses have no idea what is going on – do not have information
- High distance between farmers – a lot of time spend moving from one place to another
- Lack of network coverage – communication problem
- Questionare too long
- Fatigue with surveys/questionnaires – so many and never return with feedback/help to farmers

# Future outlook

- Coding – ongoing
- Completion of survey in cages
- On farm trial
- Data entry/Analysis
- Dissemination materials
- Dissemination & Feedback activities



# Thank you

