

FINDING SOLUTIONS WITH FAMILY FISH FARMS IN MADAGASCAR TO ADAPT TO CLIMATE CHANGE

Julien Sadousty*, Barbara Bentz, Patrick Fanomezantsoa, Delphine Lethimonnier.

APDRA Pisciculture Paysanne, Station Atlante - 20, rue Ampère - 91300 Massy - France

j.sadousty@apdra.org

In Madagascar, between 1990 and 2020, average temperatures increased, dry seasons became longer and a downward trend in rainfall was observed. Over this period, the country was also hit by 64 cyclones and 6 periods of severe drought (UNFCCC, 2022).

Fish farming (*Cyprinus carpio* and *Oreochromis niloticus*, mainly) in rice fields or dam ponds is practiced by more than 20,000 small family producers who are particularly vulnerable to climate change: the lack of water at the beginning of the fish farming season forces them to postpone by 1 to 3 months the stocking period (see figure), or even more given the increased risk of flooding at the beginning of the rainy season. Fish farmers must therefore adapt to a new breeding calendar with colder and drier conditions and greater risk management. A working approach with fish farmers has been set up to support the production of solutions, both on a technical level and organizational, combining methods such as innovations tracking (Salembier, 2019), action research protocols and co-active search for solutions (Darré, 2006).

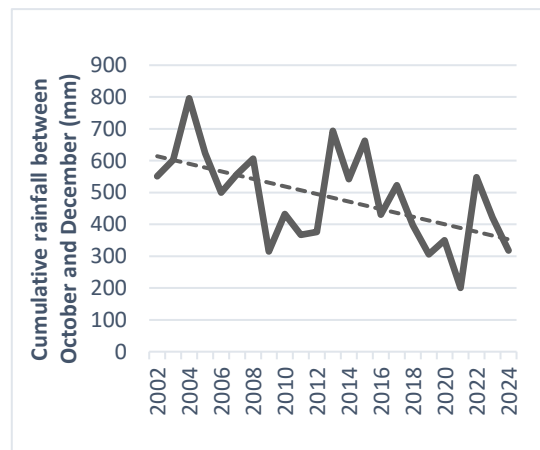


Figure 1 : Cumulative rainfall between October and December in a weather station in the Highlands of Madagascar (Muller B., personal communication).

Techniques for reproducing common carp (*C. carpio*) later during the breeding season have been developed, with some fish farmers delaying spawning by a few months, or spawning their carp a second time, a few months apart. These techniques have been widely adopted by farmers' hatcheries. In order to grow these stocked fries later, access to water often needs to be improved. Groups of fish farmers collectively install and manage hydro-agricultural structures to extend the fish farming cycle. In other cases, innovative social organizations are created to deal with water shortages or floods, such as the occasional pooling of livestock with shared redistribution rules. Finally, to compensate for a drop in productivity in the cold season, fertilization and feed supplement tests are carried out in order to improve the technical and economic performance of livestock farming.

The simultaneous implementation of these individual and collective innovations allows for systemic changes that strengthen the resilience of fish farmers.