

## *Digitaria exilis* as a Crop in the Dominican Republic

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### INTRODUCTION

Funde [*Digitaria exilis* (Kippist) Stapf, and *Digitaria iburua* Stapf, Poaceae] originated in West Africa. It is an important crop in southern Mali, western Burkina Faso, eastern Senegal, northern Guinea, northeastern Nigeria, and southern Niger (Harlan 1993; Jideani 1999) where it is consumed as a cereal. The Dominican name “funde” closely resembles some of the reported African names, such as fundi, findi, and fonio.

Funde and other African crops were introduced to what today is the Dominican Republic (then the Spanish Colony of Santo Domingo) from West Africa in the 15<sup>th</sup> century (Deive 1974). The crop survived in the island for several centuries, mostly as a weed. It was later adopted by growers as a marginal grain and forage crop, due to its tolerance to soil stress and seasonal droughts. In the 1940s and 1950s, funde received especial attention both in the Dominican Republic and in international settings, because Rafael Trujillo the Dominican Dictator and the international playboy Porfirio Rubirosa allegedly consumed it to improve their virility. That claim has been recently resurrected, with or without reason, and funde has been elevated nearly to the rank of a gourmet or specialty item with aphrodisiac properties.

For centuries, funde was studied from an historic and folkloric point of view (Deive 1974, 1979), but because of its potential as a specialty crop, it is now been considered for improvement as a cultivated species. The objective of this study was to gather information on the occurrence of *Digitaria exilis* as a crop in the Dominican Republic.

Due to the lack of technical documentation, interviews were conducted with past or present growers, consumers, marketers, botanists, folklorists, and crop production consultants, in order to compile and document the dispersed knowledge on the crop, utilization and perspectives. When possible, the information provided was verified by crossed reference and/or observed in situ.

### CULTIVATION

In Africa, funde been is known as a savanna plant, which does not prosper in soils with salinity problems, that has low water demands, and survives strong droughts (Harlan 1993; Hilu et al. 1997). Those attributes of the plant remain in the Dominican landraces of funde. However, in soils with good drainage, funde thrives in rainy seasons in the Dominican Republic.

The plant is cultivated abundantly in the province of San Cristóbal, near Santo Domingo. Most growers have about one hectare under production, with dual purpose of grass and grain. It is used as a pasture in marginal areas, where other cultivated grasses do not grow well. A number of phenotypic variants have been observed, and could actually be different genotypes developed by the selection of grain by separate growers over 500 years.

Propagation of funde can be achieved by seed or by transplanting young plants. Seed are rarely sown in rows, but instead are scattered on the soil and lightly covered using tools or branches. The seed germinates with a week of being sown.

Organic fertilization (cow or goat manure) has been used to increase plant biomass and grain yield. Attempts to improve grain yield with chemical fertilizers have been successful, although not necessarily economical. There appears to be low response to chemical fertilizers, especially N, when funde grows in association with legumes (possibly due to N fixation by the legumes).

Other agrochemical input appears to be very limited. There are no pathogens reported. Nematodes have not been found attacking the plant even in soils where other plant species were infected with *Meloidogyne incognita*, which is in agreement with research conducted by Sarr and Prot (1985) in Senegal. There is no documented research on weed management in funde, but Dominican growers have observed that it is affected by grass herbicides such as fluazifop butyl, and by non-selective herbicides such as paraquat and glyphosate.

## Trends in New Crops and New Uses

The adult plant reaches about 50 cm in height, and flowering usually occurs about 6 to 8 weeks after emergence. Bees are known to visit the flowers and apparently play a role in flower fertilization. The grain can be ready to harvest between 60 and 120 days after plant emergence, depending on the local strains and the growing conditions.

Growers tend to keep part of the grain collected, as a source of seed for the next season. Because of the tropical conditions of the Dominican Republic, the crop can be grown throughout the year. However, the rainy months of May–June and October–November are preferred for planting. For economical reasons, the crop is more valued for the grain than for the forage.

## FOOD USES

Commercial grain contents about 85% dry matter, of which about 10% is starch. Minerals, mostly iron, calcium, and phosphorus, comprise about 5% of the grain dry matter. The grain contains about 7% crude protein, and its most abundant amino acids are leucine (9.8%) methionine (5.6%), and valine (5.8%) (Temple and Bassa 1991).

The grain tastes similar to rice. It may be consumed directly, cooked in porridges and flour creams, similar to grits and wheat cream. The flour of funde is also mixed with other cereal flours to make cookies. It may also be prepared as candy and fermented beverages. These uses of funde have been known for centuries in the Dominican Republic (Deive 1974, 1979). While the brewing and malting properties of funde have been studied elsewhere (Nzlibe and Nwasike 1995), no documentation was found about making fermented/alcoholic beverages from Dominican funde. Aside from everyday meals, consumption of several funde recipes has also been associated with religious festivities inherited from African ascendants.

## FUTURE

The prices of the grain and the flour derived from it are usually higher than those of other cereals found in the Dominican Republic. Demand for funde appears to be largely unsatisfied, and it has been fueled by its supposedly aphrodisiac attributes. An attractive market for organically grown funde and its derivatives may also be possible. The results of this survey suggests that with improved cultural practices, breeding, and proper mass marketing strategies, funde could become a crop of more economic importance in the Dominican Republic in the near future.

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