

ENHANCING THE TRANSFER AND COMMERCIALIZATION OF
AGRICULTURAL TECHNOLOGIES IN NIGERIA

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RRA Survey Report on the South West Zone of Nigeria, prepared for
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LIST OF ABBREVIATIONS

ACGSF – AGRICULTURAL CREDIT GUARANTEE SCHEME
FUND

ADPS – AGRICULTURAL DEVELOPMENT PROJECTS

AMREC – AGRICULTURAL MEDIA RESOURCES AND
EXTENSION CENTRE

CRIN – COCOA RESEARCH INSTITUTE OF NIGERIA

CBN – CENTRAL BANK OF NIGERIA

FACU – FEDERAL AGRICULTURAL COORDINATING UNIT

FRIN – FORESTRY RESEARCH INSTITUTE OF NIGERIA

FIIRO – FEDERAL INSTITUTE OF INDUSTRIAL RESEARCH,
OSHODI

IARCs – INTERNATIONAL AGRICULTURAL RESEARCH
CENTRES

IAR & T – INSTITUTE OF AGRICULTURAL RESEARCH
AND TRAINING

IITA – INTERNATIONAL INSTITUTE OF TROPICAL
AGRICULTURE

ILRI – INTERNATIONAL LIVESTOCK RESEARCH
INSTITUTE

LGA – LOCAL GOVERNMENT AREA

NACB – NIGERIAN AGRICULTURAL AND COOPERATIVE
BANK

NAIC – NIGERIAN AGRICULTURAL INSURANCE
COMPANY

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NARS – NATIONAL AGRICULTURAL RESEARCH SYSTEM

NARIs – NATIONAL AGRICULTURAL RESEARCH
INSTITUTES

NAERLS – NATIONAL AGRICULTURAL EXTENSION AND
RESEARCH LIAISON SERVICES

NIOMR – NIGERIAN INSTITUTE OF OCEANOGRAPHY AND
MARINE RESEARCH

NIFOR – NATIONAL INSTITUTE FOR OIL PALM
RESEARCH

✓
NIHORT – NATIONAL HORTICULTURAL RESEARCH
INSTITUTE

PCU – PROJECTS COORDINATING UNIT

PBN – PEOPLES BANK OF NIGERIA

RRA – RAPID RURAL APPRAISAL

SAP – STRUCTURAL ADJUSTMENT PROGRAMME

SMSs – SUBJECT MATTER SPECIALISTS

RRIN – RUBBER RESEARCH INSTITUTE OF NIGERIA

SWZ- SOUTH WEST ZONE

UAE – UNIFIED AGRICULTURAL EXTENSION

VEA – VILLAGE EXTENSION AGENT

EXECUTIVE SUMMARY

RRA Inquiry	KEY RESPONSES **
Dry Season crops	Vegetables (75%)
Wet season crops	Maize (100%), Cassava (100%), Yam (75%)
Off-farm activities	Tailoring (42%), Bricklaying (42%), Carpentry (42%)
Existing cooperatives	Credit and thrift (83%)
Preferred cooperative types	Credit and thrift (100%), Input procurement (67%), labour supply (58%), Agro-processing (58%)
Usual sources of farm credit	Cooperatives (75%), family/friends (75%)
Uses of farm credit	Land clearing (100%), fertilizers (75%), Ridging (58%), improved seeds (58%)
Agro-credit constraints	Banks' collateral requirements (67%), Banks' high interest rates (67%) and Inadequate amount of cooperative credit (58%)
Production constraints	Scarcity of cash for inputs (92%) Scarcity of fertilizers (75%) High cost of fertilizers (100%) High cost of labour (92%) High cost of agro-chemicals (75%) Insect pests and weeds (58%) Lack of crop storage facilities (67%)
Marketing constraints	Perishability of produce (100%) Poor producer prices (83%) High transport costs (67%)
Sample of raw materials Processed	Rice, maize, palm fruits, cashew nut
Equipment most successfully demonstrated to farmers	Cassava grater (92%), Cassava press (83%) Gari drier/fryer (75%), maize thresher (67%)
Equipment not yet widely demonstrated to farmers	Cassava chipping machine (16%), Soybean thresher (25%), Palm oil digester (16%), Palm kernel craker (8%), rice thresher (8%)

RRA Inquiry	Zonal description/response
Rice processing constraints	<p>Low domestic demand for locally processed products</p> <p>High equipment maintenance costs</p> <p>Lack of credit for equipment purchase</p>
Cassava processing constraints	<p>Low domestic demand for locally processed products</p> <p>Low foreign demand for processed products</p> <p>Difficulty of preserving processed products</p> <p>High equipment maintenance costs</p> <p>Lack of processing equipment</p> <p>Lack of credit for raw materials</p> <p>Lack of credit for equipment purchase</p>
Palm fruits processing constraints	<p>Inadequate raw materials</p> <p>High equipment maintenance costs</p> <p>Scarcity of equipment spare parts</p> <p>Lack of processing equipment</p> <p>Lack of credit for equipment purchase</p>
Cashew processing constraints	<p>Low domestic demand for locally processed products</p> <p>Low foreign demand for processed products</p> <p>Difficulty of preserving processed products</p> <p>High cost of packaging processed nuts</p>

** % of affirmative responses to each class of inquiry are shown in the brackets (where applicable)

I. OVERVIEW OF SOUTH WEST ZONE OF NIGERIA

Table 1 presents a summary of the key demographic, socio-economic and ecological features of the south west zone (SWZ) of Nigeria.

Table 1 : Major Characteristics of the South West Zone, Nigeria

HARACTERISTICS	DESCRIPTION OR VALUE
A. Demographic Features	
1. Location	Latitude 5° N and 9° N
2. States in Zone	Delta, Edo, Ekiti, Lagos, Ogun, Ondo, Osun and Oyo
3. (a) Area	114,271 km ²
(b) % of total occupied	12%
4. Population (1991 census)	22.3 million
5. Average Pop. density	195 persons/km ²
6. % of Pop. in rural communities	65%
7. Mean annual rainfall	Zone: 1480mm Coastal areas : 2600mm Northern fringe : 1200mm
8. Rainfall pattern	Equatorial, with distinct wet and dry seasons
B. Ecological Features	
1. Drainage/River systems	Major : Ogun, Osun Minor : Oyan, Owena, Oni, Ogbesse and Osiomo
2. Vegetation (4 sub-ecologies)	Swamp mangrove forest Moist and dry lowland forest Derived Savanna Southern Guinea Savanna
3. Soil types	Fluvisol, Gleysol, Lixisol, Luvisol

Table 1 : Major Characteristics of the South West Zone, Nigeria --- cont'd

CHARACTERISTICS	DESCRIPTION OR VALUE
C. Socio-Economic Features	
1. Irrigation	Potential : 279,000 ha Actual : 77,000 ha (27%)
2. Agricultural Production/Census	Crop : Cassava, Yam, Maize, Melon, Okra, Tomato, Pepper, Coco-Yam, Plantain, Cocoa, Oil-Palm, Coffee, Rubber, Irish Potato, Cowpea, Soybeans, Kolanut Livestock: Cattle 0.4 million Sheep 2.6 million Goats 6.4 million Rabbits 0.4 million Pigs 0.9 million Poultry : Chickens 21.1 million Ducks 2.6 million Guinea fowls 0.3 million Turkeys 30,000
3. Average household size	7 persons
4. Occupation	Farming : Lagos <10%, Other states 60-70% Off-farm: trading, blacksmith, Tailoring, weaving, Dry-season fishing, etc.
5. Contribution to Agric GDP	15%
6. Average farm size	Forest 1.2 ha , Savanna 2.0 ha

Source : Anon.(1997)

II. POLICY AND INSTITUTIONAL FRAMEWORK

A. THE NATIONAL AGRICULTURAL RESEARCH SYSTEM (NARS)

The NARS consists of the National Agricultural Research Institutes (NARIs), Agricultural Universities, Agricultural faculties in Universities and the Agricultural Development Projects (ADPs). The International Agricultural Research Centres (IARCs) in the country collaborate very closely with the NARS.

Table 2 presents the list of the major institutions collaborating in the areas of agricultural research (on-station/on-farm) and extension in the SWZ. These consists of 8 NARIs, 2 IARCs, 8 state ADPs, 1 University of Agriculture, 8 federal and state Universities with faculties of Agriculture, two regional offices of the Federal Agricultural Coordinating Unit, FACU (now Projects Coordinating Unit, PCU) and the south west zonal station of the National Agricultural Extension and Research Liaison Services (NAERLS) of the Ahmadu Bello University, Zaria.

The ADPs, initially established with the World Bank assistance and counterpart funding by the federal and state governments, had responsibilities for adaptive research and technology transfer, in close collaboration with other zonal NARS. Under the recently adopted unified agricultural extension (UAE) system, a village extension agent (VEA), backed by subject matter specialists (SMSs), makes contact with the farmer on virtually all aspects of agricultural technologies. The UAE minimizes parallel or conflicting messages coming to the farmer.

Table 2 : Institutions in the SWZ Collaborating in Agricultural Research and Extension

NARIs	Full Name of Institution	Location	state
	Cocoa Research Institute of Nigeria	Ibadan	Oyo
	Forestry Research Institute of Nigeria	Ibadan	Oyo
	Federal Institute of Industrial Research	Oshodi	Lagos
	Institute for Agricultural Research & Training	Ibadan	Oyo
	Nigerian Institute for Oceanography and Marine Research	Lagos	Lagos
	National Institute for Oil Palm Research	Benin City	Edo
	National Horticultural Research Institute	Ibadan	Oyo
	Rubber Research Institute of Nigeria	Benin City	Edo
IARCs	International Institute of Tropical Agriculture	Ibadan (HQ)	Oyo
	International Livestock Research Institute	Ibadan (station)	Oyo

Universities	Full Name of Institution	Location	State
	University of Ibadan	Ibadan	Oyo
	Obafemi Awolowo University	Ile Ife	Osun
	University of Benin	Benin City	Edo
	Federal University of Technology	Akure	Ondo
	University of Agriculture	Abeokuta	Ogun
	Ladoke Akintola University of Technology +	Ogbomoso	Oyo
	Ogun State University +	Ago-Iwoye	Ogun
	Ambrose Alli University +	Ekpoma	Edo
	Delta State University +	Abraka	Delta

+ State Universities

Table 2 ----cont'd

ADPs & Related Zonal Offices	Full Name of Institution	Location or HQ	State
	Lagos state ADP	Lagos	Lagos
	Ogun state ADP	Abeokuta	Ogun
	Oyo state ADP	Ibadan	Oyo
	Osun state ADP	Iwo	Osun
	Ondo state ADP	Akure	Ondo
	Ekiti state ADP	Ikole	Ekiti
	Edo state ADP	Benin City	Edo
	Delta state ADP	Asaba	Delta
	Ibadan Regional Office, PCU	Ibadan	Oyo
	Benin Regional Office, PCU ++	Benin City	Edo
	South West Zonal Office, NAERLS	Ibadan	Oyo

++ Supervised the ADPs in the SWZ until late 2000 when the Ibadan Regional office was created.

B. AGRICULTURAL CREDIT SUPPORT

Smallholder farmers in Nigeria have shown limited chance of being able to adopt medium to high investment technologies in the absence of credit support. In recognition of this, government, especially through the Central Bank of Nigeria (CBN), have attempted to foster farm credit availability through various institutional arrangements. This have included the establishment of the Nigerian Agricultural and Cooperative Bank, NACB (1972), Agricultural Credit Guarantee Scheme Fund ,ACGSF (1977), the Nigerian Agricultural Insurance Corporation, NAIC (1988), Community Banks (1989) and Peoples Bank of Nigeria, PBN (1990).

Commercial banks were also compelled to give prescribed percentage of their total loan per annum to the agricultural sector. In spite of this and other related policy prescriptions, only an annual average of 8.3% of the

commercial bank's loan went to the agricultural sector during the 1970-92 period. This percentage improved somewhat to about 17.5% per annum during the 1993-98 period (CBN, 1998).

The ACGSF was especially established to operate through commercial and merchant banks for the enhancement of credit supply to the rural farm sector. The ACGSF until recently guaranteed credit up to 75% of the amount in default (a maximum of N100,000 to individuals and N1,000,000 to corporate or cooperative organizations). Recently approved limits were N500,000 to individuals and N5,000,000 to corporate and cooperative bodies (Usman, 2000).

Table 3 shows the amounts of agricultural loans guaranteed to different categories of borrowers in the SWZ in the year 1998. The SWZ benefited 13.6% of the nationally guaranteed agricultural loan. Within the zone, however, the major beneficiaries of loan guarantee were individual borrowers and corporate borrowers. Loan guarantee to cooperatives appear to be of low order.

Table 3 : Amount of Agricultural Loans Guaranteed to Different Categories of Borrowers, 1998 (N'000)

State	Individuals	Informal groups	Cooperatives	Company	Total
Delta	250.0	0	0	39.0	289.0
Edo	2814.0	0	0	0	2814.0
Ekiti	895.5	0	0	0	895.5
Lagos	5730.2	80.0	50.0	0	5860.0
Ogun	4304.0	0	0	2783.0	7087.0
Ondo	2998.0	0	0	200.0	3198.0
Osun	1533.0	0	0	0	1533.0
Oyo	5606.0	0	0	2000.0	7607.0
Total SWZ	24130.7	80.0	50.0	5022.0	29282.7
Nigeria	190305.2	1705.0	8960.0	14727.0	215697.2
% SWZ	12.7	4.7	0.6	34.1	13.6

Source : ACGSF Annual Report and Statement of Accounts, 1998

Table 4 shows the total amount of agricultural loans guaranteed during the 1978-98 period for different enterprises in Nigeria. These information, though not published on zonal basis, shows the relative emphasis of loan guarantee under the scheme.

Table 4: Cumulative Value of Agricultural Loans Guaranteed by the ACGSF, Nigeria, 1978-98 (N'000).

Enterprise	Amount	% of total
Livestock	350,001.9	17.8
Fisheries	36,670.6	1.9
Mixed farming	23,436.6	1.2
Food crops	1,356,555.1	69.0
Cash crops	100,437.6	5.1
Others	99,875.2	5.1
Total	1,966,985.0	100.0

Source : ACGSF Annual Report and Statement of Accounts, 1998

C. AGRICULTURAL INPUTS

Since the 1960s Government established institutions for the monopoly of crop and fertilizer marketing. Goals have varied from economic development, protection of national interest to price stabilization. The markets for agro-chemicals, tools and equipment, had been mostly dominated by private sector companies, most of which are subsidiaries of parent overseas companies. Because they are few in number in Nigeria, they (companies) have tended to operate like oligopolies and consequently charge relatively high prices.

Fertilizer supply had been monopolized historically by the federal Government of Nigeria. Until the mid-1970s, states individually decided the quantity and pricing of fertilizers. The results were consequential, namely inter-state price differentials arising from inter-state differences in stocks, and flourishing parallel fertilizer markets. In 1976, the federal Government centralized the procurement and distribution of fertilizers

required by states through the established Fertilizer Procurement and Distribution Division (FPDD).

Fertilizer supply policy in Nigeria has basically rested on domestic production and importation. The latter has been vulnerable to the vagaries of the Naira exchange rates, especially since the mid-1980s.

The structural adjustment program (SAP) which began in 1986 had far-reaching implications for both the input and output markets. The SAP was expected to raise import and domestic prices, discourage imports and stimulate domestic supply response. But, shortrun domestic constraints emerged, including high costs of imported inputs and equipment with limited access to local credit. Thus, farmers were unable to take advantage of the rise in domestic producer prices. And, there had been protracted shortfalls in the local supply of industrial raw materials. Most agro-industries operated at less than 40% of installed capacities since the SAP was introduced (Anon., 1997).

III HIGHLIGHTS OF FINDINGS

A. ZONAL AGRICULTURAL PRODUCTION

Schedule of RRA Visits to Farmers

Table 5 shows some details about the locations visited in respect of farmers and the number of farmers surveyed.

Table 5: Schedule of RRA Visits to Groups of Farmers

S/N	VILLAGE	LOCAL GOVT AREA	STATE	NO. OF FARMERS
1	Maya	Ibarapa East	Oyo	12
2	Lanlate	Ibarapa East	Oyo	60
3	Eruwa	Ibarapa East	Oyo	55
4	Akufo	Ido	Oyo	48
5	Iloro	Afijio	Oyo	23
6	Oluwaseyi/Leba	Akinyele	Oyo	21
7	Ajambata	Ewekoro	Ogun	60
8	Olugbo	Odeda	Ogun	120
9	Ode Remo	Remo North	Ogun	50
10	Olobi	Obafemi/Owode	Ogun	40
11	Ikenne	Ikenne	Ogun	31
12	Dega-Dobonre	Obafemi/Owode	Ogun	18

In Table 6 (a) – (d), key highlights are presented on the percentage response to different items of inquiry by the individual groups of farmers visited.

Table 6 (a) : Farm and Off-farm Activities of Farmers

RRA Inquiry	Zonal Description/Response	
Dry season	Crop	% Responding **
	Vegetables	75
	Tomato	17
	Pepper	33
	Okra	25
	Maize	42
Wet season	Maize	100
	Melon	33
	Tomato	33
	Okra	17
	Pepper	42
	Cassava	100
	Yam	75
	Cowpea	17
	Vegetables	42
	Sorghum	8
	Groundnut	8
	Soyabean	8
	Cocoyam	33

** Multiple responses allowed

Table 6 (a) ---- cont'd

RRA Inquiry	Zonal Description/Response	
Off-farm activities	Off-farm activity	% responding **
	Trading	16
	Vulcanizing	8
	Tailoring	42
	Vehicle repairing	16
	Motorcycle repairing	8
	Basket weaving	8
	Hunting	16
	Bricklaying	42
	Carpentry	42
	Barbing	8
	Driving	8

** Multiple responses allowed

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Table 6 (b) : Existing and Preferred Types of Cooperative Societies

RRA Inquiry	Zonal Description/Response		
	Coop. type	% membership **	% women
Existing cooperatives	Credit & Thrift	83	60-70
	Fadama (lowland)	8	50-60
	Agro-processing	16	36-100
	Input procurement	8	45-50
	Output marketing	8	45-50
Preferred cooperatives	Coop. type	% preferring **	
	Credit & Thrift	100	
	Input procurement	67	
	Labour supply	58	
	Agro-processing	58	
	Output marketing	33	
Fadama (lowland) use	33		

** Multiple responses allowed

Table 6 (c) : Sources and Uses of Farm Credit

RRA Inquiry	Zonal Description/Response	
Sources of credit	Source	% responding **
	Cooperatives	75
	Informal (friends/family)	75
	Bank	0
Uses of farm credit	Farm activity/input	% responding **
	Land clearing	100
	Ridging	58
	Weeding	50
	Improved seeds	58
	Fertilizers	75
	Agro-chemical	33
	Harvesting	8
	Produce marketing	8
Agro-credit constraints	Constraint	% responding **
	Collateral requirement (bank)	67
	High interest rate (bank)	67
	High interest rate (informal credit)	16
	Inadequate amount (Coop credit)	58
	Inadequate amount (informal Credit)	25
	Late release of loan (bank)	33

** Multiple responses allowed

Table 6 (d) : Constraints to Agricultural Production and marketing

RRA Inquiry	Zonal Description/Response	
Production	Constraints	% responding **
	Scarcity of cash for buying inputs	92
	Scarcity of improved seeds	42
	Scarcity of fertilizers	75
	High cost of fertilizers	100
	Scarcity of labour	42
	High cost of labour	92
	Scarcity of Agro-chemicals	42
	High cost of Agro-chemicals	75
	Insect pests and weeds	58
	Scarcity of land	17
	Inadequate water & rainfall distribution	50
	Lack of crop storage facilities	67
Marketing	Constraints	% responding **
	Perishability of produce	100
	Poor/lack of market access roads	50
	Poor producer prices	83
	Poorly developed village market	58
	Lack of credit for agro-processing	58
	High transport costs	67

** Multiple responses allowed

B. AGRO-PROCESSING ACTIVITIES IN THE SWZ

B.1 RRA Visits to Some Zonal Agro-Processors

Table 7: Schedule of RRA visits to Agro-processors

Name	Location	Year processing began	Status	Nature of business
Pastor B. Adenekan	Moloku Asipa, Obafemi/Owode LGA, Ogun state	1994	Individual	Rice processing
Iwajowa Women Group	Ilugun, Odeda LGA, Ogun state	1991	cooperative	Cassava processing
Victor Ekpetha	Okoro, Ogun state	1993	Individual	Palm fruit processing
Owolowo farmers group	Kegbo, Ijebu North LGA, Ogun state	1996	cooperative	Cassava processing
Cashew nuts processing Industries Ltd	Eleyele, Ido LGA, Oyo state	1990	Company	Cashew nut processing

Table 8 (a) : Raw materials and products of Agro-processing

RRA Inquiry	Zonal Description/Response
Raw materials and products	Rice – milled rice - rice bran Palm fruits – palm oil - palm kernels Cassava – Gari - flour - starch - chips Cashew nuts - nuts
Sources of raw materials	Rice – own farms and other farmers Palm fruits – own palms and other farmers Cassava tubers – cooperative members and other farmers Cashew - own farms and other farmers
Nature of arrangements for raw material procurement	Mostly informal, i.e. no written contract for either price or quantity between processors and farmers supplying raw materials

Table 8 (b) : Most urgent agro-processing constraints, based on the locations visited

RRA Inquiry	Zonal Description/Response
Rice processing constraints	<p>Low domestic demand for locally processed products</p> <p>High equipment maintenance costs</p> <p>Lack of credit for equipment purchase</p>
Cassava processing constraints	<p>Low domestic demand for locally processed products</p> <p>Low foreign demand for processed products</p> <p>Difficulty of preserving processed products</p> <p>High equipment maintenance costs</p> <p>Lack of processing equipment</p> <p>Lack of credit for raw materials</p> <p>Lack of credit for equipment purchase</p>
Palm fruits processing constraints	<p>Inadequate raw materials</p> <p>High equipment maintenance costs</p> <p>Scarcity of equipment spare parts</p> <p>Lack of processing equipment</p> <p>Lack of credit for equipment purchase</p>
Cashew processing constraints	<p>Low domestic demand for locally processed products</p> <p>Low foreign demand for processed products</p> <p>Difficulty of preserving processed products</p> <p>High cost of packaging processed nuts</p>

C. AGRO-PROCESSING EQUIPMENT SITUATION

Table 9 shows a sample of the available agro-processing equipment at IAR&T, Ibadan and NIFOR, Benin City.

Table 9 : Sample of agro-processing equipment fabricated in the SWZ

Organization	Machine/equipment	Power source	Capacity
IAR & T	1 Maize sheller	Manual	70kg/hr
	2 Maize sheller	5hp petrol/diesel engine	1000kg/hr
	3 Pepper grinder	manual	2.5lit./hr
	4 Soybean thresher	5hp petrol/diesel engine	300kg/hr
	5 Maize/cowpea sheller	5hp petrol/diesel engine	1000kg/hr
	6 Rice/millet/sorghum thresher	5hp petrol/diesel engine	500kg/hr
	7 Hammer mill	20hp electric motor	1000kg/hr
	8 Fruit juice extractor	5hp electric motor	250lit./hr
	9 Sunflower/groundnut oil extractor	10hp electric motor	250lit./hr
NIFOR	1 Small scale oil palm fruit processing equipment (SSPC)		
	2 Sterilizer		
	3 Horizontal digester		
	4 Hydraulic press		
	5 Screw press digester		

There is considerable progress in the development of agro-processing equipment by the NARIs. But, progress towards commercialization and multiplication has been slow. The NARIs have no explicit mandate to multiply or commercialize the machines/equipment they develop.

The small and medium enterprises (SMEs) which are expected to fulfill these roles are themselves constrained by poor awareness about the existing on-shelf technologies, poor capital base and low capacity to compete with foreign (imported) substitutes.

There is the added dimension that farmers are cash-constrained and therefore are unable to show effective demand for the locally made equipment. But there is strong indication that granted cash backing, farmers will adopt farm technologies once they are convinced of their relevance or usefulness. Table 10 illustrates this point to some extent.

Table 10: Equipment demonstration and adoption among farmers, SWZ

Equipment	% of farmers seeing equipment demonstrated	% of farmers using equipment
Cassava grater	92	75
Cassava press	83	58
Gari fryer/drier	75	50
Cassava chipping machine	16	0
Maize thresher	67	25
Soybean thresher	25	0
Palm oil digester	16	8
Palm kernel craker	8	0
Rice thresher	8	0
Vegetable slicer	8	0

D. TECHNOLOGY DEVELOPMENT AND TRANSFER

D.1 MANDATES OF NARIS AND IARCS IN THE SWZ

Table 11 shows the zonal NARIs, IARCs and some of their mandates.

Table 11 : Zonal NARIs , IARCs and some of their mandates

Organization	Year established	Key mandates
IAR & T	1969	Genetic improvement of maize, kenaf, jute, sisal hemp; fertilizer use and soil fertility research; technology transfer
NIHORT	1974	Tomato, okra, oranges, Pepper, amaranthus, pineapple, leafy vegetables, onion, pawpaw, guava, plantain; technology transfer
FRIN	1975	Forest, forest product utilization, agro-forestry, wildlife management ; technology transfer
CRIN	1964	Cocoa, coffee, kola, cashew, tea; technology transfer
NIFOR	1964	Oil palm, coconut, date palm, raffia palm; technology transfer
RRIN	1961	Rubber, rubber products, gum arabic; technology transfer
FIIRO	1956	Enhancement of foodstuff nutritional quality, development of fertilizer and biogas from industrial wastes, equipment design and fabrication; technology transfer
IITA	1967	Collaborates with NARIs for genetic improvement of maize, rice, cassava, cowpea, soybean, plantain; crop processing and utilization; technology transfer

D.2 TECHNOLOGIES AVAILABLE WITH NARIs, IARCs AND FARMERS

Table 12 presents samples of the technologies that have been developed by the NARIs and IARCs, many of which have been proven and released to the end users (farmers).

Table 12 : Samples of available technologies, SWZ

ORGANIZATION	Samples of Improved varieties
NIHORT	Citrus – Umudike, Etina, Valenta (late), Tangelo, Lemon, Agege-1 Okra – NH 47-4 , LD 88 – 12
CRIN	Cocoa – Amazon F3 Kola – AA231, AA86, AB15 (Red) - L47, L48 (White)
NIFOR	Oil palm – Tenera (hybrid)
IITA (Developed in collaboration with NARIs e.g. NRCRI, NCRI, IAR, IAR & T)	Cassava – TMS30572, TMS30555, TMS4(2)1425, MS 6, MS 20 Rice – ITA 306, ITA 150, ITA 315 Maize – Oba super 1, Oba super 2, TZSR, TZESR, TZPBSR, DMRLSR, DMRELSR, SUWAN 1

D.3 TECHNOLOGY TRANSFER

D.3.1 Principal Actors in Agro-Technology Transfer, SWZ

- State ADPs (8 states)
- PCU Regional offices (Benin City, Ibadan)
- Agricultural Extension units of NARIs
- Zonal office of NAERLS
- University of Agriculture Abeokuta's Agricultural Media Resources and Extension Centre (AMREC)

D.3.2 Transferred Technologies and Practices

Attempts were made in this RRA survey to assess the progress with technology transfer from the view points of both farmers and extension agencies. The totality of the emerging picture, as shown below, is that some progress has been made in terms of farm technology demonstration and subsequent farmer adoption. Table 13 illustrates this point.

Table 13: Sources of knowledge for selected farm technology and practices

Farm technology or practice	% of farmers knowing from extension services	% of farmers knowing from tradition
Improved seeds	100	0
Fertilizers	100	0
Agro-chemicals	92	8
Land clearing	16	84
Ridging	16	84
Weeding	33	67
Agro-processing	25	75
Harvesting	25	75
Crop storage	33	67

Source : RRA survey of farmers in 12 locations

Technology transfer progress as assessed by extension agencies is presented in Table 14. The adoption rates presented were orally volunteered, but drawing from each agency's long familiarity with each technology group or farm practice.

Table 14 : Technology adoption rates, as estimated by extension agencies, SWZ

Organization	Technology or practice	Year introduced	Estimated % adoption
Ogun state ADP	Crop varieties	1986	70
	Maize grain processing	1990	55
	Cassava tuber processing	1990	60
	Fertilizer application	1990	60
	Agro-chemical application	1990	60
	Grain drying	1994	40
	Crop storage methods	1993	45
	Fruit processing	1999	15
ARMEC (based on the centre's activities in Ogun and Oyo states)	Cassava tuber processing	1993	50
	Soybean processing	1995	50
	Fertilizer application	1991	40
	Livestock feed preservation	1996	80
	Crop storage methods	1994	60
	Fruit processing	1991	30

The above extension agencies have different target farmers, depending on the particular technology or practice in focus. Thus, direct comparison of the adoption rates between the agencies is not advised. Rather, what is intended as message is the success already achieved and the issues that needs future focus.

IV. RECOMMENDED ACTIONS/PROJECTS

The sets of projects recommended below for further actions by OAU/SAFGRAD-STRC are based on the noted constraints to direct farm production, agro-processing or marketing. The consultants are of the strong view that the projects will succeed best if tied to cooperatives or farmer groups, whether they are wholly males, females or mixed gender. This is to ensure cost-effective monitoring and evaluation. Also, depending on the spread and location of the projects eventually funded, we recommend that monitoring and supervisory roles be accorded Ogun state ADP, the SWZ office of NAERLS and AMREC of the University of Abeokuta. Details of institutional roles may be worked out later.

S/No	Project Title	Remarks
1	Village-level demonstration of post-harvest equipment to farmer associations	Candidate equipment to include : maize sheller, soybean thresher, combine maize/cowpea sheller, combine rice thresher, palm kernel craker, palm oil digester, Gari drier/fyer, cassava press, cassava chipping machine , fruit juice extractors.
2.	Village-level demonstration of food processing and storage methods to farmer groups	Candidate raw materials to include: maize, rice, palm fruits, soybean, cowpea, cassava, oranges, yam.
3.	Village-level loan-in-kind schemes for group ownership and management of post-harvest equipment	Candidate equipment to include : maize sheller, soybean thresher, combine maize/cowpea sheller, combine rice thresher, palm kernel craker, palm oil digester, Gari drier/fyer, cassava press, cassava chipping machine , fruit juice extractors (Cost recovery details to be worked out).

4.	Village-level loan-in-kind schemes for on-farm production by farmer groups	Candidate interventions to include : small petrol driven irrigation pumps, fertilizers, agro-chemicals and labour-saving machinery (cost recovery and sustainability details to be worked out).

It will be stressed that several projects are implied in the above four broad titles, depending on the decisions eventually taken on project spread among locations, groupings of raw materials and equipment.

ANNEXURE 1: LIST OF COPERATIVES AND CONTACT ADDRESSES

S/No	NAME OF COOP.	COOP. TYPE	COOP. ADDRESS
1+	Agbelere	Farmers coop.	Obada Oko
2+	Amusan	Farmers coop.	Amusan, Obafemi/Owode
3+	Imasayi	Multipurpose	Imasayi
4+	Ajiboyede	Multipurpose	Ibara-onle, Obafemi/Owode
5+	Igbehinadun	Multipurpose	Olobi
6+	Igbes AyeIrorun	Multipurpose	Igbo-Ewa Qtrs, Ilaro
7+	Irepodun	Multipurpose	Ado-Odo
8+	Basi-Adejumo	Farmers coop.	Aiyetoro
9+	Otta Progressive	Farmers coop.	Ado-Ota
10+	Ajibode	Farmers coop.	Ajibode, Ifo
11+	Owolowo (Women)	Farmers coop.	Keegbo, Ijebu Ode
12+	Iwajowa	Farmers coop.	Oguntolu
13+	Ibara-Onle	Farmers coop.	Ibara-Onle
14+	Ijeun (Women)	Farmers coop.	Ijeun
15+	Ifelodun	Farmers coop.	Kile, Odeda
16+	Irewolede	Farmers coop.	Boodo, Odeda
17+	Iboro	Farmers coop.	Iboro
18+	Irewolede	Farmers coop.	Okun-Owa, Odogbolu
19*	Omolayo	Multipurpose	Alabata, Abeokuta
20*	Oke-Akiro	Multipurpose	Ilewo-Orile
21*	Oju-Oja	Multipurpose	Ilewo-Orile
22*	Oke-Ebute	Multipurpose	Ilewo-Orile
23*	Isale-Akore	Multipurpose	Ilewo-Orile
24*	Ifelodun	Multipurpose	Ijemo-Fadipe
25*	Kofesu-Alaro	Multipurpose	Kofesu-Alaro
26*	Alagbede	Multipurpose	Alagbede, Odeda
27*	Ojoo-Oluwo	Multipurpose	Alagbede, Odeda
28*	Oowe (Women)	Farmers coop.	Oowe, Odeda
29*	Kango (Women)	Farmers coop.	Kango, Odeda
30*	Labita (Women)	Farmers coop.	Labita, Odeda
31*	Isolu (Women)	Farmers coop.	Isolu, Odeda
32*	Ogboja (Women)	Farmers coop.	Ogboja, Odeda

33	Akufo farm settlers	Multipurpose	Benjamin Olu Adewumi C/o Pa. E.O.Alayande P.O.Box 1903 Ode Aje, Ibadan, Oyo state
34	Pig farmers Association	Farmers coop.	Chief M.O.A. Bamigbose, P.O.Box 14421 U.I. Post Office, Ibadan

+ Coop. names supplied by Ogun state ADP; more detailed contact is available with the organization.

* Coop. names supplied by AMREC, University of Agriculture, Abeokuta; more detailed contact is available with the organization

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OAU/SAFGRAD-STRC

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