

# spreading the news

## Spreading The News



The giant plastic pipe resembles a fierce fountain as it splashes greenish water into a concrete basin. Of course, the bubbling water is nice to watch in this sandy landscape, but it does look like a waste of this precious resource. Still, the small flock of people gathered around the pipe and basin in the glaring sun are not concerned with the possible waste of a little water. They are impressed by the pump that drives the water, newly installed after electricity was established here some months ago. This pump is quite an investment but, when you know why it was installed, we think that you will agree that it was a good investment. Several people will help us understand how and why this pump came to be in this arid desert; but first, let us seek shade in this nearby stone house.

This is the combined field office and staff room for the workers of a fish farm in Fayoum Province, about 90 km south of Cairo in Egypt. Some might find the view from the open shutters pretty dull, pond after pond dug into a barren piece of land, which is so low that it is 42 m below sea level. However, one of the pond owners, 73 year old Mr Nazmy Abdel Rahman Shafi, finds the view from this little building particularly inspiring. He has spent 20 years of his working life here, and now takes great pride in one of the bigger ponds in the system. This pond really 'came to life' in 1999, when something very new happened. In that year

Mr Nazmy Abdel Rahman Shafi, together with the other owner of the pond, Mr Mohammed Gouda, agreed to be a partner in a field research experiment run by WorldFish Center. In many ways, this partnership was more or less the result of chance.

### *An entrepreneur at heart*

Chance appears to have played a key role in Nazmy's life. After many years spent as an agricultural farmer in the area, he diversified into heavy machinery. In 1980 he was contracted by the Government to build the stretch of highway that now runs above his fish farm. In order to do this, he needed more earth than was immediately available. So, he asked the owner of some nearby land if he could dig there—after all, the land was not being used and it was not fit for agriculture. But the answer was "no". If he wanted the earth, Nazmy would have to purchase 3 feddan of the land—about 3 acres all in all. Nazmy agreed. He bought the land and dug out the earth he needed, leaving big holes behind him. He later bought 3 more feddan of land, in order to finish the road.

When the road was nearly completed, some travellers from northern Egypt stopped and asked if the big holes were going to be used as fish ponds. Now this is not really what Nazmy had intended them for, because fish ponds and aquaculture were a very new thing in this part of Egypt back then. They were only just beginning to be developed in the Nile delta region in the north of the country. But Nazmy and an engineer, Mohammed Gouda—as you may have guessed—were interested in the idea, and started asking questions. The answers sounded promising, so they took their bulldozers down from the road and created orderly ponds and dykes. They also organised diesel pumps, pipes and everything else that they knew they would need.



*Electricity has now been installed on Nazmy Abdel Rabman's fish farm. Investing some of the farm's profits in this way will allow Nazmy Rabman to better control the water quality of his ponds, so increasing his farm's productivity.*

Not that they knew much about their new trade. This was the first fish pond to be created in the whole province, so there were no neighbours around to learn from. Gouda took a study tour in the north and bought fish fry, which had been caught in lakes and rivers, from fishers. The ponds were stocked with tilapia and mullet in 1981, and the first catch was sold in the local market in 1982. Impressed neighbours copied their endeavours and created new fish farms. As a result, the Fayoum region is now dotted with many fish ponds, and produces as much as 2,400 tons of fish a year. That could have been the full story, but it was not. There is actually much more to it.

### *A need to know*

In 1995, a WorldFish Center office was established in Egypt, with financial support from the Japanese Government. The staff there soon began to conduct research, and it became quite obvious to them that the production levels of most of the fish farms they studied were far too low at that time. Certainly not much was known about the whole business; the farmers were not always very careful with regard to management, and more or less followed a standard recipe for fish farming. So, they regularly added the fertilisers they knew to be necessary for plankton production, and supplied fish food based on a standard ration per fish—though they were not always exactly sure of the number or size of the fish in their ponds. They also added more oxygen to the water by churning it, using (undersized) machinery, but could only guess when such measures were needed.

So, what more could be done to improve production at the farms? Nazmy and Gouda tried out quite a few things at their farm over the years. Freshwater shrimps were mentioned in the media as a new gold mine, so they tried to produce them—but found that this did not work.

They tried eel production—not a good idea—and ventured into the production of delicious sea bass—again, no success.

But Nazmy and Gouda were always ready to look at new ideas, so they welcomed an invitation from WorldFish Centre which asked them to participate in a training programme on fish pond management for fish farmers. This was a three-week course for 14 fish farmers and was, you may be surprised to hear, the first ever training course run for such farmers in the whole history of modern aquaculture in Egypt—around 25 years.

The training programme was a joint effort on the part of the WorldFish Center and the Egyptian Social Fund for Development. It turned out to be a big event for everyone involved. There was so much to learn that was new and, as it turned out, so many different ways to manage all the factors involved in the complicated interplay between farm and nature—all of which you need to know if you want to be an efficient fish producer. The last week of the course was held back in Fayoum, where the farmers were surprised to learn many new things about their own ponds.

The course was such a success that more were organised. What is more, a new partner, the Multi-Sector Support Program (MSSP), joined the programme. The MSSP is itself a programme, run by the Egyptian Ministry of Agriculture and the European Union, which supports farmers by providing them with soft loans and which is also involved in culture fisheries.

### *Taking a chance*

One of the main things the Fayoum fish farmers needed to learn was how to manage their holdings more efficiently. In order to see an



*On this farm, ponds are aerated efficiently, using a modern, propeller-based system. This means that the fish remain comfortable even in very hot waters.*

example of one of the simple management issues that needed to be addressed, let's take a closer look at Nazmy and Gouda's fish farm. If you walk by the side of one of their greenish ponds with one of the WorldFish Center's scientists you will learn, as the farmers did, that the pool does not require fertiliser, at least not right now. Plankton is in abundance, and you will actually lower the water quality rather than enrich the food base if you add fertiliser. Obviously there were many aspects of pond management that needed to be addressed.

So the MSSP and the WorldFish Center decided to continue their co-operative endeavour. An agreement was reached between them and the farmers to undertake a full-scale experiment, in order to determine the best possible pond management system. It was decided that this scheme should be managed by a farmer but guided by advice from the WorldFish Center's experts.

Now, this was not simply a new idea—it was risky for both sides. The Center would have to work under field conditions, where far fewer elements of the process could be controlled. What is more, they could not afford to fail in this aspect of the programme. If they did, the farmers would regard the whole training programme as useless, giving only bad advice and empty recommendations. From the farmer's point of view, the work would involve time, labour and money—plus one pond would have to be reserved for the experiment. A failure would be difficult to swallow. Who wanted to try it? Yes, you guessed it, Gouda and Nazmy.

### *A hotline for help*

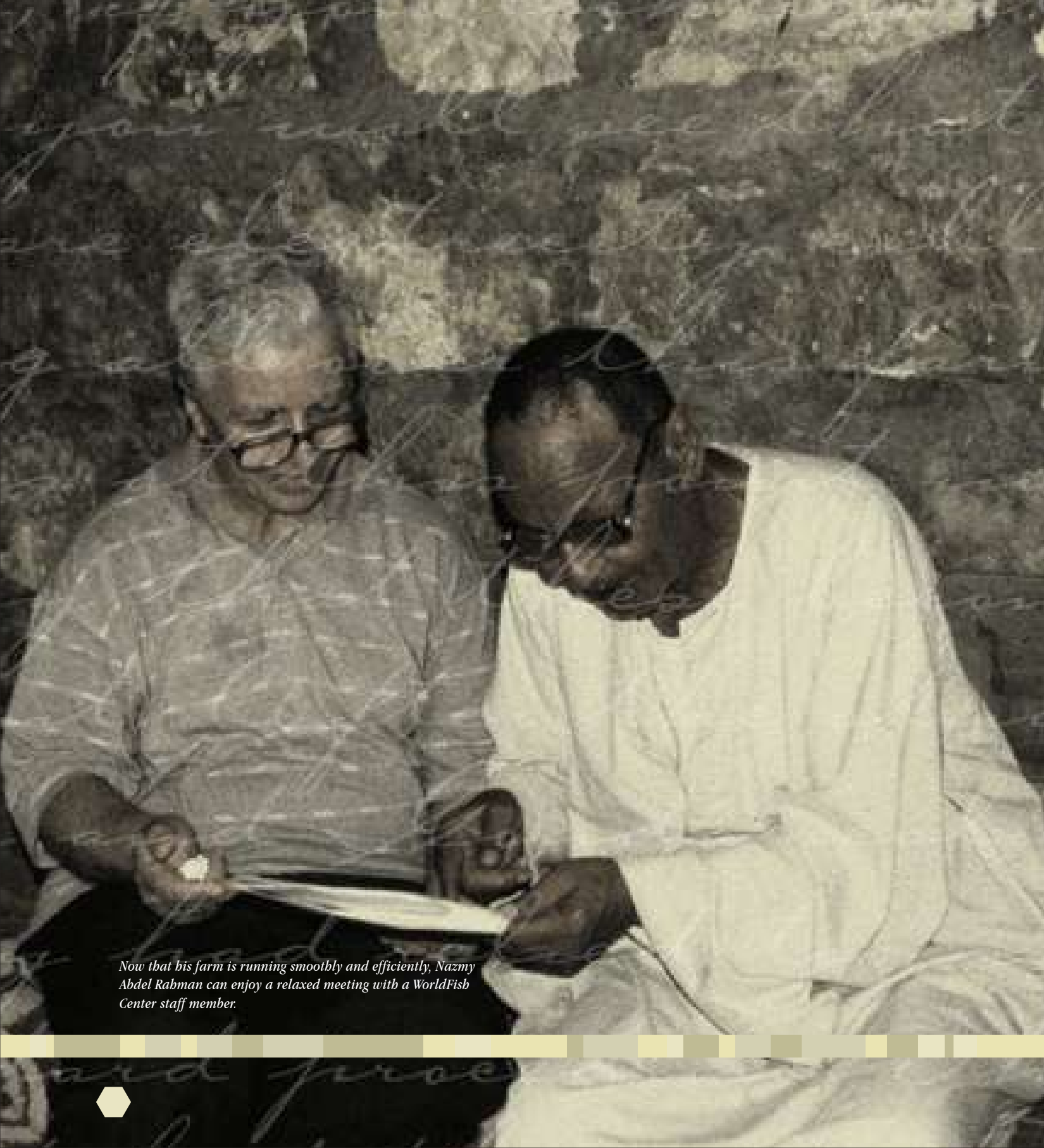
Reaching an agreement as to the fundamental aim of the experiment was not too difficult: the economics of the fish farm should be improved. This should not necessarily be achieved by producing a bumper harvest

of fish, as that might cost too much. Instead, the cost of production should be lowered. The partners wanted to produce as much as possible for the same amount of money as before, so making sure that the profits were higher than before. Actually, their ambitions were even more bold: the profits should be doubled.

But many of the other decisions that had to be made were more complicated—and the farmers were in the driver's seat here. So, the good advice the researchers gave when they said the farmers should concentrate on farming only tilapia fish was vetoed by the farmers themselves. The farmers felt that keeping tilapia alone, while it might be the easiest option, was bad business practice. If you mix the stock with mullet your catch will bring a better price from the wholesaler.

Other surprising advice given by the scientists was often accepted sceptically. Obviously the farmers wondered "do they know what they are doing?" In most cases the researchers did know, but this did not stop them holding their breath now and again while they waited to see if the routines used in the research station worked on the farm. So, for example, they tested the water—month by month—and told the farmers not to fertilise the pond for the time being, which went against the accepted procedures. They also told the farmers to skip a feeding time if the trays in the water were not completely emptied.

The telephone was often used, even outside office hours, when the farmers consulted the WorldFish Center about strange happenings. One day a rather alarming call was received: a number of the tilapia were floating, dead on the surface of the pond. This happened over a number of days—what was to be done? The regular testing showed that there was no disease in the pond—the fish that had died were apparently healthy specimens—until they died, that is. Also, only tilapia died.



*Now that his farm is running smoothly and efficiently, Nazmy Abdel Rahman can enjoy a relaxed meeting with a WorldFish Center staff member.*

*The mullet were untouched. A possible reason was that a shortage of feeding trays, coupled with the aggressiveness of the larger tilapia, produced this effect. So the advice was: stop feeding right away. And, to the farmers' surprise, the fish stopped dying right away. The scientists' understanding of the tilapia's behaviour resolved the problem. Afterwards, the number of feeding trays was increased and the problem did not recur.*

*Water quality proved to be the crucial factor in the study. You might know that Egypt is not blessed with much rain—there is not enough fresh water to go round. Because of this there are water priority sectors, and aquaculture is not among them. Agriculture, however, is high on the list. All crops are irrigated and, what is more, agriculture also takes up all the decent land and leaves only unproductive land for fish farming—so much so that fish farmers sometimes even use strips of desert. The water used in fish ponds is, therefore, provided by drainage from agriculture, and so contains minerals—as well as much of the fertiliser necessary for the ponds. But salts concentrate in the water during the hot months, when a lot of water evaporates. At the same time, during those months, the amount of oxygen in the water, which is necessary for the fish to breathe, drops to low levels. For that reason, the water is shifted—the greenish fountain of water we first saw at the front of the farm is actually being pumped out of the ponds—and air is drawn into it by means of small propellers. But you should only shift your water and start your propeller when the tests tell you that you need to. Otherwise, you waste a lot of energy and money without reason. What is more, the problem of fish dying because of saline water can be minimised. Researchers now know that we can gradually acclimatise young fish to a small concentration of salt, by placing them in a separate basin some days before they are put into the pond.*





*The modest offices of the Fayoum Fish Farming Association. Membership is growing fast, as people recognize the key role it plays in making modern pond management a success in this area.*

This was the kind of knowledge collected during the study. Everyone came out much wiser and, at the end of the year, the fish were sold and the results calculated (we will return to those results in just a moment).

### *Taking it seriously*

Now, if you look about you, you will see that there are electricity cables running all over this farm. It is at this point in our story that these become important. After the study, Nazmy and Gouda realised that they had relied too much on standard procedure. They had not had the experience necessary to keep an eye on conditions and adjust their work programme throughout the year, in accordance with the development of the fish and the changing quality of the ponds. So, the basic findings of the WorldFish Center were that Nazmy and Gouda had been continuously over-investing because of their lack of experience. They had been supplying more food than was necessary, fertilising much too often and working on the water's quality when it was actually quite OK.

But Nazmy and Gouda did not decide to invest less in their fish farm. Instead, they decided to invest differently, by buying big, professional pumps and installing aerating machines that could do something serious about any problems when they appeared (hence the need for electricity). And, exactly the same conclusions were arrived at by their colleagues, virtually all of whom were members of the very impressive co-operative known as the Fayoum Fish Farming Association. They realised that, because fish prices had dropped over the last few years in Egypt, they had to work more efficiently if they wanted to stay in business and make a profit.

### *Breaking the news*

A logical next step in the programme was to recall the participants of the training course run before the experiment and let them know both what had happened and why it had happened. So, a workshop was set up—again supported by MSSP—in Fayoum. But, instead of only 14 participants, this time more than 40 people turned up to learn that, yes, the difficult goal set for the study had been met. The profits had doubled! And, the amounts involved in this calculation were quite impressive, involving the production of 4,255 kg of tilapia and 2,140 kg of mullet from the 2.1-ha pond. The production costs were US\$ 8,384.

It was calculated that the biggest expenses of any such project would be feed, the pond lease—if the pond were not your own—and the purchase of fingerling fish. In this case, the project ended with a total sale price of US\$ 15,206. Great news for everyone, as this meant US\$ 7,000 in the pockets of the pond owner.

The responses prompted by the study were many and positive. First of all, it was felt that the experiment should be repeated on another farm (everybody agreed on that). And, later, the project was expanded to another part of the Fayoum province, and this time involved even more farms (it was supported by the same partners). The results from the follow-up experiments are still being analysed, but it looks very much as if they too will be 'hot news'. Interest in the results of the study is spreading. So, last year's training course attracted 120 people, while more than 200 have signed up for this year's presentation day.

The figures from the study had an almost immediate impact on the original co-operative, which had never seen as many new members as it did in the week following the workshop. From less than 100 members,



*The fish farmers have to observe water quality closely to make sure that the chemical balance is just right and that oxygen is added from the air now and again. A good job ensures fast fish growth and high survival rates.*

the co-operative grew to 257 members (its present number), which is about 85% of all the fish farmers in the province. This has, of course, made the co-operative a very serious partner for the businesspeople who deliver fish feed: the co-operative has negotiated very good deals and interest-free credit for its members. It has even convinced the industry that they should deliver to the farm gate, at no cost of course. This was unheard of before.

The MSSP has taken a very keen interest in the co-operative, and has secured loans, with easy terms, for members. It has even helped the co-operative to better equip its office in Fayoum.

So, though there was a set of small measurement instruments at the office, MSSP recently provided a modern travelling laboratory, and 40 members of the co-operative have now requested that the service come regularly to their ponds. But why don't more members make regular use of this service? The answer is this: because they don't all need to! The officer operating the instruments visits everyone early in the year and then provides them with a profile of the water quality of their ponds. If the quality of the water in the ponds looks OK, he will be called back by them only if it looks as though there might be something wrong or if something mysterious is happening.

But, a leading member of the co-operative is among the few who have said "thanks, but no thanks" to the water quality testing service, even though it is very cheap. Why? Has he not understood the message? Actually, he probably understood the study better than most—he has bought his own portable test-kit.