

Farmers' personal irrigated Sawah systems to realize green revolution and Africa's rice potential
 Wakatsuki, Buri, Bam, Oladele and Admiluyi

June 99, JICA Sawah project Aug 09
JIRCAS site

African farmers can develop their personal irrigated sawah systems by themselves to realize green revolution and Africa's rice potential

Aug 00 Jan 10

(1) Skills for Site Selection and *Sawah* system design

a) Water sources & quality: (>10 L/s, >5 months/year)
 Stream/River, Spring, Seepage, Flood, Rain-fed

b) Topography and soil
 Ongoing & potential rice area >10ha, Slope <1-2%, surface roughness, Soil texture, Soil fertility

c) Socio-economics
 Strong will, Market access, to road access in case of demonstration
 Land tenure, Secured lent

d) *Sawah* system design
Sawah layout and total potential area
Shape & sawah size
 Water intake, distribution using canal
 Spring & sawah to sawah, and diversion canal
 Stream/seepage
 Simple dyke & diversion canal
 Weir and Canal
 Fish pond, dam lake
 Pump irrigation
 Interceptor canal, Contour bund system
 Flood control by drainage or dam
 Drought control by pond/water-harvest
Soil movement and quality of leveling
Bund layout and quality

Collaboration between farmers & scientists, engineers, and extension officer

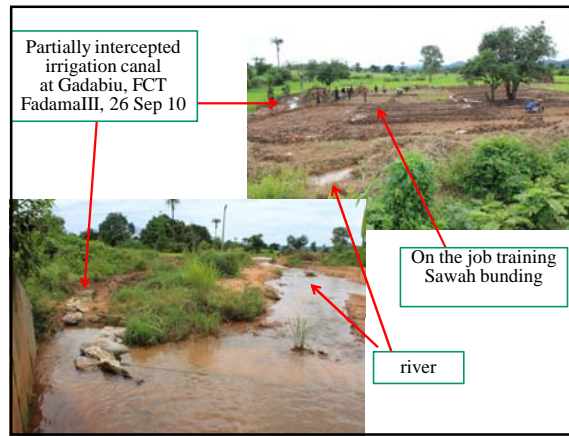
Farmers know site specific hydrological conditions which are the most important for site selection

Sand bag and Wooden Weir, because of farmers' self-support management (1999)





Sand bag weir by farmers and SRI Sawah team, Aug.2009, Nsutem, Ghana



Partially intercepted irrigation canal at Gadabiu, FCT Fadama III, 26 Sep 10

On the job training Sawah bunding

river



Fadama III Sawah Demonstration site, 40km south from gwagwalada along Abuja Lokoja road, Upper 25 Feb 2011, Lower 2 May 2010



Restoration measure destroyed by IVRDP to connect spring water and sawah by irrigation canal and syphon pipes at Adugyama, Mr. Tawiah's site, August 2011



Restoration measure to connect spring water and sawah by irrigation canal and syphon pipes, August 2011

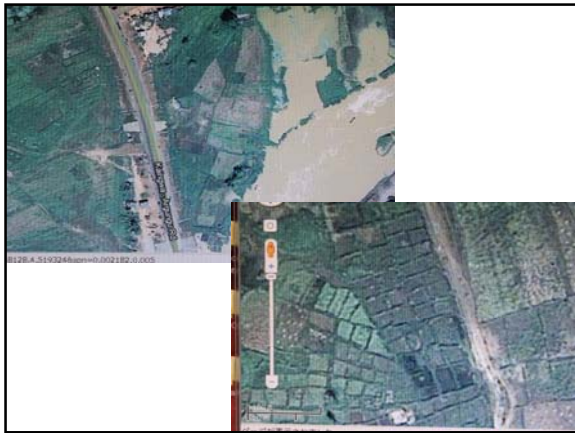
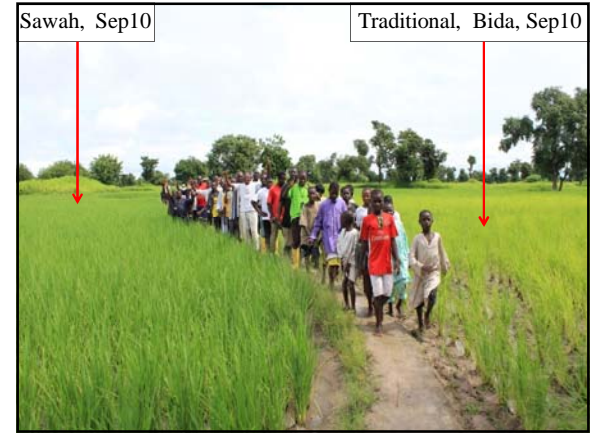
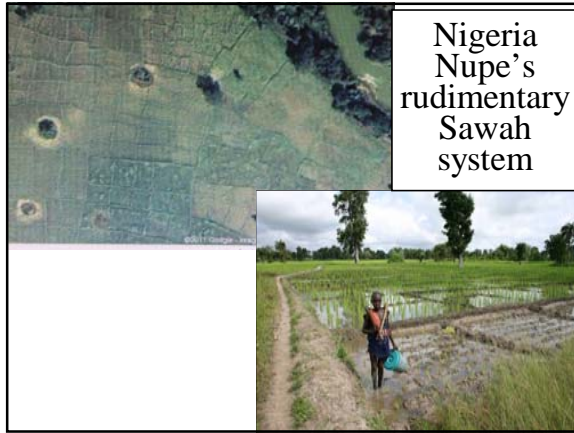
Just before IVRDP destruction: Rice growing at Mr. Tawiah's sawah to secure 5t/ha, 2009

The same site of the left, August 2011: After the destruction by IVRDP: Without restore the bunding, leveling and proper irrigation, yield will be <3t/ha

PROJECT: NILE VALLEY WATER CONTROL & IRRIGATION (NILE VALLEY)
 CONSTRUCTION OF WATER MANAGEMENT INFRASTRUCTURE AT ADUGYAMA VALLEY
 PROJECT NUMBER: P/03/01/20080
 FUNDING AGENCY: AFRICAN DEVELOPMENT BANK
 CONTRACTOR: SUNGA GHANA LTD
 CONSULTANT: NILE/CARDS CONSULT



Mr. Tawiah trained another farmer to develop 3ha of sawah using small spring water source. Only local farmers know such water source.



Jega, farmers rice fields: 3 September 2011



Kebbi, Jega demonstration site, Farmers' fields: 3 May 2011



(2) Efficient and Low cost sawah Development: Skill & Technology

(a) Skills for development
 Skill for power-tiller operations
 Plowing and Puddling
 Soil Moving
 Surface leveling & smoothing
 Powertiller management

(b) Cost
 Power-tiller for development (10ha /power tiller)
 Power-tiller spare parts
 Fuel for development
 Bush clearing, destumping
 Bunding and surface treatment
 Canal construction
 Additional hired labors
 Tools and materials
 Scientist & engineers cost
 Extension officer cost
 Farmers' training cost

Innovative Action research & on-the-job training on site- specific sawah development & management

Sawah development: at least 10ha per one Power-tiller

Target cost: \$1000-3000/ha

Target speed of development: >3ha/year /powertiller





(4) Sawah based rice farming

Management of water control facilities:
 water sources, intakes, and distributions
 water equity and canal management
 Sawah water control: Leveling, smoothing
 Bunding, Puddling skills
 Nursery and trans-planting
 Weed, pests, and birds management
 Carbon sequestration and organic matter
 management
 Fertilization and nutrient management
 Variety election

Yield target
 Cost effective *sawah* based farming
 Mono, two, double, & other cropping
 Advanced *sawah*-based farming

Target: Sustainable sawah development through the Income Increase

Income= (Sustainable Yield) x (Cultivation area)

(1) Immediate target: >20ton paddy/year/powertiller
 Paddy yield >4t/ha and Sawah area >5ha
 Total paddy selling price=\$10,000
 Powertiller cost=\$5000, 5-7 years use
 Yearly cost=\$1000(\$700)+\$200parts+\$500runing

(2) Accelerate target: >50t paddy/year/powertiller
 Paddy yield >4t/ha & Sawah area >10ha, or >5ha
 double cropping
 Total paddy selling price =\$25,000
 Powertiller cost=\$5000, 5-7 years use
 Yearly cost=\$1000(\$700)+\$200parts+\$1,000runing

(3) Basic research both on sustainable paddy
 yield increase, such as >10t/ha, and to increase the
 speed of sawah development, >5ha/year, are important

Minimization of outside funds is key for sustainable and endogenous development :

farmers to farmers technology transfer sites >>
 sites of extension officers >
 researchers' demonstration sites