



2021





The lake Malawi is more than a million years old and has the highest fish diversity of all lakes on earth. Overfishing is at present a major threat of the fish fauna in the lake. Fish produced in aquaculture can help to release the fishing pressure to fish stocks in the lake.

Introduction of Chambo fingerlings reared in hatcheries in Malawi can help to re-establish the most desired tilapia species in the lake. The "Ich liebe Fisch" project can thus make a contribution to recover the stock of the lake Chambo.



	mo	di	mi	do	fr	sa	so	
Januar 2021					1	2	3	KW 53
	4	5	6	7	8	9	10	KW 1
	11	12	13	14	15	16	17	KW 2
	18	19	20	21	22	23	24	KW 3
	25	26	27	28	29	30	31	KW 4



Collecting broodfish to retrieve eggs to be incubated in the indoor hatchery at the farm of the Bunda college. With support of the solar powered hatchery, the production of Tilapia fingerlings was increased by about 40% in the season 2019/20. This achievement results in a much improved fingerling supply to the rural farmer in Malawi.

	mo	di	mi	do	fr	sa	so	
Februar 2021	1	2	3	4	5	6	7	KW 5
	8	9	10	11	12	13	14	KW 6
	15	16	17	18	19	20	21	KW 7
	22	23	24	25	26	27	28	KW 8



From personal observations, the young women are a very powerful part of the rural communities in Malawi. The "Ich liebe Fisch" project was facilitating the participation of women in aquaculture and agriculture activities and food processing.

	mo	di	mi	do	fr	sa	so	
März 2021	1	2	3	4	5	6	7	KW 9
	8	9	10	11	12	13	14	KW 10
	15	16	17	18	19	20	21	KW 11
	22	23	24	25	26	27	28	KW 12
	29	30	31					KW 13



A pilot plant to demonstrate the production of Black Soldier Fly (BSF), which can be used in Malawi for the production of very cheap but valuable animal protein, is part of the project "Ich liebe Fisch". Thus, two members of the team were visiting the largest BSF production plant in Germany (Hermetia in Baruth) for a training in spring 2020.



Both students were thoroughly trained and participated in the entire production process

	mo	di	mi	do	fr	sa	so	
April 2021				1	2	3	4	KW 13
	5	6	7	8	9	10	11	KW 14
	12	13	14	15	16	17	18	KW 15
	19	20	21	22	23	24	25	KW 16
	26	27	28	29	30			KW 17

2 Karfreitag | 4 Ostersonntag | 5 Ostermontag



Artificial BSF propagation needs different facilities. The picture shows the mating house of the pilot plant. Flies are kept inside in cages and beyond mating the flies attach their eggs to collectors. In the next step, the eggs are transferred into boxes with an appropriate substrate where the larvae hatch and feed until they are in the pre-pupea stage.

Mai 2021

mo	di	mi	do	fr	sa	so	
					1	2	KW 17
3	4	5	6	7	8	9	KW 18
10	11	12	13	14	15	16	KW 19
17	18	19	20	21	22	23	KW 20
24	25	26	27	28	29	30	KW 21
31							KW 22

1 Tag der Arbeit | 13 Christi Himmelfahrt | 23 Pfingstsonntag | 24 Pfingstmontag



BSF can be reared on a wide variety of organic garbage. In this case, rotten mangoes were collected and processed in order to become an easy-accessible substrate for BSF larvae.

The mangos were passing a shredder and subsequently sun-dried. This approach allows to store substrates until larvae are available and support the planning of a continuous supply of appropriate substrates when needed.



	mo	di	mi	do	fr	sa	so	
Juni 2021		1	2	3	4	5	6	KW 22
	7	8	9	10	11	12	13	KW 23
	14	15	16	17	18	19	20	KW 24
	21	22	23	24	25	26	27	KW 25
	28	29	30					KW 26

BSF is a universal soldier and naturally abundant in many places in Africa. This makes it easy, to establish a broodstock for artificial propagation. The picture shows a trap to attract wild females to deposit their eggs which can be subsequently collected for controlled rearing of the larvae.



BSF are about the size of wasps and are considered harmless; a great advantage is the way of life of the adult flies, which can no longer ingest food and therefore cannot be a vector for diseases and neither bite nor sting. In this stage, only mating and dispensing of eggs occur. The life span of adult flies is about 6-9 days.

Their breeding is easy, as the larvae tolerate a wide range of food and efficiently convert organic trash into biomass with a high protein and fat content. Under optimal conditions, about one kilo of maggots can be produced from two kilos of organic substrate.

The larvae also sanitize the substrates in the digestion process, a fact that represents an interesting added value in Africa from a hygienic point of view.



	mo	di	mi	do	fr	sa	so	
Juli 2021				1	2	3	4	KW 26
	5	6	7	8	9	10	11	KW 27
	12	13	14	15	16	17	18	KW 28
	19	20	21	22	23	24	25	KW 29
	26	27	28	29	30	31		KW 30



Fried potato chips production as street food is very common in Malawi and according to the recent experiments in the project, potato peels are an excellent substrate for BSF larvae. Potato peels can be shredded and dried and allow the intermediate storage of these kind of substrates which facilitates BSF production planning.



Potato peels, sun-dried and stored in trash cans

mo	di	mi	do	fr	sa	so		
August 2021							1	KW 30
2	3	4	5	6	7	8	KW 31	
9	10	11	12	13	14	15	KW 32	
16	17	18	19	20	21	22	KW 33	
23	24	25	26	27	28	29	KW 34	
30	31						KW 35	



The local fish feed production in Malawi can benefit a lot from the addition of insect meal, which is high in protein. It can be a promising and affordable replacement of fishmeal and soy bean proteins. Since only organic garbage is the necessary substrate to grow BSF, even rural farmer will be able to produce maggots in order to improve significantly the quality of their local feeds. The "Ich liebe Fisch" project organizes training courses for the fish farmer to communicate the production of BSF maggots.

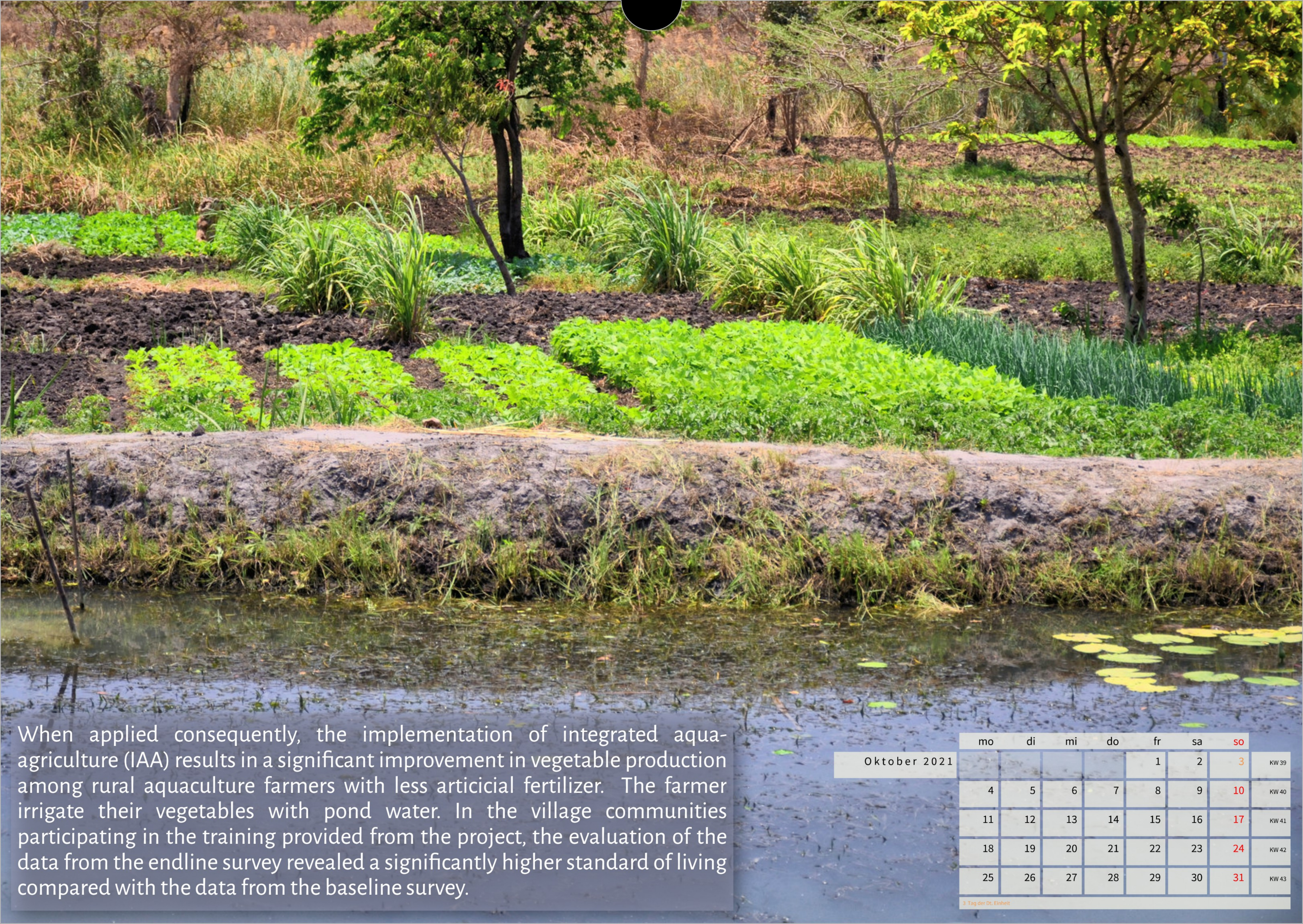


The pre-pupae stages of BSF can be fed directly to fish and chicken.



In order to produce pelleted fish feed, the pre-pupae needs to be degreased, dried and milled.

	mo	di	mi	do	fr	sa	so	
September 2021			1	2	3	4	5	KW 35
	6	7	8	9	10	11	12	KW 36
	13	14	15	16	17	18	19	KW 37
	20	21	22	23	24	25	26	KW 38
	27	28	29	30				KW 39



When applied consequently, the implementation of integrated aqua-agriculture (IAA) results in a significant improvement in vegetable production among rural aquaculture farmers with less artificial fertilizer. The farmer irrigate their vegetables with pond water. In the village communities participating in the training provided from the project, the evaluation of the data from the endline survey revealed a significantly higher standard of living compared with the data from the baseline survey.

	mo	di	mi	do	fr	sa	so	
Oktober 2021					1	2	3	KW 39
	4	5	6	7	8	9	10	KW 40
	11	12	13	14	15	16	17	KW 41
	18	19	20	21	22	23	24	KW 42
	25	26	27	28	29	30	31	KW 43

3 Tag der Dt. Einheit

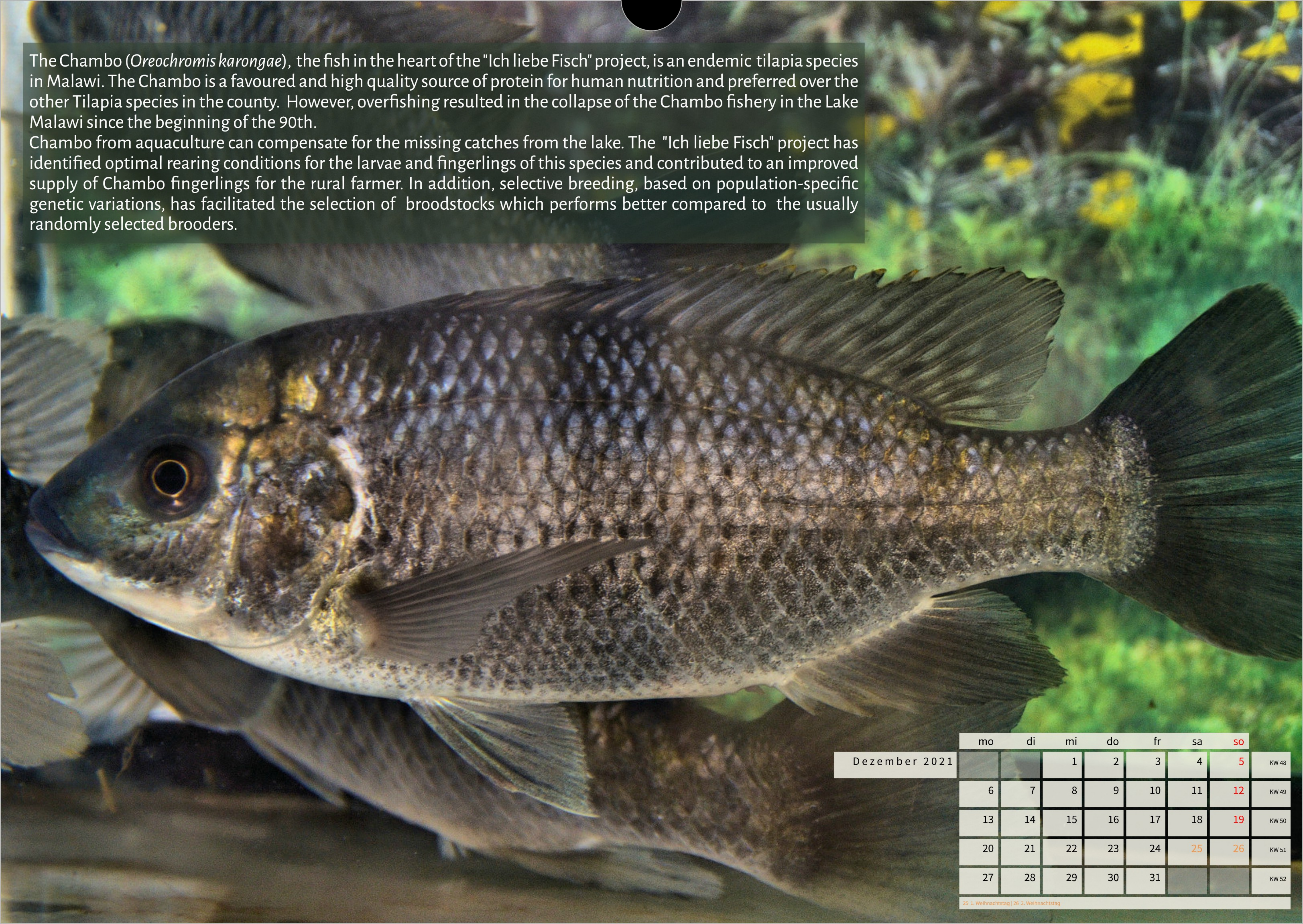


The welfare of the future generations was a special focus in the "Ich liebe Fisch" project. The major goals were to improve the supply of fish and vegetables to the rural population and to increase the added value. Following a statement of a female fish farmer: *"...I must thank the "I Love Fish" project for the help they have given us to improve our fish farming. We have benefitted a lot and we now have enough food for our families and our children are healthy. Even after the project ending, we will continue utilising the knowledge and skills they taught us because we have seen the benefits..."*

	mo	di	mi	do	fr	sa	so	
November 2021	1	2	3	4	5	6	7	KW 44
	8	9	10	11	12	13	14	KW 45
	15	16	17	18	19	20	21	KW 46
	22	23	24	25	26	27	28	KW 47
	29	30						KW 48

The Chambo (*Oreochromis karongae*), the fish in the heart of the "Ich liebe Fisch" project, is an endemic tilapia species in Malawi. The Chambo is a favoured and high quality source of protein for human nutrition and preferred over the other Tilapia species in the county. However, overfishing resulted in the collapse of the Chambo fishery in the Lake Malawi since the beginning of the 90th.

Chambo from aquaculture can compensate for the missing catches from the lake. The "Ich liebe Fisch" project has identified optimal rearing conditions for the larvae and fingerlings of this species and contributed to an improved supply of Chambo fingerlings for the rural farmer. In addition, selective breeding, based on population-specific genetic variations, has facilitated the selection of broodstocks which performs better compared to the usually randomly selected brooders.



	mo	di	mi	do	fr	sa	so	
Dezember 2021			1	2	3	4	5	KW 48
	6	7	8	9	10	11	12	KW 49
	13	14	15	16	17	18	19	KW 50
	20	21	22	23	24	25	26	KW 51
	27	28	29	30	31			KW 52