

TITLE

Project leader: J. Limmen (Rainbow Agro), M. Poelman (DLO-IMARES)

Requested budget: 35.000 euro

Countries: Kenya, Ethiopia, Somalia,

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1 Motivation and project aims

1.1 Knowledge requirements for the target group

The group of companies lack adequate insight in best practice on fish silage production, preservation, utilisation and marketing in (local and regional) agri- and aquaculture. Also the required research agenda to come to an economically sustainable and socially relevant implementation of fish silage use in East Africa needs to be developed (and financed). Developments will primarily serve a regional outreach focussing on Somalia, while activities will be performed in Kenya or Ethiopia (depending on the possible contributions of local partners).

Aquaculture input is requested from IMARES

Animal Production input is requested from Wageningen UR Livestock Research

A small contribution on fish silage processing is requested from Food and Biobased Research

Coordination of the scientific input and local partner search is requested from IMARES

1.2 Definition of the problem

Fish processing results in potential losses of protein sources in by-products (eg. Frames, cutting waste and guts). The utilisation of these by products for manufacturing of fish silage is one of the solutions to provide an economically relevant protein source for agriculture and aquaculture. Knowledge of the best use of these by-products under local and regional conditions in Africa is needed to prepare an adequate business strategy for fish silage manufacturing, and marketing/distribution. The input sector (Tuna & sardine processing) is available in Somalia (in the partnership), whereas the utilisation sector is available in Ethiopia, Somalia and Kenya.

1.3 Aim(s) of the project

The project strives to produce a business plan for fish silage production for implementation of a regional solution on a fish processing site (tuna & sardine processing in Somalia). This business plan includes a business strategy as well as a research and dissemination program for the development of fish silage use. The aim of the seed money project is to review the best available knowledge on fish silage production and its use in aquaculture and agriculture applications. This will be supported with field visits, local research partner searches and the development of an implementable research plan.

Fish silage production is targeted in Somalia, while aquaculture and Wageningen UR Live stock research is planned to be set up in Kenya and Ethiopia respectively. The project strives to develop a suitable strategy and knowledge for implementation in the region of East Africa (Kenya, and Ethiopia), with a pilot process in Somalia. Therefore the research and dissemination agenda is planned in the region, and not directly in Somalia.

1.4 Target groups:

The target group is a consortium of project development (Rainbow Agro), fish processor (Habo Tuna Factory, Somalia), feed additive producer (Selko), equipment development and manufacturer (ProZee). These target groups already have direct investment and incentives for further development.

Other local stakeholders are contacted during the project. KMFII (Kenyan Marine and Fisheries Institute) (Kenya), and ILRI (International Livestock Research Institute (Kenya, and Ethiopia))

The seed money project will result in a business plan and research agenda for the implementation of fish silage production in Somalia. The research agenda will focus on the development of a research agenda for its implementation in agriculture and aquaculture (use of feed) in Kenya (and Ethiopia), and therefore has a regional outlook.

1.5 Economic context:

Habo Tuna has a capacity of 40 tons a day. Production of silage is expected to become 12 tons a day. Fish silage inclusion in tilapia diets has been demonstrated to be 50% of the fishmeal fraction. Fish silage production is estimated to be cheaper than fish meal production. Besides fish meal replacement as a cost motive, the option of local fish protein sourcing is relevant as a solution to the protein shortage in East Africa.

Fish by-products contain valuable protein and lipid fractions as well as vitamins and minerals, but are also an important source of environmental contamination. There are economic, social and environmental incentives to improve the use of the full product for protein supply.

The performed business plans will be of benefit for the implementation of fish silage production in other regions, due to the availability of processing plants. The business case can therefore serve as an example for further outreach (to be described in a PPS proposal).

1.6 Economic Opportunities:

Added value of fish canning is obtained with the implementation of economic use of by products (the Dutch vierkantsverwaarding). Cost price of the production of tuna or other fish products is decreased when making a margin on the by-products, this margin is currently not available.

The economic opportunities for the user of fish silage are another site effect. Currently aquaculture is using expensive fishmeal (partially taxed) for production. There is a world-wide competition for this source. In addition, protein requirements for animal and poultry production are increasing due to the increasing global demand for animal protein. Until today, soybean protein has been a major source for livestock feeds, but concerns on the ecological footprint of livestock production and increased imports of soybean in South-East Asia results in world-wide competition also for this feed ingredient. Moreover, concerns on the ecological footprint of soybean / livestock production raise questions on the sustainability of using / importing this protein source for animal production. Therefore local sourcing of feed inputs, even of lower quality, is considered an economic benefit for the end user. The business plan will elucidate the potential.

Dutch entrepreneurs are the main driver for this proposal. Fish processing and fish silage production is seen as a relevant development (and investments in tuna and sardine processing are already in place).

Dutch equipment developers and producers are part of the project. The Dutch feed industry is interested to participate in the project for sourcing raw materials for locally sourced feed in East Africa.

1.7 Economic Threats:

The misuse and inadequate market strategy for fish silage is an economic threat. Development of fish ensiling without an economic incentive results in a higher cost price of the main product (canned tuna). This is only achievable if the environmental impact is a driving force, and therefore cost price may be higher.

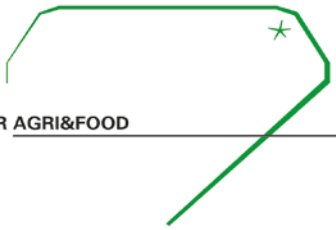
If fish silage is of inadequate quality and cost price is in competition with higher quality products the risk of a lack of market absorption is present. The economic threats are addressed in the business plan for further development. However, initial calculations showed a promising Return on Investment..

1.8 Desired expertise from DLO:

DLO will be asked to provide knowledge on the production and preservation of fish silage, and the possible utilization in aquaculture and agriculture business. Literature scans will be performed to address the possible applications.

DLO will contribute to the project by finding suitable local scientific partners (Somalia and Kenya) for the collective implementation of the research agenda.

DLO will contribute to the development of a research agenda, and implementation of a follow-up project in PPS structures.



Required input:

- Expertise on fish silage production and quality
- Aquaculture nutrition
- Livestock nutrition
- Aquaculture and agriculture development expertise

1.9 Expected results:

The results of the study will be a ready to develop a business plan for fish silage production in Somalia and in a later stage in other African countries.

2 Work plan

2.1 Approach and time schedule

	April	May	June	July	august	September	October
Initial meeting	X						
Literature research	X	X	X				
Preliminary action plan			X				
Partner selection (research)			X	X			
Definition of research plan						X	
Definition of business plan							X

2.2 Outputs

The results of the seed money projects are:

- Literature review of fish silage quality and utilisation
- Business plan for fish silage production (responsibility for Rainbow fish)
- Research agenda and PPS proposal for follow up

2.3 Dissemination to target groups

The target groups will directly be provide with the literature research, and the potential for
The target groups are directly involved in the process of selecting, visiting the local research groups, as well as in the development of a research agenda.



3 Project organisation

3.1 Project team (Wageningen UR)

Name	Organisation	Role	Email address	Telephone No.
Poelman	IMARES	Facilitator	Marnix.poelman@wur.nl	+31317487035
Vuuren, van	Wageningen UR Livestock Research	Participant	Ad.van.vuuren@wur.nl	+31320237303

3.2 Involved parties (besides Wageningen UR)

Name	Organisation	Role	Email address	Telephone No.
John Limmen	Rainbow Fish	project development	admin@rainbowagro.nl	+31251244592
Ahmed Omar	Habo Tuna Factory, Somalia	fish processor feed additive producer	fahiye77@yahoo.com	+25290727107
Arjen Roem	SELKO	equipment development and	arjen.roem@wur.nl	+31317486140
Michel Bezemer	ProZee	manufacturer	m.bezemer@prozee.nl	+31228318811

3.3 Monitoring and evaluation

The project will be monitored by Rainbow Agro. An initial meeting will take place to discuss the action plans in detail. A mission to Ethiopia and Kenya will be planned to meet with local research partners. Follow up of the mission in close collaboration with the industry stakeholders.

4 Budget

Budgets 2014

Financial source	Budget
Seed Money	€ 35.000,-
International	€ 10.000,-
In kind companies	

5 Summary

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6 Project keywords:

Fish silage, aquaculture, agriculture, by-products