ACHIEVEMENTS OF SAWAH ECO-TECHNOLOGY PROGRAMME IN NIGERIA

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The Sawah system is the basic infrastructure for intensive and sustainable rice production for rice farmers (Kebbi 1st year 2011)

The term "Sawah Technology" is innovative technology originated from Nigerian, Ghanaian, Japanese Sawah team and farmers, which refers to the farmer based mechanized development and production of rice in lowlands through an improved method of maximum utilization of naturally occurring water in these areas to obtain an improved yield and more acrage for rice cultivation compared to any other existing method of rice area development and production.

Table. Research, technology development, innovation and dissemination in the area of eco-technology are just emerging. Agriculture needs Good Environments and Good Varieties. Both Biotechnology and Ecotechnology have to be researched, developed and innovated in good balance

Bio-technology :

To improve varieties through breeding, i.e., Genetic improvement. Target is DNA improvement.

Operational platform is Cell of organisms

Eco-technology :

To improve growing ecology through sawah research, i.e., Improvement of water cycling and soil condition.

Target is soil and water. Operational platform is sawah in watersheds.

THE GENESIS

- Sawah concept was introduced to Nigeria through typical On-farm Demonstration studies at Gara in 1986, Gadza in 1987 and Ejeti 2001 all in Bida area of Niger State.
- The initial research efforts were not adopted due to low level of innovation and interaction with the farmers.
- Nigerian Researchers were invited to Ghana Sawah sites for observation and replication in Nigeria, this led to another on-farm research and demonstration at Ejeti, Bida area in 2001.
- The success of this activities led to the innovative adoption of the technology in the demonstration site from where further research activities were carried out and dissemination activities started in earnest.

- In the year 2005, a team of researchers visited NCAM from IITA, Ibadan and NCRI, Badeggi. This visit was the point of introduction of Sawah Technology to NCAM.
- Following this visit, invitation for collaboration with NCAM researchers resulted in the involvement of Engr. Ademiluyi Y. S. in several research projects of Sawah in Badeggi in line with the first mandate of the Centre.

Collaborative research in machinery application

The success of this embryonic collaborative research activities led to the involvement of some of NCAM Researchers in Capacity Building Research program sponsored by the Japanese government between 2007 and 2009 in several hosting Institutions in Ghana and Nigeria.

The 2009 Capacity Building Program was hosted by the National Cereal Research Institute (NCRI), Badeggi in September, 2009. The training team visited Dr. Ademiluyi's Sawah Research farm at Elerinjare and paid a courtesy visit to the then Ag. Executive Director who was barely two months in Office.

Following this, the principal researcher of Sawah Technology for Africa, Prof. Wakatsuki Toshiyuki of then Kinki University (now Shimane University) Japan visited NCAM on 23rd of September, 2009 to propose collaboration between NCAM and Kinki University, Japan towards extension, projection and further innovation of Sawah Technology.

Executive Director with Wakatsuki

Wakatsuki Signing the Agric. Engineering Hall of Fame Register

COLLABORATIONS

The NCAM-hosted Sawah Eco-technology project in the past years has entered into collaboration with different organization such as:

- Third National Fadama Development Project (Fadama III).
- Soil Research Institute (SRI), Kumasi, Ghana.
- International Cooperation Centre for Agricultural Education (ICCAE).
- SMART, Sawah, market access and rice technology,

  of Africa rice

Collaborations cont'd

- Shimane University, Matsue, Japan
- Nagoya University, Nagoya, Japan
- Commercial Agricultural Development Project (CADP)
- Ekiti State ADP
- Kwara State Fadama II
- United Nations University – Institute for Sustainability and Peace (UNU-ISP)
- Osun State Quick Impact Intervention Program (QIIP)
- Some private farms.

for training and dissemination activities.

Collaborative Activities

In pursuance of the terms of the various MOUs, the following activities have been carried out:

- Donation of 40 sets of power tillers to deserving farmers groups that adopt the technology(NCAM/KINKI Univ)

The Centre hosted the Japan Capacity Building Program (JCBP) for young African researchers in September, 2010. The JCBP was organized by the International Cooperation Centre for Agricultural Education (ICCAE), Nagoya University, JAPAN

PARTICIPANTS AT THE NAGOYA TRAINING IN 2010

INTRODUCTORY TRAINING-OF-TRAINERS

A workshop and Train-the-Trainers Conference was organized for Fadama III Facilitators from the selected states by NCAM, Ilorin between October 24 and 30, 2010.

PARTICIPANTS AT THE TOT

ON-THE-JOB CAPACITY BUILDING FOR CADP TRAINERS AND COMMERCIAL FARMER UNDER UNU-ISP, JAPAN

A capacity building training programme was organized by NCAM between 15th October and 5th November, 2012 for CADP facilitator

and selected Commercial farmers under United Nations program. The said training was also used to sensitized farmers and encourage them to practice sawah eco-technology by using their farm of about 2 ha as demonstration and dissemination field

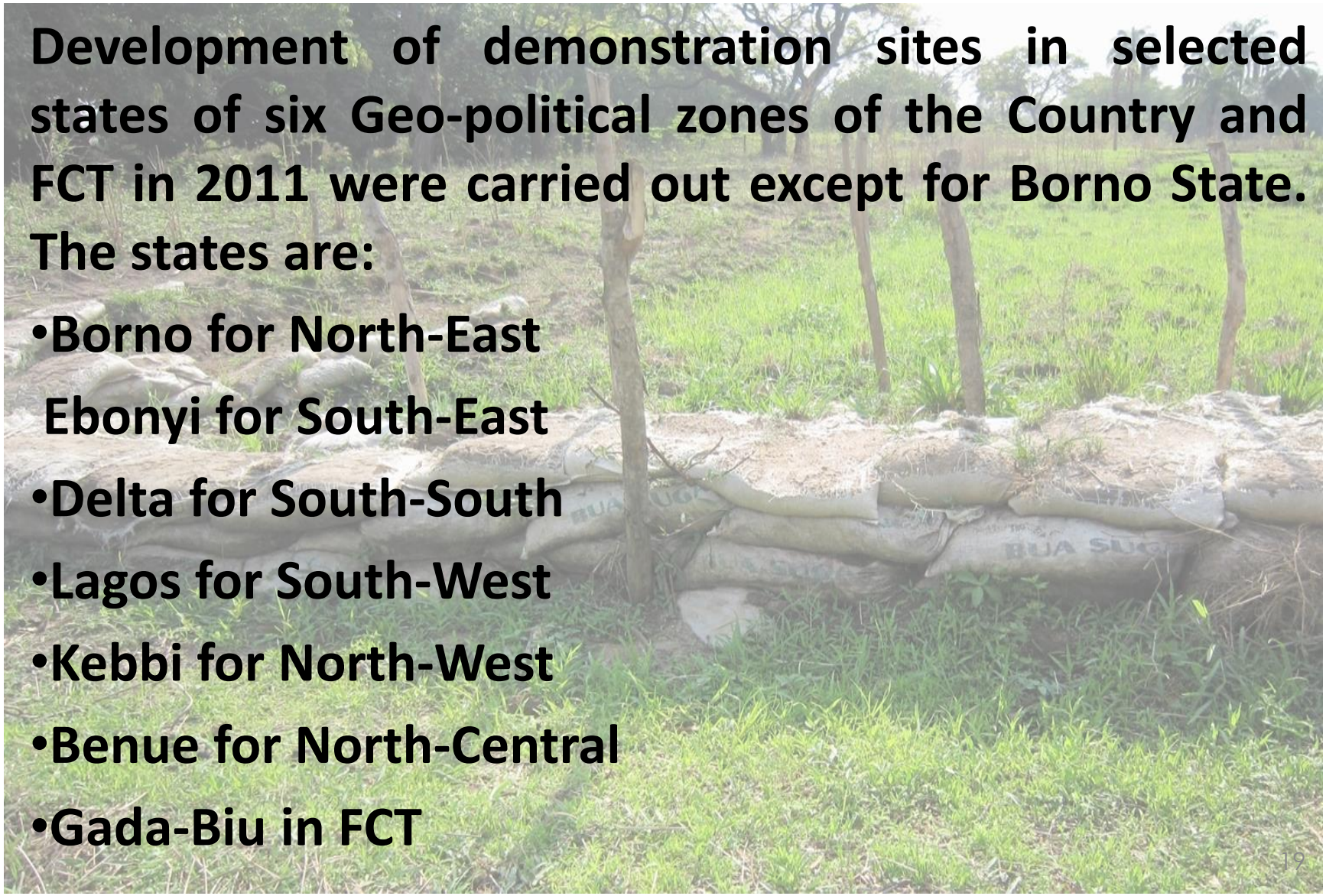
PARTICIPANTS AT THE OJCB

COMMUNITY DRIVEN DEVELOPMENT AND DISSEMINATION OF ADOPTIVE SAWAH ECO-TECHNOLOGY

A capacity building training programme was organized for trainees from State Fadama III by NCAM between 3rd October and 2nd November, 2012.

PARTICIPANTS AT THE CDDD TRAINING

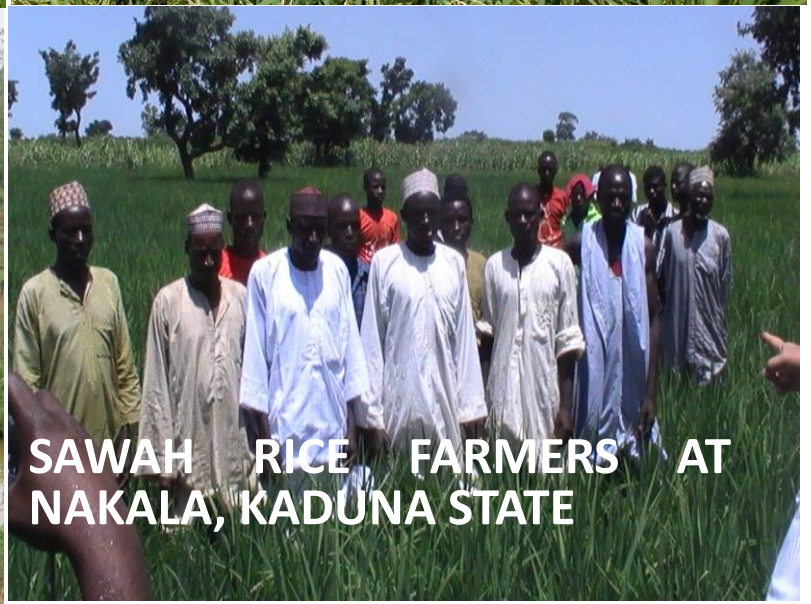
DEMONSTRATION AND EXTENSION



Development of demonstration sites in selected states of six Geo-political zones of the Country and FCT in 2011 were carried out except for Borno State. The states are:

- **Borno for North-East**
  Ebonyi for South-East
- **Delta for South-South**
- **Lagos for South-West**
- **Kebbi for North-West**
- **Benue for North-Central**
- **Gada-Biu in FCT**

SAMPLE DEVELOPMENT SITES



Training on topo-survey NCAM

Bida, Shabamaliki

On the job training

Powertiller sinking

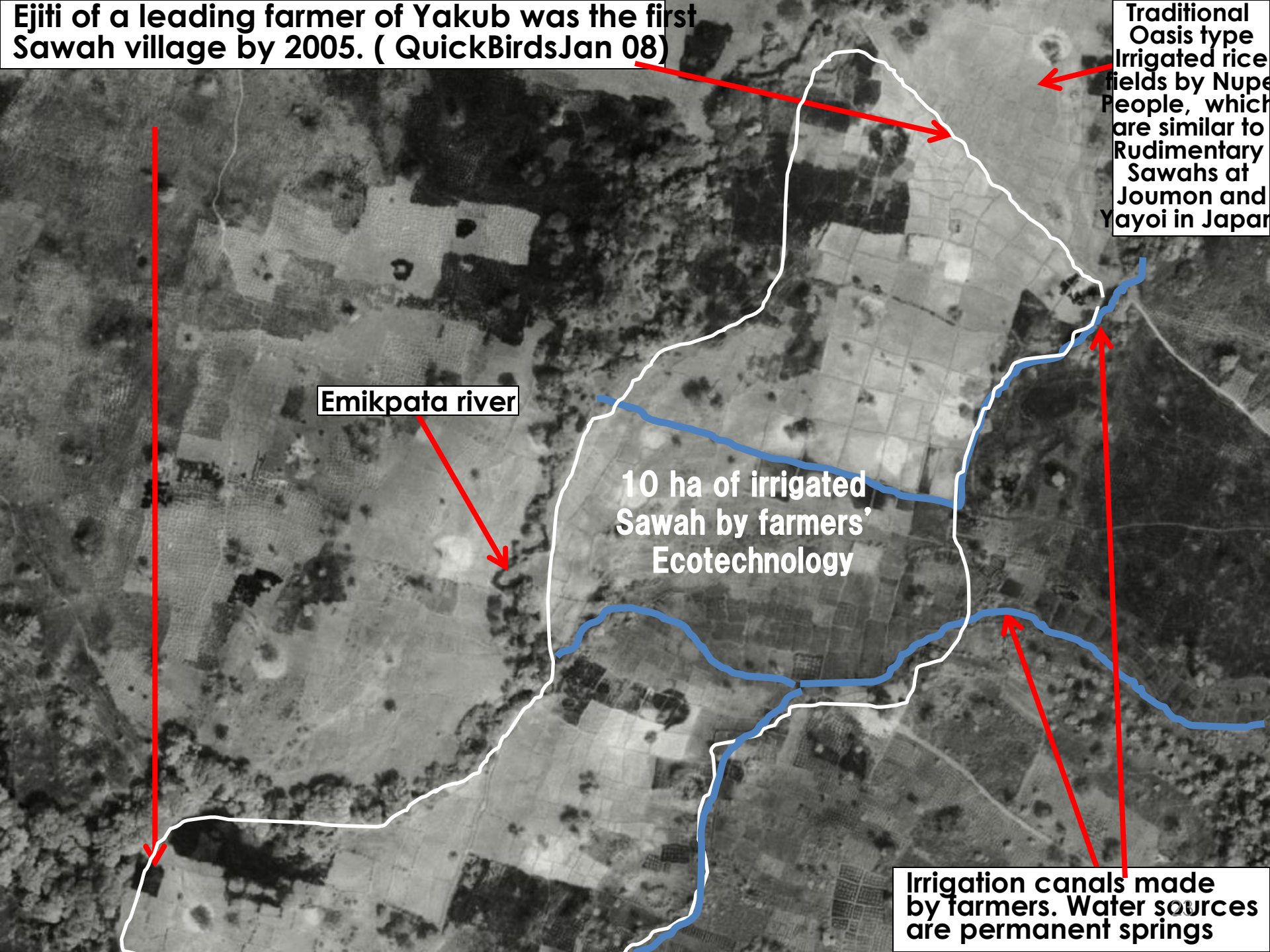
Bida, Shabamaliki

Soil and Wooden Weir, because of farmers' self-support

Farmers' to farmers technology transfer

On the job sawah ecotechnlogy training including PhD program, NCAM

On-The-Job training: Sawah, Fadama, ADP staffs and farmers


Ejiti of a leading farmer of Yakub was the first Sawah village by 2005. (QuickBirdsJan 08)
Traditional Oasis type Irrigated rice fields by Nupe People, which are similar to Rudimentary Sawahs at Joumon and Yayoi in Japan
Emikpata river
10 ha of irrigated Sawah by farmers' Ecotechnology
Irrigation canals made by farmers. Water sources are permanent springs

CURRENT CLASSIFICATION OF SELECTED STATES

- **(A.) FARMERS TO FARMERS**
- KEBBI AND NIGER
- **(B.)EXTENSION**
- EBONYI,KWARA,ONDO,EKITI AND BENUE
- **(C.)DEMONSTRATED**
- DELTA,LAGOS,OGUN,FCT AND ANAMBRA
- **(D.)NEW SITE WITH POSSIBLE BIG POTENTIAL**
- KOGI, OSUN, SOKOTO,CROSS-RIVER,NASARAWA,ZAMFARA,AKWA-IBOM,IMO,ENUGU
- **(E.)NEW DEMONSTRATION STATES**
- GOMBE,BAYELSA, JIGAWA, TARABA,OYO, ADAMAWA


EBONYI STATE FADAMA CO-ORDINATING OFFICE
Invite U For
ONE DAY FARMERS FIELD DAY
ON RICE SAWAH TECHNOLOGY
Date: Monday 14th Nov., 2011
Venue: Ebonyi State Fadama III Demonstration Plot On Sawah Rice Technology,
Omege Okpuitumo / By Omege Filling Station, Abakaliki LGA.
Time: 11am Dot.
ESFACO: Empowering Fadama Communities For Profitable Farming


EBONYI STATE FADAMA III PROJECT
(WORLD BANK ASSISTED)

Oasis type pump irrigated rice and vegetable fields. Poor water use efficiency and weedy rice field before Sawah technology applied at Kebbi, Nigeria

Kebbi, Arugung demonstration site, Sawah fields: 3 September 2011

Upper Makurdi, Benue
Lower, Asaba, Delta

Nupe village of Sheshi Bikum: 3 ha of sawah was developed in three months in 2010 using one powertiller of sawah project. Paddy production was about 13 ton, which is equivalent to $5000. Sawah farmers group bought additional power tiller of $3000. Sawah area expanded to 35ha by January 2012.

On the job training has expanded to the staffs of AfricaRice, Togo and Benin on various (Afari, Ghana, Nov.2011)

International workshop on sustainable sawah development by farmers' self-support efforts (SERIF) was organized at Kumasi, Ghana in collaboration with Agric. ministries of Ghana & Nigeria, JIRCAS-Japan, AfricaRice and our Sawah project. Now leading farmers can develop 5-10ha of new sawah fields within 1-3 years and produce 20-50 ton of paddy per year using one power tiller (Nov. 2011)

SALIENT ACHIEVEMENT

- Positioning the Centre in improving rice mechanization in the country.
- Sawah has encouraged and engaged in adaptive and innovative research towards the development of indigenous technologies for rice farming in Nigerian Lowlands, River basin and flood plains (Fadama areas) in Nigeria.
- Sawah has brought into focus mechanical, agricultural and eco-technologies developed by Shimane/Kinki University, Japan, and evaluated their suitability for adoption in Nigeria.
- The sawah eco-technology can evolve further through additional innovations by researchers, extension officers and rice farmers in Nigeria

- Sawah Project is presently assisting in the commercialization of proven machines (Power Tiller and coupled implement) and lowland rice production techniques in the Country;
- It has disseminated information on methods and programmes for achieving speedy and sustainable agricultural mechanization for rice farming
- It has provided training facilities by organizing courses and seminars specially designed to ensure sufficiently trained manpower for appropriate mechanization of lowland rice farming.
- If sawah area development reach to 25-50 ha and 100-200 ton of annual paddy production, the farmers can use harvester economically, which give market competitive paddy production without stone

ALL THESE ARE THE FULFILMENT OF THE CENTRE'S MANDATE AS A GOVERNMENT PARASTATAL

IMPACT ON FARMERS and NATIONAL ECONOMY

- Rekindling the spirit of rice farmers in the profitability of rice farming
- Sensitization of farmers towards Sawah Eco-technology and Rice Farming
- Appreciation of eco-technological concepts of field layout, bunding, levelling and agronomic concept of transplanting for effective water management by adoptee farmers
- Capacity building of Fadama III facilitators and leading farmers in the selected sites.

- **Increasing average paddy yield threshold of rice farmers in participating localities. (e.g. 6.5 t/ha and 7.2 t/ha in Ebonyi and Kebbi states respectively).**
- **Sawah, as at today, is a household name among rice stakeholders.**
- **The Minister-of-State for Agriculture have seen it as the surest way to the Rice Transformation Agenda in the Agricultural Transformation Agenda**

Table Distribution of lowlands and potential irrigated sawah in Nigeria and SSA (Hekstra, Andriesse, Windmeijer 1993, Potential Sawah area estimate by Wakatsuki 2002,2012)

Classification	Area (million ha)	Area for potential irrigated sawah development
Coastal swamps	17	4-9 millon ha (25-50%)
Inland basins	108	1-5 million ha (1-5%)
Flood plains	30	8-15 million ha(25-50%)
Inland valleys	85	9-20 million ha(10-25%)

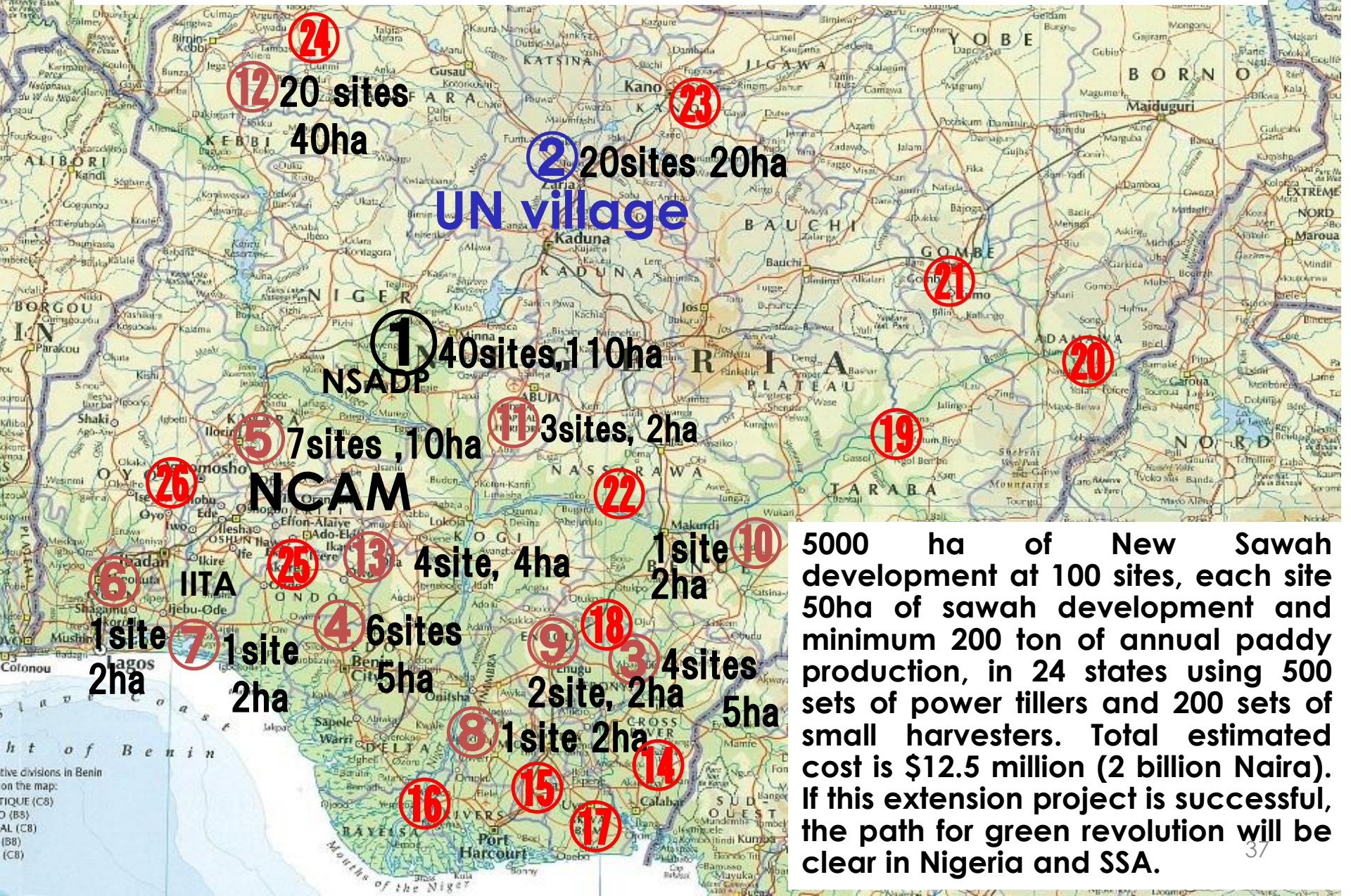
Note 1. Although priority target is the inland valley because of easier water control, some flood plains can be high priority, such as Sokoto, Kebbi, Jigawa, Yobe and Borno where personal pump irrigated sawah is efficient

Note 2. Estimated potential sawah area is 3million ha (annual paddy production 12 million ton) in Nigeria and 20 million ha in Sub Saharan Africa (SSA). Estimated area came from the relative amount of water cycle in monsoon Asia, which has 130 million ha sawah. However, if innovative technology will be developed, 5 and 50 million ha of sawah can be developed in Nigerian and SSA, respectively, in future.

①: Long term basic action research site during 1986-2008

②—⑬: New demonstration site conducted during 2009 -2011

⑭—㉖ : New extension sites proposed to FMA and RD,Nigeria



5000 ha of New Sawah development at 100 sites, each site 50ha of sawah development and minimum 200 ton of annual paddy production, in 24 states using 500 sets of power tillers and 200 sets of small harvesters. Total estimated cost is $12.5 million (2 billion Naira). If this extension project is successful, the path for green revolution will be clear in Nigeria and SSA.

CONCLUSION

Research and innovation are still on-going in various areas of Sawah Eco-technology aimed at improving rice yields and attaining sustainable green revolution in rice production.

APPRECIATION

We thank the Honourable Minister of Agriculture and his team for the opportunity granted to present the brief on the achievement so far of the success story of NCAM led SAWAH Eco-technology and rice farming in collaboration with Kinki University, Japan which is the surest way to rice transformation in the Agricultural Transformation Agenda of this present administration.


THANK YOU ALL!
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