Small doses of fertilizer applied at the right place at the right time, combined with an inventory credit system (warrantage), lead to large benefits in yields and incomes in several countries of sub-Saharan Africa.

Overview
Land degradation leads to estimated losses of US$42 billion in income and 5 million hectares of productive land in sub-Saharan Africa (SSA) each year. Poor soil fertility, in particular low phosphorus and organic matter, cause low grain and biomass production.

A combination of strategic fertilizer application and an inventory credit system, called warrantage has helped farmers obtain good grain yields, improve their livelihoods and access finance and markets.

The innovation
Microdosing involves the application of small, affordable quantities of inorganic fertilizer with the seed at planting time, or as top dressing 3 to 4 weeks after emergence.

Microdosing, adapted to traditional water management known as Zaï, where small planting holes are dug early in the season and filled with manure, doubles crop yields.

Warrantage
Inventory credit or warrantage allows farmers to store their grain at harvest time for sale when prices are better, and take a loan against the stored grain. After sale of the grain, the farmers pay back loans and buy inputs for the new season.

The Impact
About 25,000 smallholder farmers in Mali, Burkina Faso, and Niger have learned the technique and increased sorghum and millet yields by 44 to 120%. Their family incomes increased by 50 to 130%.

Fertilizer use has been reintroduced in Zimbabwe, Mozambique and South Africa. Although microdosing is time consuming and laborious, its use in Zimbabwe resulted in 170,000 households increasing cereal production levels by 40,000 tons, saving US$7 million in food imports.

A regional project of the Alliance for a Green Revolution in Africa (AGRA) is targeting 360,000 households with the microdosing technology by the end of 2012.

Researchers are looking at packaging the correct dose of fertilizer and exploring the use of seed coating and an animal-drawn mechanized planter as options in collaboration with other institutions.

Partners
NARS, farmer organizations, NGOs, FAO, local agricultural centers, a network of international donors, CORAF/WECARD, USAID, AGRA.