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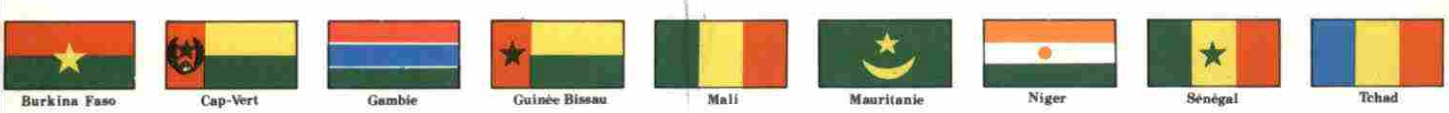

PROJET DIAGNOSTIC PERMANENT

PERMANENT DIAGNOSIS PROJECT

MEETINGS OF THE TECHNICAL COMMITTEE AND REGIONAL CONCERTATION

FROM 8TH - 12TH APRIL 1991

OUAGADOUGOU

ASSESSMENT OF AGRICULTURAL SURVEYS IN THE CILSS COUNTRIES

PR/DIAPER/22/03/91

ECA/D13/91

MARS 1991

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N O T I C E

This document "Assessment of Agricultural Survey of CILSS countries presents an evaluation of agricultural survey of nine CILSS countries.

It had been conceived following missions of the Coordination and support teams of the Permanent Diagnostic Project II in each of the nine countries. These missions took place between the 20 th of January and the 15th of March.

Be it hereby permitted to the thank the totality of the official of the survey plan of action for entire involvement in this assessment.

This document presents some generalities for each of the surveys, a detailed description of the survey a Diagnostic and some improvement proposals. In a document "Annexes" are given the different survey questionnaires of the nine countries.

S U M M A R Y

This assessment of agricultural survey in the CILSS countries undertaken by the Permanent Diagnostic Project II enables the reckoning of some salient points

A) THE INTRODUCTION OF SOME SURVEY DEVICES.

Since the 1987-1988 Agricultural Campaig.. there has been an agricultural survey in each CILSS country (the last to be created was in Guinea Bissau).

With the exception of Chad all the devices introduced cover the entire national territory according to a uniform methodology.

Since 1985, these devices have improved tremendously in their geographic cover, objectives organization, data processing and their presentation of results

B) SIMILARITY OF OBJECTIVES.

The assessed agricultural survey are production surveys by which they want first of all to estimate crop production.

The indications of the anticipated cereal harvests and the estimate of peasant stocks have been included in the survey.

On these main objectives are added other concerns related to some countries.

In Guinea-Bissau, Mali and Senegal they are interested in a very detailed manner in the agricultural exploitation demography.

In Cape Verde, Gambia, Guinea Bissau, Mali and Mauritania, the application of technical themes (type of seeds, use of fertilizers, etc) is monitored.

Data has been collected on rearing in Gambia, Guinea Bissau and Mali.

The producer price has also been raised in Mali and in Chad.

It must be noted however that in most cases the data other than those related to the prediction, production and to the peasant stocks are not exploited and hence remain essentially in archives and are not used.

C) CONVERGENCE OF METHODOLOGY

The methodology applied in the different countries are very similar with regards to probing plan and observation methods.

Concerning probing, it's a question of random sampling of two degrees excepting in CHAD where there are three degrees of surveying. The fundamental materials for these surveys are certainly of different qualities in the countries where there have been recent general population censuses, the availability of list of villages was exploited in the establishment of an exhaustive and better primary survey basis. It's now with Niger, Senegal and Mauritania where this opportunity has not been exploited.

* In Chad and Guinea-Bissau, the lack of recent general population censuses prevent the elaboration of an adeq te survey base.

* The model of production estimates are equivalent.
They are based on estimates of areas and the average yield at the sub-regional, regional and national levels.

* The prediction of harvests are almost every where carried out by interview of peasants and or by the cross-sampling of cob density. The second method is applied only in Niger and Senegal. In Cap-Verde, Guinea-Bissau , Gambia and Chad it's a question of more formal methods not by methodological choice but by necessity given the climatic conditions and farming seasons in the face of the mid-October ploughing dates for the establihment of useful predictions for the decision makers.

Where peasant residual stock is estimated (in all the CILSS countries excepting Mauritania and Cape Verde) it's derived from a similar technic.

On one hand, it consists essentially of measuring the volume into weighing units and/or on the other hand value from the declarations of those in charge the storage units into local measurements.

This convergence of methodologies investigation by the Permanent Diagnostic project. It has had to intervene in this respect in Burkina Faso (re-definition of samples of collection procedure, questionnaires revisions in Cape Verde and Guinea-Bissau (initiation of agricultural surveys). In Gambia, Mauritania and Niger (methodology revision), in Senegal (the establishing of a centralised national plan of action and methodology definitions) and in Chad (the installation of survey devices in the sudaneen zone and methodology-definition).

D) RELIABILITY OF DATA

The survey assessments have permitted for one to have an idea of survey errors affecting some results yet to also detect the main sources of errors of observation.

Concerning the latter, it's mainly the basis of unperfectness of first degree probing in the countries where there haven't been population censuses as well as in those which have not benefited from the existence of such a census, which could have been the cause of some major errors of observation. Consider especially the cases of Guinea-Bissau and Chad and to a lesser extent Niger, Senegal and Mauritania.

The lack of considering the size of the sample, by calculating the extrapolation without consideration is the second source of errors of observation established.

The factural errors of calculation/of use of extrapolation formulae were also noted in Burkina Faso, in Guinéa-Bissau and in Senegal and Chad.

Out of these sources of error the first is the most difficult to eliminate given: the generality of important works. There is the need for a censuses in Guinea-Bissau and in Chad. It is however possible whilst waiting for the improve nt of the probing basis using specific operations. There have been censused in Niger, Senegal and Mauritania, so it suffices to extract from the village record files. The two other sources of error are comparatively easier to eliminate- by adopting adequate exploitation procedures of the surveys.

The probing errors were calculated for the areas and yields of some countries.

As for the national level, on the basis of about 2.500 working units, the probing error being 95 %, is in the order of ± 12 % for the areas of major cereals (millet-sorghum-maize) in Mali, ± 8 % in Niger and ± 7 % in Burkina Faso. These errors are acceptable for such a great economic importance.

At the sub-national level (regional, departmental etc...) the error is already less acceptable. It varies between ± 20 % to ± 40 % in Burkina faso, Mali and Niger.

Concerning yields, their prediction has only been calculated at the least geographic level, considering their variability in space. With rounding off, the probing error is in the order of ± 9 % in Niger whereas it occilates very often in the neighbourhood of ± 4 % and ± 17 % in mali at the level of "cercles".

It has come to light that the areas and the estimated production at the National Level could be sufficient estimation and that at the Sub-national level the prediction is poor. The more refined established results at the geography levels should be used cautiously and mostly taking into account the causes.

It must be understood that one cannot mainly paliate the lack of data prediction at the sub-national level without a consequent increase of the sampling level which are means available for the survey

E) PROBLEMS OF DATA PROCESSING.

The processing of the data is in different degrees according to the countries.

It is entirely computerized in Burkina Faso, Cape-Verde, Ganbia, Mali and Chad.

Only the final results are computerized in Niger.

The processing of data is still manual in Guinéa-Bissau Mauritania and Senegal.

The retard in the computerization of data processing is essentially due to the lack of competent national personnel survey analyses and sometimes due to lack of material.

The installation in the different national services of the softwares in the analyses of SP6 surveys, conceived through the request of the Permanent Diagnostic project, would enable the progressive rectification of the problem.

The absence of formalized and explicit steps are still clearly observed in the analyses of the different indications of the survey.

There is no precise document on the tabulation plan of the different control procedures of the date and the calculation of the results.

ASSESSMENT OF THE GAMBIAN AGRICULTURAL SURVEY.

1. INTRODUCTION

The Gambian agricultural survey, presently known as NASS (National Agricultural Sanpley Survey) has been carried out yearly since 1973. It was initiated with support from FAO and has since gone through successive improvements :

- 1978 : Start of measurerement of areas using programmable machines.
- 1983 : change of basis of probing in favour of the general population census.
- 1985 and 1988 : changes of probing plan and up-dating the basis of probing (census of "dabadas" with DIAPER support)
- 1988 : Start of working of the survey by means of computers

The current NASS methodology is that outline in 1988.

2. GENERALITIES (General points)

The NASS is carried out by the DOP (Department of Planning) of the Ministry of Agriculture. It is supported by three external sources :

- The Permanent Diagnostic Permanent Project (CILSS) which contributes towards the financing of the running (perdiem staff, petrol, office supplies) of survey materials and logistics (motors, mobylettes, véhicules, measurement materials) : it also finances the retraining of collection staff.
- The USAID has since 1985 been contributing to the running of NASS's plan of action by granting a technical support (the presence of an agro-economist) the supply of certain equipment (vehicules, micro-computers) and the financing of training:scholarships of short and long terms in agricultural statistics for the national personnel.

Through the "support to the Agricultural Sector" the world bank supports the fees of some researchers (18) and procures some materials (programmable calculation machines).

The rest of the fees are borne by the national budget (salaries of managerial staff and some researchers, equipment in the form of vehicules, motocycles, general fees).

The NASS is carried out by 50 personnel surveyors whose work is followed by 10 controllers. The supervision is done by 3 management staff out of whom is an expatriate worker in charge of the USAID.

3. DESCRIPTION OF THE SURVEY

3.1. Objective

The NASS is a survey of production and at the same time a structural survey. It aims at :

- making harvest forecasts in october every year
- giving estimates of the production of main crops by the assessment of the areas of land cultivated and the yields
- estimating the peasant residual stock at the end of October.
- estinating the number of livestock
- analysing the "dabadas" (exploits) from the point of view cultural techiques (the use of fertilizers, labours technics).

3.2. Methodology

The NASS is a two-way investigation survey. on the one-stage it draws villages with a probability proportional to the seize in "dabadas". On the second stage it samples three dabadas from each village systematically and of egual probality.

In all, 666 dabadas from 222 villages are surveyed first. The villages were classed into 37 groups corresponding to areas of counting. In each area of counting it draws 6 villages.

In each dabadas of the sampling plots are counted in three phases :

phase 1 : Census of maize plots, of premature millet and of cassava.

phase 2 : Census of late millet, of sorghum, of plateau rice of groundnuts.

phase 3 : Counting of plots of valley rice.

The measurement of counted fragments is done during each phase.

The forecast of harvest is done on the basis of the appreciation from the controllers and supervisors of the evaluation of yields with respect to the campaign carried out.

The estimates of peasant stocks are made through interview of the peasants consent to it or by the measurement of the volume of cereals in stock.

3.3. Organisation of the collection and schedule

The work of the surveyors is divided into 8 tasks :

1) Counting of dabadas (June)

2) Filling of exploitation questionnaires (June)

3) Phase 1 (July)

4) Phase 2 (end of July and August)

5) Harvest of yield squares of fragments of phase 1 and assessment of peasant stocks and discount of fragments not harvested.

6) Harvest of square returns of fragments of phase 2 and forecast of harvest (October) and discount of fragments not harvested.

7) Phase 3 (November)

8) Harvest of square returns of fragments of phase 3 (December) and discount of fragments not harvested.

It must be noted that the data of phase 1 and 2 (list of fragments and areas by crop) are exploited to determine the fragments which ought to receive a square of returns taking into consideration the fact that it's necessary to select at most two fragments per village per crop.

3.4. Data processing and publication

3.4.1. Procedures for calculating the major results.

The areas calculated are rough areas and it considers only the major crop. They calculate the area sown and the area harvested. The returns calculated are the arithmetic means of individual returns observed over the squares of fragment returns harvested. The fragments of zero returns are excluded.

The production forecast are obtained by mutiplying the areas sown by the forecast returns obtained on the basis of appreciation from the controllers and supervisors.

3.4.2. Method of processing

NASS data processing is done essentially by couputer.

After a complete and exhaustive visual control of the questionnaires, they are captured by means of word proccessing package (computer) Paradoc according to a system that rejects data out of beach.

As for the variables of areas and returns, the number of observations, the averages, minima and maxima crop; per region are edited and subjected to supervised examination for likelihood countrol.

3.4.3. Publications

The final results of the 1989-1990 agricultural campaign were introduced in the "1989-1990 National Agricultural Survey - Final report - Gambian Agricultural Production.- Campaign 1989-1990" document, a publication of the Ministry of Agriculture - Planning Department.

This publication available in April 1991, includes :

- survey methodology
- the presentation of the following results :

The areas sown, the areas harvested, the returns, the productions for the following crops : late millet, early millet, sorghum, maize; plateau rice, mangrave rice, irrigated rice and groundnuts according to the country's Divisions.

. Precise calculations of the areas per crops

. The frequency of dabadas growing the different crops and the average areas sown dabada.

. The comparison between the 1986 and 1989 dabada frequencies according to the different crops and the average areas sown per dabada.

. The numbers of small ruminants and beasts of burden.

. The description of the agricultural survey sampling.

. The sum of mean prices and details of cereals at national level from August 1989 to February 1990.

. The average prices in detail and in some of the cereals for the market from August 1989 to February 1990.

The areas and production of tomatoes and onions.

* The temporary results of the 1990-1991 Agricultural Campaign were presented in the document :" predicted results of the Agricultural Campaign 1990-1991" of the planning department of the Ministry of Agriculture.

This document, available in October presents :

- The methodology of harvest prediction
- The description of other operations (price check-ups, estimation of cereal stocks)
- commentaries on the prediction of harvest

- The preliminary estimates of sown areas, harvested areas, returns and production for the crops : early millet, late millet, sorghum, maize, plateau rice, mangrove rice, irrigated rice, and groundnut according to division.

- Ex-post and predicted cereal assessments.

- The data on the prices of cereals from May 1990 to September 1991

4. DIAGNOSTIC OF THE SURVEY.

4.1. Data collection

The organisation of the collection makes room for respecting the sowing and harvest periods at the same time meeting the demands of the users with regards delay.

It further guarantees exactitude of changed areas.

However, harvest prediction is done according to a slightly reliable method. The crowded presence of surveyors in the field from June to October and the existence of an appreciable capacity to do computer analysis dictates the use of more formal methods for best harvest prediction.

They indicate however that the 1990/91 predictionsn were only 3,8% superior to the final estimates for dry cereals and 23% for upland rice. The information gathered on agricultural exploitation which are relevant to the use of fertilizers, to traction are of structural kind and their being considered each year to renders heavy the work on the field brings up appreciable supplementary information to the know-how of the sector.

Even though collection operations are difficult, they are mastered due to the narrowess of the country which reduces the time and difficulty of mobility.

4.2. Data processing

Data processing considerably implicates the national personnel who apparently have mastered the whole process.

There is little criticism that could be launched against the site of the process if not the method of calculation of returns which does not take into account the importance in areas of fragments upon which observations are made which needs re-adjustment.

One would also notice that most of the information gathered is not used. Especially, the data on livestock and agricultural technics.

5. IMPROVEMENT PROPOSALS

There is little to propose in the improvement of this survey having seen the great expertise of its implementation in the field and its analyses.

One should note however that it would be judicious to reduce volume of questionnaire by elininating the structural data, especially those linked to farming technics. That is mostly where these data are not used : it would be necessary to analyse those bearing on many years which have been gathered and stocked.

It is not also useful calculating the areas harvested in order to calculate production. It suffices to calculate the returns bearing in mind the fragments of zero returns. This way, we would avoid re-visiting each fragment at the time of harvest.

Given the activities of DOP in computer analyses, we ought to suggest to it to delve deeper into the analyses of the sample in order to realise its usefulness.
