

# IMPROVEMENT OF CROP PRODUCTIVITY (IVC/5/025) D1 New

## MODEL PROJECT

### CORE FINANCING

YEAR	Experts		Group Activity	Equipment	Fellowships		Scientific Visits		Group Training	Sub-Contracts	Misc. Comp.	TOTAL
	m/d	US \$	US \$	US \$	m/d	US \$	m/d	US \$	US \$	US \$	US \$	US \$
1999	1/0	14,700	0	20,000	9/0	31,050	0/15	5,400	0	15,000	0	86,150
2000	1/7	19,055	0	35,000	3/0	10,800	0/15	5,700	0	15,000	0	85,555
2001	1/0	16,200	0	40,000	3/0	11,250	0/15	6,000	0	10,000	0	83,450
2002	1/0	16,950	0	20,000	3/0	11,700	0/0	0	0	10,000	0	58,650

First Year Approved: 1999

**OBJECTIVES:** To increase and sustain the fertility of sandy soils through the establishment of nitrogen fixing plants in tree crop plantations and to evaluate, in demonstration plots, the increased productivity of coconut palm growing together with nitrogen fixing trees.

**BACKGROUND:** Agricultural production is the mainstay of the Ivorian economy, employing approximately 80% of the national labour force and contributing over 35% to the GDP. Cocoa, coffee and coconut palm account for more than 50% of export revenue, making the economy dependent on international price fluctuations. Current production levels are low. This is mainly due to low soil fertility, particularly to nitrogen deficiency in the sandy soils predominant in the littoral areas. Chemical fertilizers can be used to improve soil fertility and increase crop yields but they are too expensive for most farmers. Previous TC projects have indicated that the integration of nitrogen fixing plants into cropping systems could significantly decrease the need for imports of chemical fertilizers and increase crop production, with several economic and environmental advantages. Since 1987, the Agency has been assisting the Institute of Forestry (IDEFOR) in the use of isotope techniques for studies on biological nitrogen fixation (BNF) by leguminous trees grown in coconut palm plantations, to develop methods for increasing the fertility of sandy soils. These studies have shown that the productivity of coconut palms could be increased at least fivefold through the introduction of new agricultural practices based on the establishment of leguminous trees. Further assistance was requested in 1994 to select and evaluate leguminous plants for cropping with trees of great economic importance such as coffee, cocoa and coconut palm, and promising leguminous trees have been selected. This project addresses a priority area identified in the CPF.

**PROJECT PLAN:** IDEFOR and the extension service of the Ministry of Agriculture will collaborate at all stages of the project. During the first year, experiments will be carried out at four selected locations under different agro-ecological conditions, using N-15 labelled fertilizer and monitoring soil water content with a neutron probe, and will involve both IDEFOR and extension personnel, who will be trained as necessary. During the second year, pilot trials will be set up to demonstrate the benefits of using leguminous trees. Such trials will be continued during the third and fourth years in order to enable small farmers to integrate selected nitrogen fixing trees into their agricultural practices.

**NATIONAL COMMITMENT:** Appropriate staff; infrastructure and operational budget.

**AGENCY INPUT:** Expert services in BNF in leguminous tree-plant studies and nitrogen turnover in cropping systems; N-15 labelled fertilizers; training in N-15 analysis, soil moisture neutron probe utilization and BNF for annual and perennial legume crops.

**PROJECT IMPACT:** The integration of selected nitrogen fixing trees into small scale farms will supplement limited available and expensive commercial nitrogen fertilizer and contribute significantly to maintaining soil fertility and increasing crop yields. Improvements in the small scale farming sector will lead to economic and environmental benefits nationwide.