# Molapo Farming in the Okavango Delta

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***People in the Okavango region grow crops along the rivers. This is called Molapo farming. How does it work, what are its advantages and what are some of the problems and prospects ?***

## *WHAT IS MOLAPO FARMING ?*

There are two different systems of crop farming in the Okavango region: dryland farming and flood recession or Molapo farming.
A land use assessment on the basis of satellite images carried out by the University of Botswana found that of 48,900 hectares cleared for cultivation in Ngamiland, 75% consist of dryland fields and 25% of fields in temporarily inundated floodplains (Figure 1).


*Figure 1: Molapo fields partly flooded.*

While dryland crops depend entirely on rainfall, flood recession farming makes use of fields -known as *molapo,* plural *melapo* - that are located close to or in the floodplain or river channel where soils are moistened by seasonal flooding or the draining of water into low-lying ground, supplemented by rainfall. During the recession of the floods the fields gradually dry up and strips parallel to the remaining water can be successively planted as the water recedes.

## *MOLAPO FARMING WHO and WHERE ?*

Flood recession farming is an important livelihood activity that depends on natural (flood) waters. The floodwaters originate in Angola and in March/April the flood peaks at Shakawe in northern Ngamiland and spreads gradually throughout the Okavango Delta. In Maun the water level starts to rise about three or four months later (June-August). Depending on rainfall in the Angolan highlands, the timing and level of the flood vary considerably from year to year.

Although according to census data only 14.5% of the economically active population of Ngamiland is employed in agriculture, field data collected by the University show that arable agriculture is the most important livelihood activity for over 23% of households in rural areas of the Okavango Ramsar site. Most farmers cultivate small areas for subsistence purposes but less than 10% of farmers live from what they grow. Despite recent rapid population increase, the cultivated area has not increased.

Along the Okavango Panhandle and in the Etsha area, where the HaMbukushu are the dominant ethnic group, dryland cultivation is dominant. *Molapo* cultivation is found in the floodplains at the western and south eastern fringes of the Delta, especially in the Tubu and Shorobe-Matlapaneng areas (Figure 2).

## *UNCERTAIN CROP YIELDS*

The main cereal crops grown in Ngamiland are sorghum, maize, and millet. Secondary crops like beans, pumpkins and watermelons, sweet reed and peanuts are also cultivated. The HaMbukushu predominantly grow millet in the drylands around Etsha and on both sides of the Okavango Panhandle.

Most of the other ethnic groups such as the BaYei and the BaTawana prefer maize and sorghum as their staple grain crops. Sorghum is also processed into a traditional alcoholic beverage called *Bojalwa jwa Setswana*. The BaYei who consider themselves "river people" grow maize in the floodplains while sorghum is planted in the higher, drier parts of a *molapo* field.

Crop farming in the region has a high failure rate attributed to drought or erratic rainfall, excessive flooding (in flood-recession farmland) and crop losses or crop damage by livestock, wildlife, birds (particularly quelea), rodents, and pests. Even though millet is more likely to be damaged by birds, it is quite drought resistant; maize and sorghum are more vulnerable to total crop loss than millet.

In general, traditional arable farming is an extensive system with minimal input and occasionally fair, but more often low returns. This type of farming depends largely on unpredictable environmental conditions during the cropping season, which are beyond the control of farmers. As natural conditions vary drastically, yields also vary considerably from year to year. Average yields for maize are 162 kilogram per hectare (kg/ha), for sorghum 121 kg/ha and for millet 144 kg/ha (Table 1, overleaf).

Crops mature earlier and yields are higher in the molapo system because of moisture availability due to periodic flooding. Yields of sorghum can be 500 kg/ha whilst under optimal flooding conditions over 2000 kg/ha sorghum has been recorded (Table 1). These high yields are a clear advantage of molapo farming.

**TABLE 1. Cereal crop-yields, dryland and molapo.**

| *CROP* | *YIELD (kg/ha)* |
|---|---|
| **Maize, dryland** | **162** |
| **Sorghum, dryland** | **121** |
| **Millet , dryland** | **144** |
| **Sorghum in Molapo** | **500** |
| **Sorghum in Molapo, optimal flooding** | **2000** |

***VARIABLE FLOODING***

But, there are also disadvantages. Due to changes in flood level and distribution patterns some *molapo* fields do not get flooded every year (although they still benefit from the rising groundwater table or run-off from adjacent areas) and are cultivated under rainfed conditions. In 1986-87 and during the 1990s for example, the Shorobe *molapo* areas were not flooded and could only be cultivated after the onset of rains.

To respond to these fluctuations in environmental conditions, farmers have to be adaptable. An extreme example of natural fluctuations is the drying up of the Thaoge river, formerly the main tributary for the Tubu floodplains in western Ngamiland. Consequently some of the major *molapo* cultivation areas between Habu and Gumare had to be abandoned.
Some of the affected farmers moved their lands to the northwest into the Karongana area. However, the total area of molapo farming in western Ngamiland decreased considerably.

In the Shorobe molapo area the floods during the 1963, 1974, 1977 and 1978 cropping seasons were so high that the water did not recede from the floodplain cultivation areas. This forced farmers to shift their arable activities temporarily to the dryland. As soon as the flood conditions allowed, farmers moved back to re-cultivate the more fertile soils of the *melapo* and largely abandoned the dryland fields despite the fact that some of them had already been fenced.

***PROBLEMS AND PROSPECTS***

One problem resulting from such uncertain conditions is that many fields remain uncultivated. On average, only about one fourth of fields are cultivated per cropping season. This amounts to about 2.1 hectares per household, which is not enough for subsistence or to make some cash income. Most young people, therefore, look elsewhere for employment and leave the rural areas.

Molapo farming is also considered bad for the river environment, perhaps not so much today but more for the future. Today, molapo farming takes place on small fields separated by strips of 'natural' floodplain. So, wholesale land-clearing does not usually occur, although removal of some vegetation takes place. Other than that there is no clear evidence of large-scale direct negative environmental impacts on the wetlands, especially because most fields are cultivated at low input levels (e.g. fertilizers are rarely used). Molapo farming is thus generally not very water quality unfriendly, but through increased use of fertilisers and pesticides, which can pollute the water, this could change in the future.

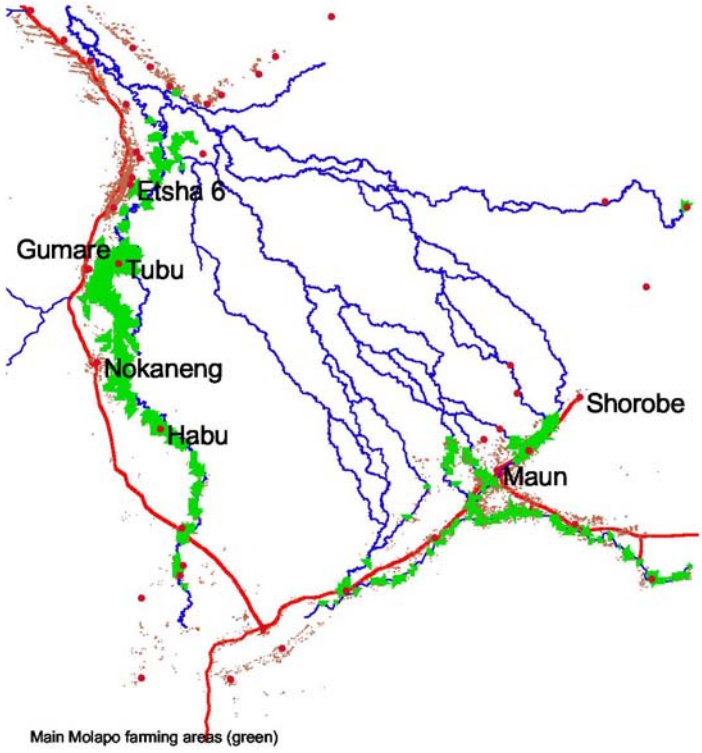


*Figure 2: Main Molapo farming areas.*

The future prospects for molapo farming are uncertain because there are no clear policies to regulate this traditional farming system. For example, even though molapo farming is an important livelihood activity and has potential water quality implications, it is not specifically addressed in the Okavango Delta Management Plan. This is partly because many people 'owning' molapo fields do not have Land Board certificates and, thus, no modern use rights. Instead, they rely on traditional rights that are not eligible for most government subsidies.

A situation whereby many people have uncertain molapo land rights is not conducive to productive cultivation or to environmentally responsible land management. This can negatively affect both molapo farming and the river environment.

*Compiled by: C. VanderPost (cvanderpost@orc.ub.bw) Jan. 2009.*