Report on a Visit to Côte d'Ivoire and Senegal to Initiate Post-harvest Fish Loss Assessment Research, 18th Sept - 21st October 1997

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Acknowledgments

CONTENTS

Summary

1. The visit was the first activity of RNRSS 7008, a collaborative research project between Natural Resources Institute (NRI) and the European Union Regional Post-harvest Fisheries Programme (WARF) based in Abidjan, Côte d'Ivoire. The project objectives are to validate previous loss assessment work done in Tanzania by NRI (project RNRSS 5027) in another region, West Africa. The other objective is to develop loss assessment methods for use in West Africa by the WARF. The Funds for the work are being provided by the Department for International Development (DFID) and the European Union (EU).

2. A two day workshop, organised by INFOPECHE , was held in Abidjan on 22-23 September. The objectives of the workshop were to discuss the loss assessment methodology research and development work in West Africa proposed by NRI and the EU Regional West Africa Fisheries Programme (WARF). Thirteen participants attended from WARF, INFOPECHE, NRI and organisations in Côte d'Ivoire, Senegal, Ghana and Nigeria.

3. Two loss assessment training seminars were held. A five day seminar was conducted for a team of researchers from the University of Côte d'Ivoire. A 6 day seminar was held in Mbour, Senegal for a team from the Collectif National de Pecheurs du Sénégal (CNPS), and the Institut de Technologie Alimentaire (ITA) of Dakar. The training was facilitated by NRI (Kleih and Ward). Three loss assessment approaches developed by NRI in Tanzania were introduced to the teams:

   - informal approach based on Méthode Active de Recherche et de Planification Participative (MARP), (equivalent of Participatory Rural Appraisal).

   - load tracking

   - questionnaire surveys

4. A short introductory guide in French to the use of MARP for fish loss assessment was produced by NRI (Kleih). Scoring was experimented with during the seminars and proved an effective tool for generating qualitative and indicative quantitative data on losses.

5. One fundamental change was introduced to the questionnaire approach and that was the inclusion of questions which concern the quality of fish entering a particular distribution stage.

6. NRI are to provide statistical advice for the questionnaire surveys which were designed during the seminars.

7. Work programmes for the following months have been agreed with the two research teams (Côte d'Ivoire and Senegal). These centre on testing the three loss assessment approaches and progress will be reviewed at a workshop in March 1988, to be held in Abidjan.

8. One of the next activities is the development of a computerised data analysis system for handling the questionnaire data. The system will be installed by NRI at the INFOPECHE office in Abidjan. Suggested timing is February 1998.

9. It was agreed with INFOPECHE that Dr Cheke of NRI should visit Abidjan for validation of the Predicative Macro Model. He would link in with the work being conducted by the Côte d'Ivoire team, using their data. He would also train someone from INFOPECHE in the use of the model. A suggested timing for this visit is January or February 1998.

10. A number of organisations expressed an interest in LossBase, the Microsoft Access database of losses information developed by NRI for RNRSS Project 5027. An objective of the current research is to review this database and revise it accordingly. Copies will therefore be sent to some of the interested organisations for review.

11. It was agreed between NRI, WARF and INFOPECHE that INFOPECHE would be responsible in future for co-ordinating the research on behalf of WARF. NRI will in future liaise directly with INFOPECHE and copy correspondence to WARF.

Main Report

Introduction

1. The visit was the first activity of RNRSS 7008, a collaborative research project between NRI and the EU Regional Post-harvest Fisheries Programme (WARF) based in Abidjan, Côte d'Ivoire. The project objectives are to validate previous loss assessment work done by NRI in Tanzania (project R5027) in the context of West African conditions and to develop loss assessment methods for use in West Africa by the WARF.

2. The visit follows on from a meeting organised by INFOPECHE in February 1997. That meeting, attended by regional fisheries specialists, FAO and NRI outlined the general research activities which form the basis for the collaborative research programme.

3. The report outlines the three key activities undertaken during the visit:

   - facilitation of a two day sub regional workshop on fish loss assessment,

   - training of a research team for loss assessment work in Côte d'Ivoire,

   - training of a team for loss assessment work in Mbour, Senegal.

4. These activities were undertaken with the assistance of the Intergovernmental Organization for Marketing Information and Co-operation Services for Fishery Products in Africa (INFOPECHE) who were responsible for organising the workshop and arranging the training seminars. An NRI Socio-economist (U Kleih) conducted the first training seminar in Abidjan. The author conducted the training in Mbour assisted by B Diakité, a fish processing technologist from the Institut de Technologie Alimentaire (ITA) of Senegal and Dr Amadou Tall, the Director of INFOPECHE.

5. At the end of each training seminar, work programmes were agreed for the two research teams. This work is to be funded by the WARF and will be reviewed in March 1998. At the end of the visit the EU Rural Development Adviser in Abidjan was briefed by NRI on the work done and the future activities of the project.

6. An itinerary for the visit including people met is given as Appendix 1. The following is an overview of the workshop and training seminars.

Sub Regional Workshop on Post-harvest Fish Loss Assessment, Abidjan

7. A two day workshop, organised by INFOPECHE and funded by DFID, was held in Abidjan on 22-23 September. The objectives of the workshop were to discuss the loss assessment methodology research and development work in West Africa proposed by NRI and the EU Regional West Africa Fisheries Programme (WARF) (this work was agreed at a previous workshop organised by INFOPECHE earlier in the year).

8. Thirteen participants attended the workshop from the following organisations: INFOPECHE; WARF; Institut de Technologie Alimentaire, Senegal; Collectif National de Pecheurs du Sénégal, Senegal; Food Research Institute, Ghana; University of Côte d'Ivoire and Chicago Smoked Fish Wholesale Market, Abidjan. A workshop itinerary is given as Appendix 2. A list of participants is given as Appendix 3. Below is an overview of the key points arising from the workshop.

NRI and Development of Loss Assessment Tools

9. An overview was given of the four loss assessment tools developed by NRI in Tanzania: field based methods for data collection; a database of loss information; a model for analysing losses in a distribution chain (LossBase); a model for costing interventions. Some data generated by these tools was also presented.

10. A number of organisations showed interest in LossBase. These were WARF, INFOPECHE, NIOMR, FRI and University of Côte d' Ivoire. Some of these organisations will be sent copies of the database to review as part of the project.

11. Some of the questionnaire data on losses in Tanzania was presented in graph form. It was suggested that it would be useful to have data on catches or production levels on the same graph. This would highlight possible relationships between loss levels and production. This is something to bear in mind when questionnaire data is analysed later during the project.

Group Analysis of Loss Issues

12. Discussions indicated that the group felt the following were the key types of loss that should be focused on during the research and that methods should be developed accordingly:

- Physical loss (also known as quantitative loss)

- Quality loss (also known as qualitative loss)

- Economic loss (monetary value of physical & quality loss)

- Market force loss

- Nutritive losses (not to be studied during the pilot phase)

13. The traders present mentioned that the losses of concern to them were the quality of smoked fish, losses due to fragmentation and loss due to market forces. The Senegalese representative mentioned that losses of high quality fish were minimal and that there were losses in quality of small pelagics, but that these fish were smoked and there appeared to be no perception of loss (during the training seminar in Senegal it became evident that physical losses also occur on a seasonal basis).

14. The loss due to fluctuations in market forces was viewed as important by the traders and other participants. However, it was argued by the socio-economists present that market forces leading to a loss in profit due to changes in supply and demand should not be classed as a loss, since someone (i.e. those buying fish at a cheaper price) would benefit at the trader's/seller's expense.

15. It was agreed that because it had been decided in the February meeting that market force losses were important and should be studied, research should be carried out to determine whether market force losses are measurable and should be classed as a loss.

16. It was recognised that a quality loss could result from market forces e.g. during gluts fish may not be purchased quickly and spoilage may set in.

17. It is worthwhile rethinking the issue of market force loss and how it is covered in the NRI manual. It may be worthwhile separating this type of loss out and covering it in more detail - explaining the various angles.

Previous Attempts at Assessing Post-harvest Fish Losses

18. Most of the participants mentioned some previous loss related work that they had been involved with or knew of.

- In Ghana some load tracking type work has been done by FRI in Ghana to asses the loss of tomatoes during distribution. Fragmentation of smoked fish has also been studied in Ghana at Yedji by FRI some years ago.

- In Nigeria fragmentation losses have been studied in retail and wholesale markets, but have not been measured. Dr King had done some work to determine the constraints to processing, transport and marketing. A study in Nigeria by Osudji had been conducted many years ago. The results indicated that losses (un-defined) may be as high as 40%. NIOMR are currently conducting a survey of insect infestation using a questionnaire. This is part of a larger initiative on the use of Actellic to control insect infestation in the country.

- Traders in Chicago Market said they measure losses by price differences. They also assess the quality of smoked fish by visual inspection and by taste. Losses are expected when gluts occur. Losses are also related to the texture

of fish. Losses are avoided by the use of ice at sea. Reducing fishing effort was also mentioned (see above). Traders will try to buy well dried fish and will try to protect the fish with plastic sheets

- The University of Côte d'Ivoire has done some studies on the marketing and distribution of fish. During these studies quality losses were observed. The Ivorians were not aware of any loss studies that had been done in the country.

- ITA in Senegal have done work on loss assessment. Physical losses of fish have been measured at the landing stage at one site. Quality loss was monitored as part of a study comparing insulated containers. Physical and quality losses of smoked fish were also studied. PRA has been used for data collection by ITA. These issues were discussed in more detail during the training seminar.

What Will Information on Losses in West Africa Be Used For?

19. The end use of data on fish losses was discussed. Information on losses in West Africa would be used by WARF to monitor their programme activities. WARF has as an objective the reduction of post-harvest losses by 25% by the end of the present 5 year phase.

20. Data on losses will be useful to economic operators such as traders since it will help them make decisions on possible ways to reduce losses. The reduction in losses is clearly equated with an increase in revenue.

21. Once losses have been identified and clarified it will be possible to identify and design appropriate training and research activities to assist in loss reduction.

22. It was also agreed that recommendations based on loss data could be made to government with a view to influencing national policy.

Consolidation of Loss Assessment Pilot Phase

23. An overview was given by NRI of the proposed programme of research between NRI and WARF. The session focused on clarifying some of the finer details of the programme.

24. The participants were in favour of a questionnaire approach to loss assessment. And thought the use of students rather than government staff would be more appropriate for survey work. Figure 1 shows the suggested flow of data from economic operators to WARF

Figure 1 Data Collection System

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       │                                  │      ▼
       │                            ┌─────────────────────────┐
       │                            │      Supervisor         │
       │                            │ (Research organisation - │
       │                            │  ITA, UCoD, NIOMR, FRI) │
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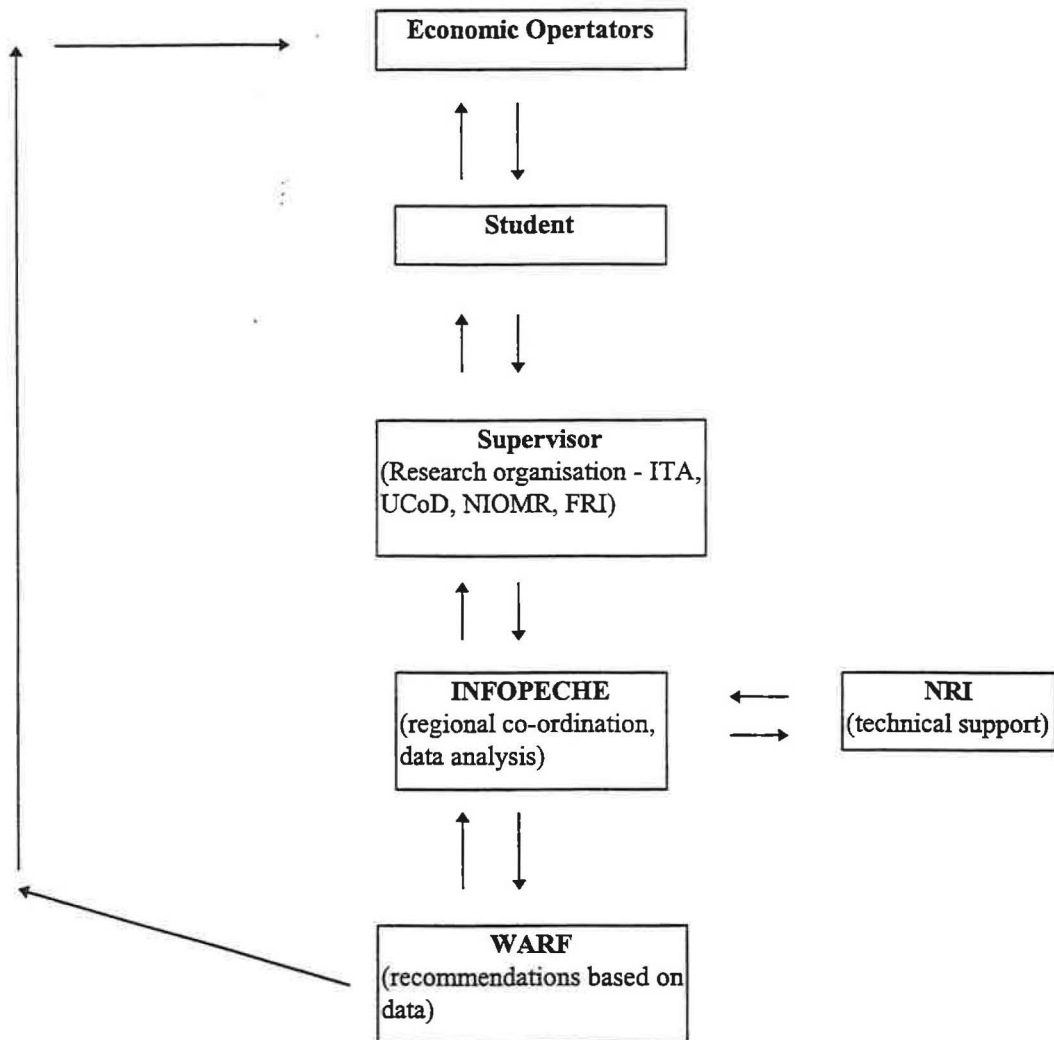
25. Loss assessment should be conducted at the fishing, landing and processing stages. Data on the following should be generated during a questionnaire survey:

- type of gear,
- type of boat,
- fishing times,
- quantities landed,
- use of ice,
- losses at sea
- time between landing and sale,
- who buys the fish,
- physical and quality losses,
- what happens to fish not sold.
- type of processing methods,

- source of fish,
- cost of fish,
- storage

26. In reality some of this data could be collected using informal data collection methods.

27. It was suggested that a questionnaire(s) for loss assessment be developed during the workshop. An attempt was made to get the views of the participants on what data related to losses they thought should be generated by questionnaires. The actual drafting of questionnaires was not an appropriate activity for the workshop since it is best done once a better understanding of the sector under study has been gained - something which was not possible in the time given.

28. It was proposed that it may be possible to adapt the loss assessment questionnaires used in Tanzania to the West African situation. This was in fact done later during the training seminars.

29. The traders from Chicago Market mentioned that a questionnaire may cause a certain amount of anxiety in fishermen.

30. Participants mentioned that it will be important to identify the species of fish that data is collected on and that the assessments must exclude losses that are of parts of the fish which have no economic or nutritive value.

31. It became evident from discussions that there was some confusion as to the focus of the research at each of the four selected sites (Chicago Market - Côte d'Ivoire, Maiduguri - Nigeria, Mbour - Senengal, Chorkor Village - Ghana). It was indicated that loss assessment trials/research should focus on the whole chain involved at each site. The alternative scenario was to focus on the losses at stages within the site. The budget and resources for the research had been planned according to the latter.

32. The former scenario would be possible if more time and resources were available.

33. It was proposed that segments of the a chain will be studied at the different sites with the objective of developing an overall methodological approach. It is important that the objective of the pilot phase, which is validation and methodological development, is not overridden by the desire to simply generate data on losses without first ensuring a sound methodological approach.

34. Load tracking has been used for studying losses for other commodities. It was used in Tanzania for assessing fresh fish losses in a particular distribution chain. As has been mentioned, load tracking has also been used in Ghana. During the later training seminars a draft load tracking exercise was discussed.

The Use of Demerit to Indicate the Relationship Between Quality and Price

35. Following the workshop a discussion was held with the Nigerian participants and the WARF socio-economist on the issue of how to link quality with price, perhaps using demerit scoring to enable the development of a quality assessment tool which could be used in load tracking work, or to assist in clarifying quality in questionnaire surveys.

36. The possibility of including a quality assessment tool in a questionnaire for reduced price (quality) loss was discussed. In the present set of questionnaires there was no quality indicator except price. Fish are either sold for a reduced price or for a good price. There are two grades of quality only - good and poor.

37. The demerit score sheet for fresh fish in the manual was used as a starting point for the discussion which quickly centred on "bonga", a fish which in Nigeria is sold by the "hand" (a pile of fish). Usually all bonga is sold for smoking and buyers do not put too much importance on quality. However, a demerit score sheet was drawn up for smoked bonga. The criteria were:

- fragmentation

- insect infestation

- colour

- taste

38. It was suggested that such a tool may be appropriate for assessing quality at the wholesale and retail levels when the relationship between quality and price may be clearer.

39. A key aspect of load tracking is the ability to assess the quality of fish objectively and systematically as it is distributed. In Nigeria an alternative type of tool to demerit was used for assessing the quality of plantain. The tool was a colour chart. The only variable was colour, making assessment relatively straight forward. For smoked fish it was decided that there were two variables which influenced quality and price. These were fragmentation and insect infestation. While fragmentation would be easy to present pictorially - it was decided that insect infestation would be more difficult to present. However there appeared to be scope to develop a pictorial guide for quality assessment.

Loss Assessment Training Seminar - Abidjan

40. A five day training seminar was conducted by NRI for a team of four from the University of Côte d'Ivoire. The team was led by Dr Paul Anoh, all were French speakers only. The seminar was also attended by the Director of INFOPECHE and the WARF Socio-economist. The group were given an understanding of three loss assessment approaches: informal fish loss assessment using Participatory Rural Appraisal (PRA), Load Tracking, and Questionnaires. These three approaches were used effectively in Tanzania.

"PRA and statistical surveys will generate sets of data which will complement each other. The PRA will provide qualitative, in depth understanding of issues related to fisheries post-harvest losses, whereas the statistical survey should lead to more precise information on a number of carefully selected key issues." (U Kleih 1997).

41. The training involved both formal and informal theory and discussion sessions as well as fieldwork at sites in and around Abidjan, including Chicago Smoked Fish Wholesale Market. A 9 month work programme was drawn up at the end of the training. The programme will focus on field testing the three approaches. All three approaches will be carried out at the same sites on the same species at similar times.

42. The following is an overview of the training and results/outputs from the training. The training itinerary is given as Appendix 4.

Informal Loss Assessment Methods

43. PRA/RRA was used by NRI in Tanzania to develop an informal loss assessment approach or method. It is suggested now that PRA is a useful/essential first step to preparing load tracking and statistical questionnaire surveys. As the Abidjan team had had no previous exposure to PRA/RRA, the first day of the training seminar was devoted to an overview of PRA, which in French is known as Méthode Active de Recherche et de Planification Participative (MARP).

44. Subsequent training focused on the use of specific PRA tools to generate data on post-harvest fish losses. These tools were then tested in the field at sites in Abidjan during semi-structured interviews with fishermen, processors and smoked fish traders. The team then evaluated the fieldwork exercises. The seminar led to the preparation by U Kleih (NRI) of a short introductory guide in French to the use of MARP for fish loss assessment. The guide is given as Appendix 5. It includes examples of checklists and the data generated by some MARP tools and it was used as a basis for the second training seminar at Mbour in Senegal.

Load Tracking

45. Load tracking was used by NRI in Tanzania to identify where and why losses occur in a distribution chain. The method relies on following a batch of fish as it is moved through a distribution chain and assessing the quality of the batch at specific points in the chain. The method was used with some success in Tanzania. It was decided by NRI that this would be an appropriate tool to develop further for

stand alone use in West Africa. This idea was broached with the Abidjan team who agreed that it would be a good method to try. Dr Anoh commented that it was something which he had wanted to try for a long time, but had not as he had never had sufficient resources.

46. A load tracking approach was drafted and discussed during the seminar. The draft was an elaboration of the method used in Tanzania. The draft is given as Appendix 6. It encourages a more systematic analysis of quality and the variables which can influence quality.

47. The method will be tested on Sardinella. More specifically the smoked Sardinella chain beginning with fresh fish and finishing at the wholesale stage. The work will be done at sites within Abidjan.

48. One of the important components of load tracking is the ability to quickly assess fish quality in the field. This is best done organoleptically and using demerit scoring which has been used effectively in Tanzania. This relies on the scoring of certain quality attributes such as gill colour or flesh firmness. A tool was developed during the seminar for assessing the quality of smoked Sardinella. This is shown in Figure 2.

Figure 2 Demerit Score Chart for Smoked Sardinella

Colour/Sheen Color	Bright 0	1	Dull 2
Taste Gout	Sweet/Meaty 0	1	Sour/Bitter 2
Physical State Physique Condition	Whole 0	1	Broken 2
Dryness Secheresse	Soft 0	1	Brittle 2
Burnt Bruler	Non 0	One Side 1	Two Sides 2
Skin Ecorcher	Complete 0	Half 1	None 2

Questionnaires

49. Questionnaires used for assessing losses at various distribution stages in Tanzania were translated into French. A further questionnaire focusing on losses to wholesale cured fish traders was also drafted. The questionnaires were discussed and modifications made to adapt them to equivalent stages in the Sardinella chain. One fundamental change was introduced - the inclusion of questions which concerned the quality of fish entering a particular distribution stage. The original

Tanzanian questionnaire which dealt with losses in the processing sector did not generate data on the quality of fish coming into the processing sector, but focused on the loss in quality during and after. Two questions were therefore added. One which asks about the amount of good quality fish bought and processed; and another about the amount of lower quality fish bought and processed.

50. It was felt that, in order to understand losses at a particular stage more fully, there should be data on the fish entering that stage, as well as on the fish or product leaving the stage. The quality of fish entering a stage will have some bearing on the losses during and after. Also, knowing more about the quality of fish entering a particular stage will give an indication of potential loss earlier and could be used to cross check data collected at those earlier stages.

51. Draft questionnaires have been produced to assess losses during the fishing, processing and wholesale stages. These are given as Appendix 7. They will be used by three students from the University of Côte d'Ivoire supervised by Dr Anoh. The survey will be conducted during the peak and low production periods for Sardinella and one other species. That is during December when landings are heavy and during August when they are lowest. The sites chosen are Vridi Ako, Vridi Zimbabwe, Vridi Sir and Chicago Market - the same sites that will be used for MARP and load tracking work. The questionnaires will be reviewed by NRI and then tested during November.

52. Dr Anoh has implemented and conducted several questionnaire surveys in the past and is familiar with survey approaches and techniques. In the Tanzania surveys, data was coded as it was recorded during interviews. Dr Anoh suggested that the coding of answers to questions should be done by the enumerators after interviews and before data analysis, rather than as part of the data recording process. This is the system which he is familiar with. It will make data recording easier during interviews, but will increase the workload for enumerators later on. It will also increase the amount of paperwork involved in the data collection process. It will be useful in terms of methodology development to test this alternative approach.

53. Advice on survey sampling will be given by a Côte d'Ivoire University statistician and NRI. NRI will also comment on the draft questionnaires, which are being finalised by Dr Anoh. Comments from NRI will be given to Dr Anoh by the end of October. Before starting a formal survey the team will test the questionnaires in the field and make any final modifications. It is envisaged that a survey will begin during the last week of November and last for 1 month, assessing losses during the time of predicted peak Sardinella landings.

54. An alternative way of using questionnaires was suggested during the training. This centred on operators filling in questionnaires themselves rather than being interviewed. A much simpler questionnaire would be used. However, it was agreed that this would probably not be successful in the context of Abidjan and that interviews by students would be a surer way of obtaining data.

Future Work Programme - Abidjan

55.At the end of the training seminar a work programme was drawn up which focused on testing the three loss assessment approaches over a 9 month period. All methods being used at the same sites and for the same distribution chain. This would enable a comparison to be made of the three methods in terms of data generated.

56.An overview of the activities for the first four months of the work programme is given below:

- identify fieldwork sites in Abidjan

- liaise with statisticians in Abidjan and NRI

- contact local authorities for agreement for fieldwork activities

- preparation of PRA tools and techniques

- conduct loss assessment studies at 4 sites in Abidjan using: MARP, load tracking and questionnaires.

Loss Assessment Training Seminar - Senegal

57. At Mbour, one of the most important fish landings in Senegal, NRI conducted a six day training seminar for a team of five. The team consisted of four members of the Collectif National de Pecheurs du Sénégal (CNPS), including the President, and one person from the fish processing section of the Institut de Technologie Alimentaire (ITA) of Dakar (Mr Diakité) who will lead the team and supervise the work. As in Abidjan, three loss assessment methods were introduced and training consisted of practical as well as theory and discussion sessions. Dr Tall, the Director of INFOPECHE, was present for the load tracking, questionnaire and work programme sessions. At the end of the training a work programme was discussed and agreed with the team.

58. The Mbour team included two active fishermen and one active fish processor/trader. Only one person in the team from CNPS was literate and had any knowledge of research and data collection methods (she had some experience of questionnaire surveys). This presented an interesting and quite valuable challenge for the training team and also for the process of developing loss assessment methods. Until Mbour, loss assessments had been done by either public sector researchers, such as a Fisheries Department or, as in the case of Côte d'Ivoire, educated professional researchers. In other words the fishermen, processors and traders had primarily been more the givers of information rather than the generators and users. Mbour therefore presented an opportunity whereby actual operators themselves would be trained in loss assessment methods and would afterwards be in a position to conduct their own loss assessment work

59. As a consequence of the team members experience and literacy levels it was decided to concentrate more on the use of MARP for fish loss assessment. This would enable those who could not write to contribute by using diagram techniques such as scoring and diagram tools.

Informal Loss Assessment Methods

60. The guide to the use of MARP for fish loss assessment produced as a result of the first training seminar in Abidjan was used as the basis for training the Mbour team (see Appendix 5). After an introduction to MARP the team identified the following tools as being appropriate for loss assessment work by them in Mbour:

- semi-structured interviews
- ranking and scoring
- diagrams
- anecdotes
- case studies

61. During a "brainstorming" session a number of issues of local concern were highlighted by the team. These included:

- high physical losses of Sardinella in the surround net fishery
- quality losses of export species

Figure 3 Flow Diagram - Mbour to Dakar - Fresh Sardinella
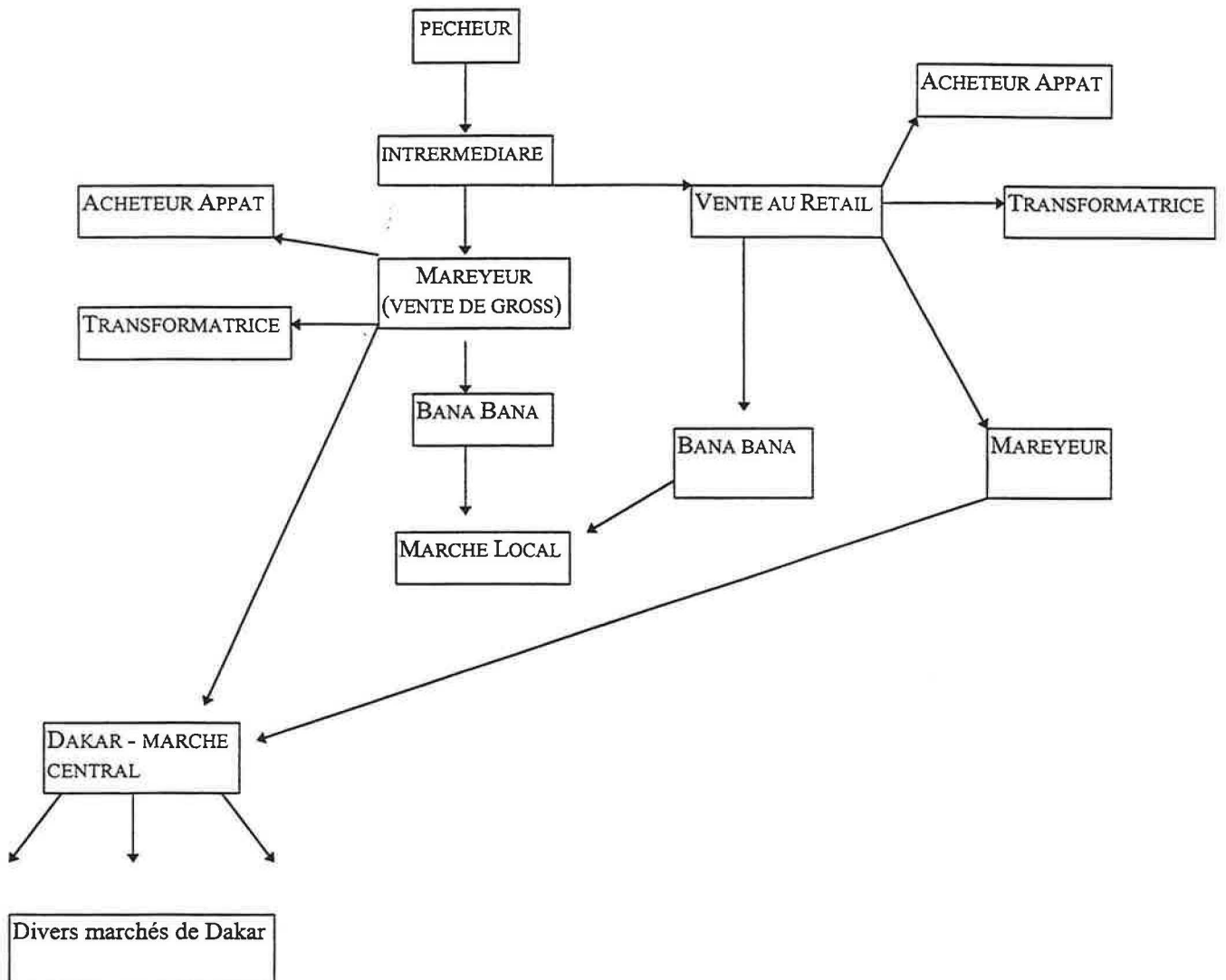
Figure 4 Quality Assessment Tool For Fresh Sardinella

Quality Attribute	Indicator and Score	Indicator and Score	Indicator and Score
GILL COLOUR	Red 0	Pink 1	Brown 2
FIRMNESS	Firm 0	Soft 1	Very Soft 2
EYE COLOUR	White 0	Cream 1	Red 2
SCALES	Shiney 0	Slightly Dull 1	Dull 2

Maximum Good Quality = 0

Extreme Poor Quality = 8

Questionnaires

65. Two questionnaires that were used to asses losses in Tanzania were translated into French and discussed with the team. These deal with losses at the fishing and landing stage and the processing stage.

66. Changes were made to the wording of the questionnaires and two questions were added to the processing questionnaire which deal with the quality of fish being bought by processors. The questionnaires are given as Appendix 9.

67. It was decided that the questionnaires would be used by two team members to survey losses of Sardinella in the Surround Net fishery. The survey would be carried out in January, which according to the seasonal scoring exercises is the month with lowest losses, and in August which is the month where losses are highest (see Appendix 8).

68. A list of Mbour Surround Net fishermen was provided by CNPS. NRI are to provide statistical advice for sampling.

69. The processing questionnaire will be used to survey losses in the Sardinella processing sector. Two products are traditionally produced using Sardinella. These are Kjedja and Tambajan. Processors of both products will be interviewed in December and then again during the time of high losses in June, July or August.

Future Work Plan Mbour

70. The work plan has been divided up according to the three loss assessment approaches to be tested. The activities are given below and should be completed by end of February 1998.

Informal MARP Studies

- Conduct a further seasonal scoring exercise with a group of surround net fishermen

- Analyse Mr N' Doye's data on production and compare it with the results of the seasonal calendars

- Conduct one group interview with filet dormant fishermen and interviews with three individual fishermen

- Conduct one further group interview with processors and 3 individual interviews

- Diakité to document the data collected

Load Tracking

- CNPS to contact two traders and obtain co-operation for the studies

- Diakité to test quality assessment tool

- Load tracking to be used twice and results evaluated

Questionnaire Survey

- Diakité to revise the questionnaire and send copies to the Mbour team

- Diakité and Mbour team to test the questionnaires with fishermen and processors

- NRI to provide guidance on sampling and statistics

- CNPS to provide Diakité with a list of Kjeda and Tambajan processors

- Diakité to obtain a list of fresh Sardinella traders from CRODT

- Survey of processing sector conducted in December

- Survey of fishing sector conducted in January

Future Project Activities

71. There are several short term activities planned which were discussed with WARF and INFOPECHE.

Data Analysis

72. One of the next activities in the collaborative research programme is the development of a computerised data analysis system at the INFOPECHE office in Abidjan. This work is to be funded by WARF and conducted by NRI. It was agreed with INFOPECHE that NRI would inform them of potential timings for this work. It is suggested that once a time has been agreed then WARF forward an air ticket and an advance of subsistence to NRI.

Model and Database

73. It was agreed with INFOPECHE that Dr Cheke should visit Abidjan where he would link in with the work being conducted by Dr Anoh and his team. It was also suggested that someone from INFOPECHE would work alongside Dr Cheke and that computer facilities would be made available by INFOPECHE. A suggested timing for this visit is January or February 1998.

74. A number of organisations expressed an interest in LossBase, the Microsoft Access database of losses information produced by NRI. An objective of the current research is to review this database and revise it accordingly. Copies will be sent to some of the organisations which showed interest as part of the review process.

Research Co-ordination

75. It was agreed between NRI, WARF and INFOPECHE that INFOPECHE would be responsible for co-ordinating the research on behalf of WARF. NRI will in future liaise directly with INFOPECHE and copy correspondence to WARF.

76. Draft terms of reference for the work programmes agreed with the two teams were drafted by NRI for use by WARF in drawing up a contract with Dr Anoh and Mr Diakité. These are given as Appendix 10.

77. Discussions between NRI, the researcher team leaders and INFOPECHE concluded that the work programmes from October to the end of February will cost approximately US$3000 per team. This funding is to be provided by WARF as part of their contribution to the research.

78. It is envisaged that a monitoring workshop will be held in Abidjan, March 1998 to assess the results of the work programmes. This will entail Mr Diakité travelling to Abidjan and discussing the Mbour results with INFOPECHE, WARF and Dr Anoh and his team, who will similarly present the findings of the Abidjan team's work. Dr Kane of WARF requested NRI to provide a summary of NRI's expenditure to date.

Appendix 1   **Visit Itinerary/People Met**

Thurs 18 Sept	arrive Abidjan
Fri 19	M Akeredolu (WARF)
	A Tall, Director, Infopeche
	preparations for workshop
Sun 21	U Kleih, NRI, arrives
Mon 22 - 23	Workshop on fish loss assessment
Wed 24	Report writing
	Training course preparations
	Discussion with NIOMR on quality assessment tools
Thurs 25 - Fri 3rd	Training seminar for reserch team from Côte d'Ivoire
Sun 5th	arrive Senegal
	Mr Diakité, ITA, Dakar
Mon 6th	Creditip, Dakar
	Dr D G Gueye, Director General, Fisheries, Senegal
	El Hadj Cisses, Director of Projects, Senegal
	Ousmane N' Diaye, Director of Artisanal Fisheries, Senegal
	Travel to Mbour
	Mr Arona Diagne, President, Collectif National de Pecheurs du Sénégal (CNPS)
	Mamadou Diouf , Service de Peche, Mbour
	Visit to Mbour landing
Tues 7	preparation of training seminar materials and briefing Mr Diakité
	meeting with Mbour research team
	Arona Diagne
	Mdm M Kane
	Mdm Rama Tall
	Mr B N'Doiye
Wed 8 - 13th	Training seminar, Mbour
Sun 12	Visit to Joal fish landing
Tues 14	report writing
	Service de Peche, Mbour

Mbour landing

Wed 15 - 16	Training seminar Mbour Dr Tall, Infopeche arrives in Mbour
Thurs 16	travel to Dakar
Fri 17	travel to Abidjan
Sat 18	meeting with Dr Tall, Infopeche and Dr Kane, Director of WARF
Mon 20	Infopeche office report writing meeting with Abidjan research team Dr Kane, Director WARF M Akeredolu, WARF
Tues 21	Report writing Manfred Brandt, Rural Development Adviser, EU leave for UK

Appendix 2   Workshop Itinerary

<u>SUB REGIONAL FISH LOSS ASSESSMENT WORKSHOP, NRI/WARF,
Abidjan, 22-23 September, 1997.</u>

Day 1 (22/09/97)

09.30 - 10.00	**Opening**	**(A Tall, A Ward, D Kane)**

10.00 - 10.15   **Participant Introductions**

10.15 - 10.30   **Coffee Break**

10.30 - 12.00   **Development of Loss Assessment Tools
by NRI (A Ward)**

12.30 - 14.30   **Lunch**

14.30 - 15.30   **Group Analysis of Issues in Post-
harvest Fish Loss Assessment (A Ward)**

15.30 - 15.45   **Coffee Break**

15.45 - 17.15   **Group Analysis contd**

17.15   **Round Up**

Day 2 (23/09/97)

09.00 - 10.00   **Overview of the Loss Assessment Pilot
Phase from Quality Circle Meeting
(A Ward)**

10.00 - 10.15   **Coffee Break**

10.15 - 12.00   **Consolidation of the Loss Assessment
Pilot Phase (Groups)**

12.00 - 14.30   **Lunch**

14.30 - 15.30   **Group Feedback (M Akeredolu)**

15.30 - 15.45   **Coffee Break**

15.45 - 16.45   **Other Matters**

16.45   **End of Workshop**

Appendix 3   *List of Abidjan Workshop Participants*

WORKSHOP ASSESSMENT - POST HARVEST LOSSES/
22 - 23 September 1997
Abidjan - Côte d'Ivoire

LIST OF PARTICIPANTS / LISTE DES PARTICIPANTS

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Appendix 4   *Abidjan Training Itinerary*

<div align="center">

Pertes de Poisson après Capture
Atelier à Infopêche
Semaine de 25 Septembre - 3 Octobre 1997
Itinéraire Indicatif

</div>

Jeudi (25 Sept)
Matin
- PRA/MARP
Après-midi
- PRA/MARP
- IIED Video

Vendredi (26 Sept)
Matin
- Choisir Outils pour Pertes
- Tester Les Outils
Après-midi
- Chicago Market

Lundi (29 Sept.)
Matin
- Discussion de l'approche
- 'Load-tracking'
- Classement par scoring
Après-midi
- Visite du Marché de Chicago

Mardi (30 Sept.)
Matin
- Discussion de la visite du Marché de Chicago
- Préparation d'un DP dans un lieu de débarquement
Après-midi
- Visite d'un lieu de débarquement

Mercredi (1 Oct.)
Matin
- Discussion du DP chez les pêcheurs
- Préparation d'un DP chez les fumeurs
Après-midi
- Visite des fumeurs

Jeudi (2 Oct.)
- Préparation des questionnaires

Vendredi (3 Oct.)
Matin
- Discussion des questionnaires
- Etablissement d'un programme de travail
Après-midi
- Visite du Marche de Chicago

PERTES DE POISSON APRES CAPTURE

DIAGNOSTIC PARTICIPATIF (DP)

Une Introduction aux Principes, les Outils, et les Points Pratiques

Abidjan en Octobre 1997

ADEPA   **INFOPECHE**   **NRI**

Introduction

Ce guide a été préparé lors d'un atelier de formation en Diagnostic Participatif (DP) dans le contexte des pertes de poisson après capture. L'atelier qui a eu lieu entre le 24.9. - 4.10.1997 a été organisé à Abidjan par NRI et ADEPA en collaboration avec INFOPECHE.

Le but principal de la formation était d'initier une équipe de chercheurs de l'Université d'Abidjan avec les principes, outils, et points pratiques d'un DP ayant comme objectif d'analyser les pertes de poison après capture. Il était prévu que les chercheurs continueront à raffiner la méthode sur le terrain tout en collectant des informations par rapport aux pertes de poisson. Dans le même contexte, l'équipe validera le 'Draft Manual for Assessing Post-Harvest Fish Losses' (A Ward, NRI, 1997).

En partie le guide est basé sur des documents de formation écrits par l'IIED (International Institute for Environment and Development, Londres) et le NRI. A cela s'ajoutent des différents exemplaires de travail réalisés lors de la formation sur le terrain.

Selon le IIED, le DP est une activité systématique, informelle et progressive qui comporte à la fois un panier d'outils, des principes, et une manière d'organiser le travail d'une équipe sur le terrain. Il n'est pas prévu de présenter ici un manuel exhaustive mais plutôt un guide 'rapide' touchant aux éléments clés d'un tel exercice. Si nécessaire, les chercheurs concernés peuvent compléter leurs connaissances par des guides divers qui ont été publiés notamment sur le MARP (Méthode Acceleré de Recherche Participative) dans le monde francophone, ou le PRA (Participatory Rural Appraisal) dans le monde anglophone.

Principes

Le DP dispose d'un nombre de principes pour mieux comprendre la réalité complexe des pertes de poisson après capture et leur impact économique sur les opérateurs concernés.

En premier lieu c'est **l'attitude** du chercheur qui influence le rapport avec les pêcheurs, femmes fumeuses ou commerçants de poisson qui peuvent être basés dans le milieu urbain ou bien dans les zones rurales. Dans ce sens, le principe de la **participation** inclut l'écoute profonde et l'apprentissage tout en respectant le savoir-faire des opérateurs économiques.

Le **travail pluri-disciplinaire** est très important pour mieux comprendre les aspects techniques et socio-économiques qui influencent les pertes de poisson. Dans ce contexte, une équipe composée des différentes disciplines professionnelles permettra de s'approcher au sujet de différents angles.

Les interviews avec **guide d'entretien** comme outils de base permettent une recherche d'une **compréhension qualitative** plutôt que quantitative et chiffrée. En même temps il y a des outils qui peuvent être utilisés pour classer les priorités des pêcheurs ou obtenir une estimation de l'importance relative des pertes physiques et qualitatives.

Le **croisement et la vérification de l'information** reçue sont basés sur le principe d'approcher un sujet d'analyse par différents moyens en incluant la composition de l'équipe ou bien des combinaisons d'outils techniques. Dans l'absence des échantillons statistiques, ceci permet de vérifier la validité de l'information.

Bien que le DP est un approche très systématique, il est aussi caractérisé par sa **flexibilité** dans le sens que la planification et l'exécution d'une activité

doivent prendre en compte des nouvelles découvertes tout au longue d'un travail participatif.

La **restitution des travaux réalisés** aux opérateurs économiques concernés est un élément clé d'un diagnostic participatif Ceci devrait s'effectuer dans l'esprit de partager les résultats des analyses entreprises ensemble avec la population villageoise.

Les outils

Les outils utilisés au cours d'un DP peuvent inclure:
- l'examen des données secondaires,
- observation directe,
- entretien semi-structuré,
- entretien en groupe ou individuel,
- diagrammes (coupes transversales, calendriers, cartes, etc.),
- classement par ordre ou par cotation,
- anecdotes, études de cas, et mini-biographies,
- jeux et jeux de orle.

Il faut s'imaginer cette liste plutôt comme un panier dans lequel se trouve une sélection d'outils dont le choix s'effectuerait en fonction des objectives de la recherche. Toujours dans ce contexte, deux ou plusieurs outils peuvent se compléter dans le but de collecter l'information ensemble avec les opérateurs économiques.

Les données secondaires

Pour éviter de "réinventer la roue", il est éssentiel d'étudier les données déjà existantes sur un sujet ou une zone recherchée avant d'aller sur le terrain. Les informations secondaires peuvent exister sous forme des publications ou des rapports techniques. Surtout les derniers sont pas toujours facile à accéder.

Les observations directes

Une fois sur le terrain, il est important que l'équipe de recherche ne se contente pas des informations obtenues par voie orale seulement. D'un côté, cette approche permet de vérifier des données, de l'autre côté la compréhension d'un sujet sera approfondie.

L'entretien semi-structuré

Cet outil forme la base de la majorité des DP. Il peut avoir lieu sous différentes formes, par exemple interview individuelle avec un commerçant ou bien entretien avec un groupe de transformatrices.

La différence fondamentale entre une enquête statistique et un entretien semi-structuré est que le dernier engage tous les participants plutôt dans une discussion ayant les caractéristiques d'un échange d'information. Dans ce sens un problème est mieux cerné et cela permettra de générer une information plus riche.

Malgré ces caractéristiques semi-structurées, l'entretien doit être bien préparé dans le sens que l'équipe "sait de quoi elle parle» et que les taches de chaque membre d'équipe sont bien définis.

Le mots suivant sont considères comme 'les six petits aides' pendant un entretien semi-structuré: **Quoi? Qui? Comment? Pourquoi? Quand? Où?**

Néansmoins ces mots doivent être utilise dans un esprit ouvert sans que les interlocuteurs soient mises inutilement sous pression. En plus, il faut éviter d'orienter les réponses.

Les pages suivant montrent trois exemples de guides semi-structurés préparé lors de l'atelier mentionné ci-dessus. Le premier était utilisé pour un DP au Marché de Chicago, le deuxième pour un DP avec des pêcheurs, et le troisième pour un DP avec des femmes fumeuses au quartier de Zimbabwe dans les banlieues d'Abidjan.

GUIDE D'ENTRETIEN

DP   LIEU DE DEBARQUEMENT

INFORMATIONS GÉNÉRALES

* Objectifs

* Organisation / Conditions administratives

* Historique

LA PÊCHE

* Types de pêche : - équipage
                                  - zone

* Matériels de pêche.

Diagr   * Saisons-------} variation de
Diagr   * Espèces-------} volume

* Durée d'une marée / moyens de conservation

* Pertes - type de pêche
               - matériel
               - saison
               - espèces
               - durée.

LE DÉBARQUEMENT

* Lieu

* Temps et durée

* Etapes d'activités

* Moyen de conservation

* Destination / Acheteurs

* Pertes - lieu ; manutention ;saisons ; espèces ; durée
               - Raisons

REMERCIEMENTS

GUIDE D'ENTRETIEN

PREPARATION D'UN DP DANS UN LIEU DE FUMAGE

FUMEUSES DE ZIMBABWE

INFORMATIONS GENERALES

*Objectifs

*Historique

* Carte du lieu

*Activités économiques en

APPROVISIONNEMENT

* Lieu et honoraires

*Espèces/saisons/prix/ qualité du produit à l'achat

* Moyens de transport et embalage

* Pertes - Causes - Précautions

TRAITEMENT

* Type de traitement

* Etapes, méthodes, raisons

* Intrants (et pourquoi) *inuts*

* Main d'oeuvres *Manpiver.*

* Pertes - causes - précautions

COMMERCIALISATION

* Destination des produits

* Stockage (durée, lieu)

* Embalage

* Transport

* Pertes - causes - précautions

* Types de vente - prix - qualités

* Qualité des produits finis

En conclusion, comparer les pertes par étape (utilisation des grains)

REMERCIEMENTS

GUIDE D'ENTRETIEN

**DP AVEC LES COMMERCANTS DU
MARCHE DE CHICAGO**

INFORMATIONS GENERALES

- Présentation de l'équipe
- Explication d'objectifs de recherche et pourquoi Chicago Market a été sélectioné
- Organisation du marché
- Carte du marché
- Mésures

CIRCUIT DE COMMERCIALISATION

- Dessin des flux (pour les deux saisons)
- Approvisionnement et importance des sources
- Espèces
- Emballage (transport)
- Stockage
- Acheteurs / distributeurs

PERTES

- Physique : combien, quantité
- Qualitatives : *catégorie -combien
                    - quantité vendu par catégorie
- Prix
- Saisons
- Espèces

CAUSES DES PERTES
- Emballage
- Tranport
- Stockage
- Saisons
- Espèces
- Force du marché

REMERCIEMENTS

Diagrammes

Parmi les divers types de diagramme qui peuvent être utilise dans le cadre d'un DP auprès des opérateurs économique de la filière poisson, les cartes et les calendriers saisonniers ont démontrés leur utilité. Une carte du marché faite par les commerçants au début d'un DP peut être une bonne démarche pour ouvrir le débat suite a la présentation de l'équipe et ses objectives. Cette même carte sera également utile dans l'application d'autres techniques de recherche telle que la préparation d'un échantillon aléatoire formant un élément clé d'une enquête statistique.

A travers des calendriers saisonniers, les pêcheurs peuvent indiquer les principales saisons de pêche par rapport aux quantités de poisson capturé. Au niveau des femmes transformatrices un telle diagramme permettra de mieux comprendre les activités quotidiennes.

Les matériaux utilisés dans la construction des diagrammes varient selon ce qui est disponible. De préference des matériaux locaux sont utilisé mais cela n'exclue pas les papiers de grande taille et feutres de type 'marker'. L'essentiel est que la population concernée se sent à l'aise avec la technique décrite.

Les deux exemples ci-dessous sont également le résultat de l'atelier mentionné.

ZONES DESSERVIES PAR LE MARCHE DE "CHICAGO".
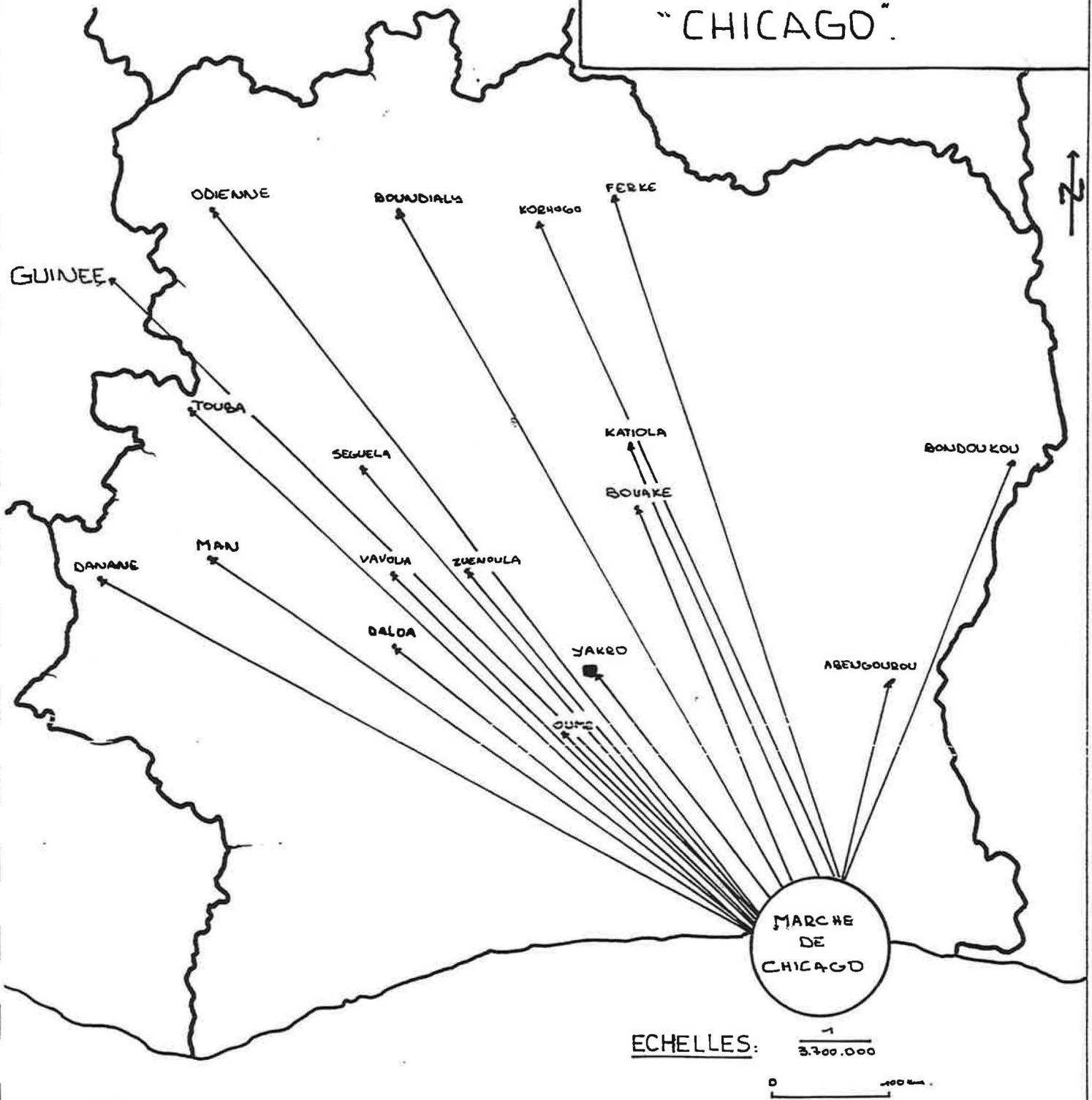
LEGENDE :

• VILLE

■ capitale d'ETAT.

FLUX DE DISTRIBUTION.

ECHELLES : $\frac{1}{3.700.000}$

SOURCE : CARTE REALISEE EN COLLABORATION AVEC LES COMMERÇANTS.
Abidjan , 29 sept 1997

ORGANISATION DU MARCHÉ

ENTREE DU MARCHE

Left column (top to bottom):
- OUMAR
- KARIM.
- IBRAHIMA SIDIBE.
- MOUSSA
- COULIBALY NAMAKORO
- KARIM
- SEKOU KONE.
- SEYDOU KONATE
- BRAHIMA KABE.
- ABOULAYE TOURE
- RAZIKA
- AMADOU COULIBALY

Top row:
- ADAMA HAROUNA
- KOMIOUBA
- MAMADOU SAMAKE
- SIRIKI
- ADAMA "CARTONS"
- SEYNI
- ABOULAYE
- BRAHIM.
- MAMA
- TOURE

Right column (top to bottom):
- BAKARY DAD
- NAMA TERA
- ABOU
- JAOUSA
- BRAHIMA CARTONS.
- ZAKO
- BELA. MOUSSA
- EL HADJ OUSMAR

BASCULES

Inside the market:
- KADRE BABA
- EL HADJ ANZA
- ABOU
- EL HADJ COULIBALY BAKARY SYLLA
- SALE ZAKARI EL HADJ ABDUL
- EL HADJ ATTA
- RAOUL EL HADJ MADOU

ALLEE — ALLEE — ALLEE — ALLEE

- SALE
- SIDI
- SALE ZAKARI EL HADJ ABDOUL
- AROUNA ASOUMA MAMADOU
- ABDOUL
- ABOUBACAR SALIFA
- ASOUMA KADRE
- AROUNA MIKA

VENDEUSES DE PLACALS ATTIEKE

VENDEUSES DE CONDIMENTS.

N
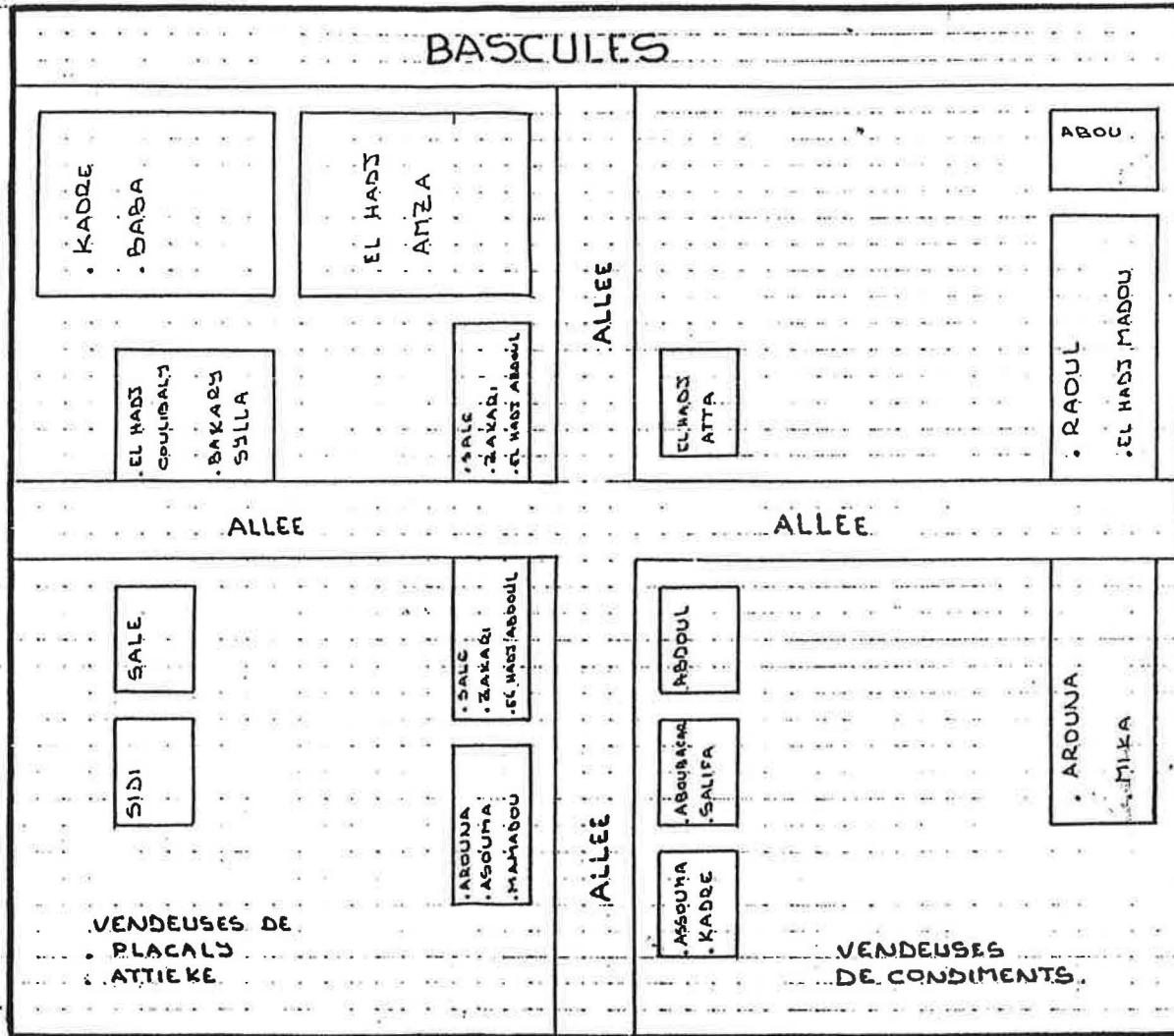
LEGENDE : ———— CONTOUR DU MARCHE

☐ EMPLACEMENT DES COMMERÇANTS.

VARIATION SAISONNIERE DE LA QUANTITE DE POISSON SELON LES ZONES D'APPROVISIONNEMENT

Sept   Octobre   Novembre

Déc Janv Fév Mars Av Mai Juin Juillet
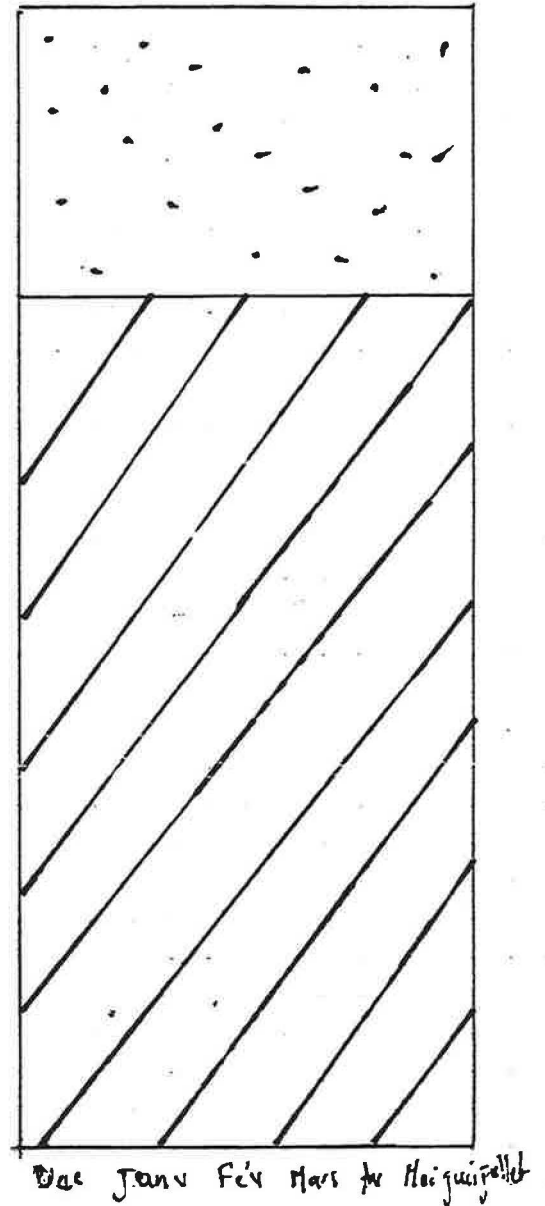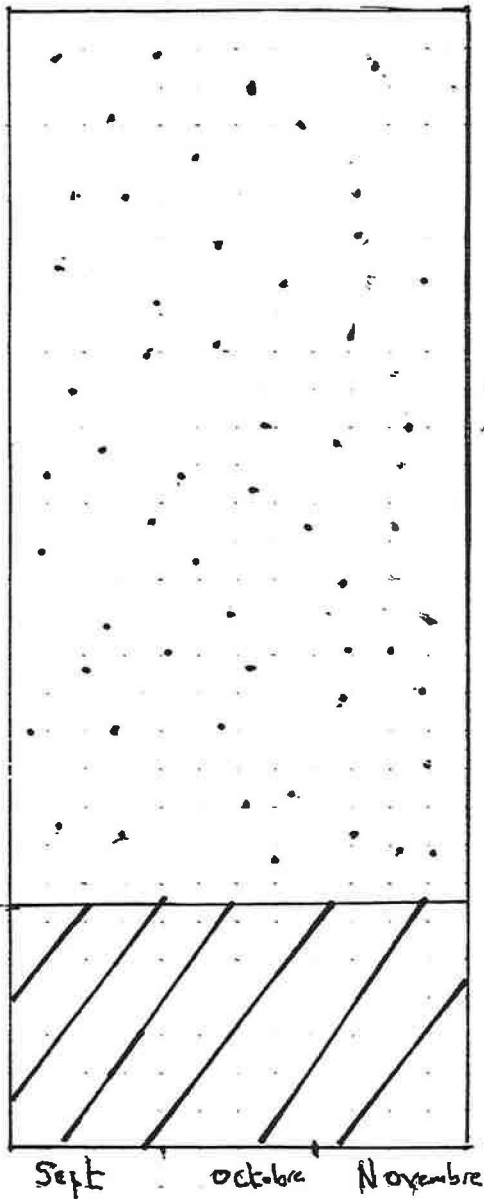
LEGENDE
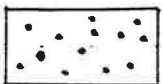
approvisionnement des villages environnants

approvisionnement du port de pêche

SOURCE : ENTRETIEN AVEC UN GROUPE DE COMMERÇANTS DE CHICAGO

FUMOIR

LAGUNE.

CUISINE

MAISON

MAISON
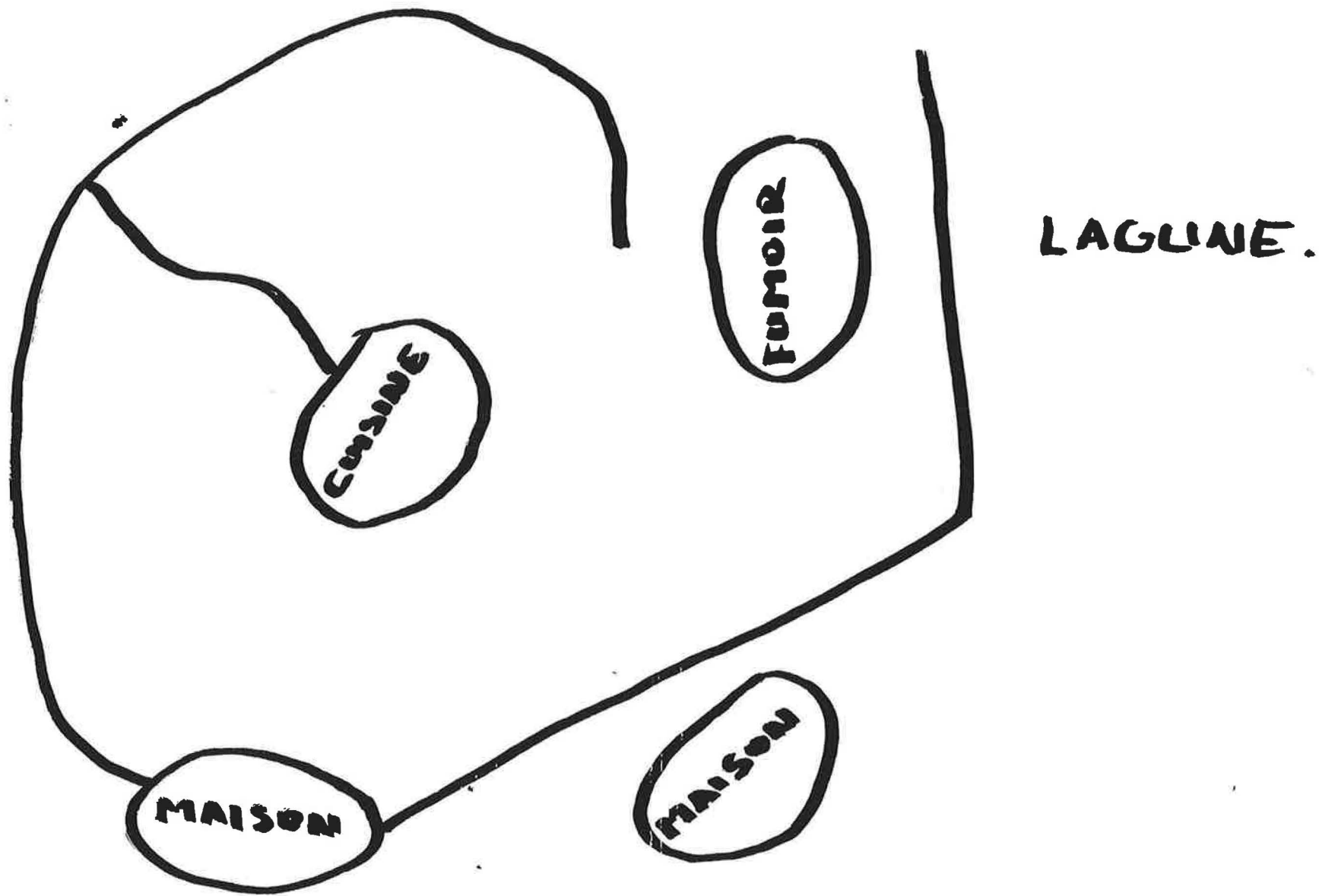
ORGANISATION SPATIALE DE VRIDI-ZIMBABWE VUE PAR UN GROUPE DE FUMEUSES. N° 1

Classement

Dans le contexte d'évaluer les pertes de poisson après capture, les classements par cotation apparaissent particulièrement utile pour une évaluation approximative des taux des pertes physiques et qualitatives.

Des grains ou d'autres matériaux locaux peuvent être utilisés pour évaluer les pertes d'une façon participative. Dans ce sens, une question facilitante la tache d'évaluation pourrait être formulée de la manière suivante: 'Parmi 100 cuvettes de poisson capturés, combien sont en moyenne de qualité réduite'. L'exercice peut s'effectuer avec cent grains de mais (ou du coquillage) sans que les pêcheurs comptent les résultats en détail. L'idée est plutôt d'établir un tas de grains par rapport a la magnitude approximative des pertes (voir les exemples ci-apres).

D'autres méthodes de classement incluent le classement par paires, par matrice directe, ou par ordre hiérarchique. Ces dernières trois techniques sont avant tout utile pour déterminer et classer rapidement les préférences et les raisons du choix d'un individu ou d'un groupe de personnes. Le classement par matrice sera particulièrement utile quand les préférences des opérateurs économiques pour des différentes améliorations techniques à envisager seront évaluées. (dans ce contexte veuillez consulter les manuels montrant des exemples).

Il n'est pas à oublier que les classements faits par un groupe de personnes seront toujours accompagnés par des discussions animées qui révéleront une quantité importante d'information.

Production totale
du poisson debarqué

89
grains de
mais

11
grains de
mais

Poisson
de bonne qualité

Poisson
de mauvaise
qualité
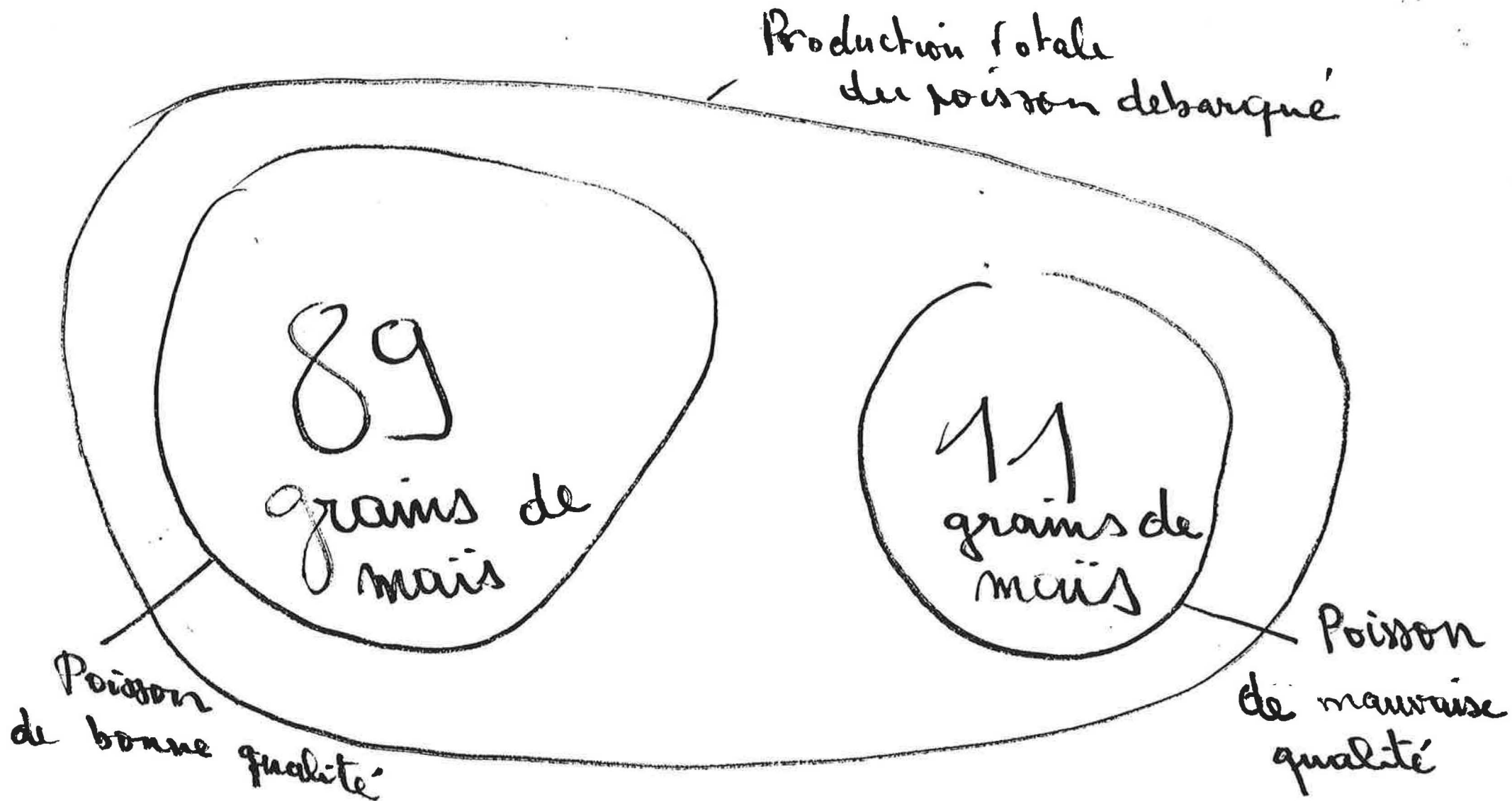
SOURCE: RESULTAT DE L'ENTRETIEN AVEC UN GROUPE DE
PECHEURS DE ZIMBABWE REPRETANT LA
QUALITE DU POISSON DEBARQUE.

PROPORTION DE POISSON CASSÉ APRÈS ACHAT AU PORT
SELON LES FUMEUSES DE VRIDI-ZIMBABWE
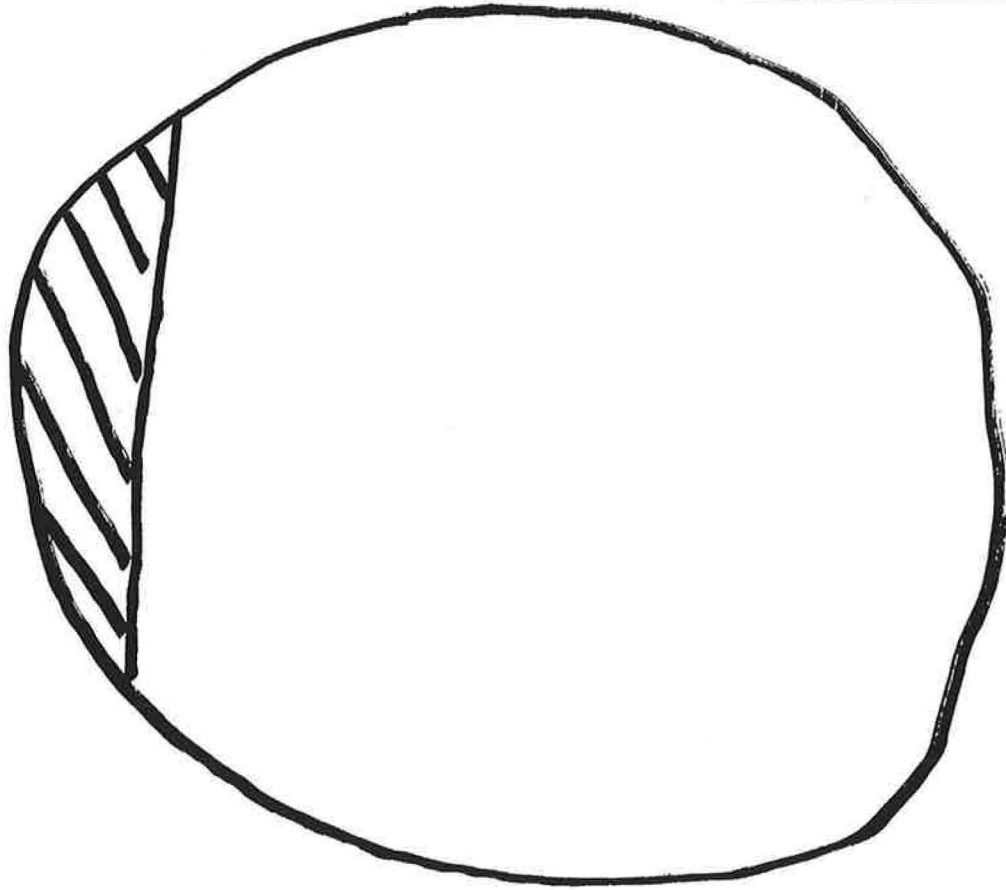
LÉGENDE.

◪ : QUANTITE DE
POISSON CASSÉ APRES
L'ACHAT AU PORT

□ : QUANTITE DE POISSON
ENTIER.

N=2.

Points pratiques

En ce qui concerne la planification d'un DP il est essentiel que **le temps et les moyens** prévus pour les différentes étapes en incluant la rédaction du rapport soient suffisants. Le non respect de cette règle peut mener à des frustrations à différents niveaux notamment les villageois, l'équipe de terrain, et ceux qui attendent le résultat du travail.

Le principe de **stratification** est à appliquer dans la sélection des zones, villages, ou individus à étudier. Ce principe essaye de combler le danger de concentrer ses efforts sur une catégorie de villages ou individus seulement. S'il y a, par exemple des différentes zones écologiques dans la région concernée, il est préferable d'étudier des villages de chaque zone. Au niveau d'un village, le même principe de stratification peut s'appliquer en choisissant des différent catégories de population à contacter. Par exemple, malgré la nécessité de passer par les autorités locales au début du diagnostic, à un moment donné il deviendra nécessaire d'inclure d'autres groupes dans le diagnostic. Des variables qui peuvent être utilisées dans ce choix concernent l'âge (pas seulement les personnes âgées), le sexe (pas seulement les hommes), et la prospérité (pas seulement les plus riches). Si c'est impossible d'avoir par exemple un débat ouvert avec les femmes en présence des hommes il faut considérer d'avoir des rencontres séparés.

Pendant une activité au niveau d'un village ou d'un marché par exemple, il **est** à **éviter qu'une seule personne domine** le débat. Celui qui mène la discussion doit essayer de faire participer le maximum de membres du groupe présent lors d'une réunion pour un entretien semi-structuré. Le résultat sera une information plus riche.

Concernant les techniques et outils à utiliser, **un ésprit ouvert et innovateur** de l'équipe de chercheurs est indispensable. Cela veut dire que les outils présentés dans les guides habituels demandent souvent une adaptation pour

les conditions locales. Dans le passée le Diagnostic Participatif a été surtout utilisé dans les villages agricoles. En ce qui concerne la pèche et les pertes par capture, les outils utilisé d'habitude pourrait certainement bénéficier d'un raffinement.

TRAINING / FORMATION
25 - 26 September 1997
Abidjan - Côte d'Ivoire

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Appendix 6   **Load Tracking**

Trials in West Africa, Sept - Dec 1997.

Mission:
Développer un outil sem-informel pour générer des données quantitatives et qualitatives sur les pertes après capture pour une chaîne de distribution spécifiques en Afrique de l'Ouest.

To develop an semi informal tool for generating quantitative and qualitative data on post-harvest fish losses for a given distribution chain in West Africa.

Objectif:
Le suivi de cargaisons a été utilisé pour évaluer les pertes qualitatives. Un essai devrait être mis en place en Côte d'Ivoire pour tester un suivi de cargaisons pour évaluer les pertes physiques et qualitatives sur la de chaîne de distribution du poisson fumés en Afrique de l' Ouest. L'essai nous permettra aussi de développer un draft de procédures à tester et à évaluer. Les résultats de l'essai seront utilisés comme guide pour d'autres travaux dans la région.

Load tracking has been used to assess quality losses. A trial should be set up in Cote d'Ivoire to test a load tracking framework suitable for assessing quality and physical losses in smoked fish distribution chains of West Africa. The trial will enable a draft procedure to be field tested and evaluated. The results of the trial will guide further work in the region.

1. LANDING (DEBARQUEMENT)

Data/Protocol Données/Protocole	How To Collect Data Comment collecter les données	Comments Commentaires	Work Needed Travail nécessaire
Site			
Date			
weather/temp Temps	team équipe		
Choose batch of fish Choisir un lot de poisson	team (équipe)	random sample échantillon aleatoire	define sampling technique definir l' échantillonnage technique
Time of capture Temps de capture	ssi with fishermen who fished in the canoe which landed the fish ssi avec les pêcheurs qui ont opere dans la pirogue d'où est débarqué le poisson	must identify from which boat batch came doit identifier les pirogues d'où le lot provient	
Time fish was landed Temps où le poisson est débarqué	as above idem	as above idem	from exploratory study à partir de l'étude préliminaire
Gear type used for capture Type d'engins pour la capture	as above idem	as above idem	
Type of vessel (with engine or without) Type de pirogue	as above idem	as above idem	

(avec ou sans moteur)			
Time between landing and leaving site Temps écoulé entre le débarquement et le déplacement du poisson du site	ssi with buyer/owner ssi avec vendre/propriétaire		
Quality Assessment of batch Evaluation de la qualité du lot	team using demerit scoring équipe utilisant la cotation	sample taken from batch at random échantillonnage de lot aléatoire	develop for fresh fish développer pour le poisson frais.
Price according to quality Prix en fonction de la qualité	ssi with fishermen and cross check with trader ssi avec pêcheurs et vérifier avec le commerçant	standardise into kg standardisation kg	

2. TRANSPORT

Data/Protocol Données/Protocole	How To Collect Data Comment collecter les données	Comments Commentaires	Work Needed Travail nécessaire
Date	team équipe		
From where to where d'où à où	ssi with buyer ssi avec le commerçant		
weather/temp Temps	team équipe		
Type of transport Mode de transport	ssi/observation		
Time duration of transport Durée du transport	ssi/observation ssi/observation		
Who is transporting Qui transporte?	ssi with buyer ssi avec le commerçant		
Who is receiver/buyer Qui reçoit/vendeur		-may not be a buyer unless processed fish peut être n'est pas un vendeur sauf si est transformateur de poisson	
Handling/preservation/packaging methods manatention /preservation/ emballage	ssi/observation observation/ssi		

2. TRANSPORT (Contd)

Quality assessment Evaluation de la Qualité	team at destination L'équipe à la destination	random sample or same sample as landing échantillon aléatoirememe échantillon qu'au débarquement	develop demerit scoring développer un barême de cotation
Physical losses during transport Pertes physiques durant le transport	ssi with buyer ssi avec le commerçant		

3. PROCESSING (TRANSFORMATION)

Data/Protocol Données/Protocole	How To Collect Data Comment collecter les données	Comments Commentaires	Work Needed Travail nécessaire
Date			
Site			
weather/temp Temps			
time of arrival Temps à l'arrivée			
processing stages with time duration Etapes de la transformation durée	ssi with processor ssi avec le transformatein		identify processing stages identifier les étapes de la transformation
Quality assessment of final product Evaluation de la qualité du produit fini	team équipe	-	develop demerit score chart for processed fish développer un diagramme sur le produit traité
Prices Prix	ssi with processor/buyer ssi avec transformateur/ acheteur	accurate price information may be difficult to get une information fiable pourrait être difficile à obtenir	

3. PROCESSING (TRANSFORMATION) (Contd)

Physical losses during processing **Pertes physiques durant le traitement**	ssi with processor (scoring) ssi avec le transformateur (cotation)		
time of sale/onward transport **temps écoulé avant la vente après le transport**	ssi with processor ssi avec le transformateur		
who buys and where **Qui achète et oú?**	ssi		
packaging (who,material) **emballage (qui? matériau utilisé)**	ssi/observation		

WHOLESALE (Vente de Gros)

Data/Protocol Données/Protocole	How To Collect Data Comment collecter du données	Comments Commentaires	Work Needed Travail nécessaire
Date			
Site			
weather/temp Temps			
time batch arrives temps ou les lots sont réceptionnés			
time sold temps ou les lots sont vendus			
processes at market (weighing, sorting, packing,storage) + times Transformés au marché (pesée, classification, emballage, stockage)		info from exploratory study information venant de l'étude explorataire	
Physical losses Pertes physiques	ssi with trader (scoring) ssi avec les commerçants (cotation)		
Quality assessment Evaluation de la Qualité	demerit score sheet plus scoring barême de cotation		develop demerit score chart développer un diagramme de cotation

WHOLESALE (Vente de Gros)

Prices according to quality Prix en fonction de la qualité	ssi		
Onward destination Destination	ssi with trader (scoring) ssi avec commercant (cotation)	batch may be divided up les lots pouvant être divisés	

RETAIL (Vente au Retail)

Data/Protocol Données/Protocole	How To Collect Data Comment Collecter les données	Comments Commentaires	Work Needed Travail nécessaire
Date	team équipe		
Site	team équipe		
weather/temp Temps	team équipe		
time of arrival Temps à l'arrive	ssi/observation		
duration of selling Durée de la Vente	ssi		
handling/preservation methods Méthode de Manutention/ préservation	ssi/observation		
Physical losses Pertes physiques	ssi	any fish not sold poisson non vendu	
Quality assessment Evaluation de la Qualité		sample of batch échantilloner le lot	develop demerit scoring développer un barême de cotation

Fundamental Issues for Discussion: (Sujets Fondamentaux á Discuter)

1. *Identify a number of traders within a chain who will co-operate on a regular basis. This may be done by starting at the end of the chain and working back. Operators may regularly deal with the same buyers and sellers. If this is the case then it will be easier to identify the key players within the chain and approach them for collaboration.*

Identifier un nombre de commerçants de la chaîne avec qui nous pourrons coopérer sur une base régulière. Ceci peut être fait en commençant par le bout de la chaîne et la remonter vers le début. Les opérateurs pouvant travailler avec les mêmes commerçants et vendeurs. Si c'est le cas il est plus facile d'identifier les operateurs de la chaîne et les approcher pour établir une relation de coopération.

2. *How do we encourage operators to co-operate?*
Comment encourager les opérateurs à coopérer

> *by explaining objectives and suggesting they may benefit from the research?*
> En leur explicant les objectifs et en les informant sur les effets bénéfiques de la recherche?

> *by paying the operators and inconvenience fee?*
> en payant les opérateurs et en les dédommagant

> *by buying the fish used*
> en achetant le poissons utilisé

3. *Do we focus on whole chain or a part of chain initially?*

Est-ce-que nous vous intersessez unitialement sur toute on une partie de la chaîne?

4. *How should the batch of fish be selected?*

Comment les lots de poisson devont être sélectionnes?

> *random sampling of batches at landing*
> échantillonnage aléatoire de lots au débarquement

> *same time of day for each sampling day*
> même horaire du jour pour chaque jour d'échantillonnage

> *sample from a number of canoes*
> échantillonage a partir d'un nombre de pirogues

5. *How often?*

Quelle et la périodicité ?

once a month?
une fois par mois?

6. *If different traders are involved every time will it be possible to ensure co-operation?*

Si différents commerçants sont impliqués à chaque fois, est - il possible d'assurer la coopération?

7. *An exploratory PRA should be used to characterise the distribution chain. This will identify the following:*

Un diagnostic participatif doit être utilisé pour caractériser la chaîne de distribution. Ceci permet l'identifier ce qui suit.

key species and products and define which to study
les espèces et les produits les plus importants et définir lesquels sont étudiés

best times for data collection
meilleurs temps/période pour la collecte de données

identify traders in chain to work with
identifier les commençants le long de la chaîne avec qui nous travaillons

traditional measurements
methodes traditionnelles de mesures

8. *Each time the Load Tracking trial is done an opportunity should be taken to conduct a short PRA study which focuses on a short checklist of key loss related issues:*

A chaque fois que la méthode de suivi de cargaison est utilisér l'opportunité de conduite une courte étude par diagnostic particapartif basé sur un checklist court des pertes les plus importants

physical losses in last month
pertes physiques le mois derniers
main species landed
les principales espèces débarquées
quality losses over the last month
pertes qualitatives eurgist es le mois dernier
constraints
contraintes

Appendix 7   *Draft Questionnaires - Abidjan*

QUESTIONNAIRE
Communautés de pêcheurs

Fiche n°...

Localité... Date:...................................

Enquêteur:...

NB: Assurez-vous que toutes les réponses se font par rapport à une seule embarcation dans laquella personne concernée a participé à la pêche.

I- Données socio-démographiques

11- Nom.. 12- Age.............................. 13- Sexe...............................
14- Nationalité.............................. 15- Nombre d'année d'expérience...
16- Niveau d'instruction................ 17- Situation matrimoniale...
18- Nombre d'enfant...................... 19- Religion...

NB: Date de la dernière marée.......................................(S'il y a plus de 7 jours de cela, veuillez arrêter de repondre au questionnaire)

II- Engins de pêche

21- Nom ou numéro de l'embarcation ....n°..
22- Quel engin de pêche avez-vous utilisé?...

III- La pêche

31- Lieu de pêche.. 32- Durée de la marée...

33- Avez-vous rejeté du poisson dégradé dans la mer avant le débarquement? Oui........; Non..............
   Si oui
   331- Espèce de poisson...
   332- Unité de mesure..
   333- Nombre d'unités...
   334- Raisons pour laquelle le poisson a été jeté...

34- Avez-vous vendu du poisson à une embarcation de collecte avant de débarquer? Oui.......; Non.....
   Si oui
   341- Espèce de poisson...
   342- Unité de mesure..
   343- Nombre d'unités...
   344- Prix de l'unité...

IV- Débarquement et commercialisation des produits de la pêche

41- A quelle heure avez-vous débarqué votre poisson?..

42- Avez-vous pris du poisson pour l'autoconsommation ou autre? Oui...............; Non...................
   Si oui
   421- Espèce de poisson...
   422 -Unité de mesure..
   423- Nombre d'unités...

43- Quelle quantité de poisson avez-vous débarqué sur la plage...
   (y compris le poisson destiné à l'autoconsommation)
   431- Espèce de poisson...

432- Unité de mesure..

433- Nombre d'unités..

44- Le poisson a t-il été immédiatement rejeté après le débarquement du fait de son altération?

Oui....................; Non...................

Si oui

441- Espèce de poisson..

442- Unité de mesure..

443- Nombre d'unités..

444- Raisons pour laquelle le poisson a été jeté..

45- Le poisson a t-il été rejeté plus tard du fait de sa dégradation?   Oui....................; Non................

Si oui

451- Espèce de poisson..

452- Unité de mesure..

453- Nombre d'unités..

454- Raisons pour laquelle le poisson a été jeté..

? **Si non,** qu'avez-vous fait de ce poisson de mauvaise qualité?................................

....

46- A quel prix avez-vous vendu le poisson de bonne qualité?

461- Espèce de poisson..

462- Unité de mesure..

463- Nombre d'unités..

464- Prix de l'unité...

47- Avez-vous vendu du poisson à un prix plus bas aux transformatrices ou autres? Oui.....; Non.....

Si oui

471- Espèce de poisson..

472- Unité de mesure..

473- Nombre d'unités..

474- Prix de l'unité...

475- Utilisation (Qu'est-ce que l'acheteur va faire de ce poisson)...........................

476- Raisons pour laquelle le poisson a été vendu à ce prix...................................

48- Est-ce qu'une partie du poisson n'a pas été vendue (A l'exception du poisson autoconsommé ou bien rejeté du fait de son atération)

481- Espèce de poisson..

482- Unité de mesure..

483- Nombre d'unités..

484- Raisons pour laquelle le poisson n'a pas été vendu.......................................

Fin des questions posées aux pêcheurs

V- Tableau de synthèse des unités de mesure

Espèces de poisson	unité	Poids moyen de l'unité
1-		
2-		
3-		

QUESTIONNAIRE
Transformateurs

Fiche n°....................................

Localité..   Date:.............................

Enquêteur:...

I- Données socio-démographiques

11- Nom..............................   12- Age............................   13- Sexe...............................

14- Nationalité............................   15- Nombre d'année d'expérience.........................

16- Niveau d'instruction................   17- Situation matrimoniale.................................

18- Nombre d'enfant....................   19- Religion..

NB: Si la dernière activité de transformation date de plus de 2 semaines, arrêtez l'entretien là

II- Approvisionnement en poisson (espèces et quantités de poisson achetées)

21- Espèces..

22- Quelle est l'unité de mesure du produit acheté: Panier......Cuvette.......Carton.....Autres.......

23- Combien d'unités avez-vous acheté...

24- A quel prix?...

23- Où avez-vous acheté votre poisson: Région d'Abidjan..............   Hors d'Abidjan.......

III- Transformation du poisson (espèces et quantités de poisson transformées)

31- Espèces de poisson..

32- Unité de mesure : Panier...................Cuvette..............Carton............Autres.................

33- Quelle quantité avez-vous transformé...

35- Type de transformation: Fumage.................Séchage..............Autre(préciser)..................

IV- Evaluation des pertes

41- Avez-vous rejeté du poisson pendant ou après la transformation?   **Si oui**

411- Espèce de poisson...

412- Unité de mesure..

413- Nombre d'unités..

414- Raisons du rejet..

415- Utilisation finale du poisson..

42- Avez-vous perdu du poisson pour d'autres raisons?   **Si oui**

421- Espèce de poisson...

422- Unité de mesure..

423- Nombre d'unités..

424- Raisons de la perte..

V- Vente du poisson transformé

51- Donnez le prix moyen du poisson de bonne qualité vendu

511- Espèce de poisson...

512- Type de traitement..

513 -Unité de mesure..

514- Nombre d'unités..

515- Prix de l'unité..

52- Avez-vous vendu du poisson à un prix réduit du fait de sa dégradation . Si oui

521- Espèce de poisson...

522- Type de traitement..

523 -Unité de mesure...

524- Nombre d'unités..

525- Prix de l'unité..

526- Raisons de la dégradation qualitative..

527- A quelle fin le poisson dégradé a t-il été utilisé..

53- Avez-vous rejeté du poisson suite à sa dégradation qualitative ou pour d'autres raisons?

531- Espèce de poisson..

532- Type de traitement..

533 -Unité de mesure..

534- Nombre d'unités..

535- Cause de la dégradation...

536- Utilisation finale du produit...

Fin des questions posées aux transformateurs

V- Tableau de synthèse des unités de mesure

Espèces de poisson	unité	Poids moyen de l'unité
1-		
2-		
3-		
4-		

QUESTIONNAIRE
Commerçants

Fiche n°...........................

Localité.. Date:...........................

Enquêteur:..

NB: Assurez-vous que toutes les réponses se font par rapport à un seul bâteau dans lequel la personne concernée a pêché elle-même.

I- Données socio-démographiques

11- Nom............................ 12- Age........................ 13- Sexe.............................

14- Nationalité......................... 15- Nombre d'année d'expérience.............................

16- Niveau d'instruction................ 17- Situation matrimoniale.............................

18- Nombre d'enfant.................... 19- Religion.............................

II- Approvisionnement en poisson

21- Quand avez-vous acheté le lot de poisson que vous vendez présentement?

    211- Moins d'une semaine...

    212- Deux semaines...

    213-Trois semaines..

    214- Autres (préciser)..

NB: Si l'approvisionnement date de plus de 14 jours, arrêter l'entretien ici

22- Combien et quelles espèces de poisson avez-vous achetées?

    221- Espèces...................................

    222- Quel traitement a t-il subi: Frais............   Fumé............   Salé-séché...............

    223- Quelle est l'unité de mesure du produit acheté: Panier...... Cuvette.......Carton.....

        Autre........................

    224- Combien d'unités avez-vous acheté...

    225- A quel prix?...

23- Où avez-vous acheté ce poisson: Région d'Abidjan.................. Hors d'Abidjan.......

                                  (Préciser le lieu)   (Préciser le lieu)

24- Quelle était la qualité du produit à l'achat?

    241- Bonne qualité

        2411- Espèces............   2412- Unité de mesure........ 2413-Nombre d'unités

        2414- Prix de vente...

    242- Mauvaise qualité

        2421- Espèces............   2422- Unité de mesure........ 2423-Nombre d'unités

        2424- Prix de vente...

III- Le transport du poisson

31- Comment le poisson a t-il été transporté jusqu'au marché?...

    311- Espèce de poisson.............312- Type de traitement: Fumé.............Salé-séché...........

    313- Quantité: Unité de mesure.........................   Nombre d'unités.............................

    314- Le moyen de transport: Camionnette........Pinasse.........Pousse-pousse...........Autre......

32- Combien de temps s'est-il passé entre l'achat du poisson et son arrivée au marché?

    321- Espèce de poisson.............322- Type de traitement: Fumé.............Salé-séché...........

    323- Quantité: Unité de mesure.........................   Nombre d'unités.............................

    324- Temps mis: Jour..........Semaine.........................Mois.......................Autre...............

IV- Le stockage

Combien de temps s'est-il passé entre l'arrivée du poisson au marché/ magasin et la vente de la quantité totale?

    1- Espèce de poisson..............2- Type de traitement: Fumé..............Salé-séché...............

    3- Quantité: Unité de mesure...........................   Nombre d'unités.............................

    4- Temps mis: Jour..........Semaine.....................Mois.......................Autre.....................

V- La vente

51- Avez-vous vendu la totalité du poisson acheté?   oui ....; Non.............

    Si oui

    511- Espèce de poisson...

    512- Type de traitement...

    513 -Unité de mesure...

    514- Nombre d'unités..

    515- Prix de l'unité...

52- Est-ce que vous avez vendu du poisson à un prix réduit suite à la dégradation de sa qualité

    Si oui

    521- Espèce de poisson...

    522- Type de traitement...

    523 -Unité de mesure...

    524- Nombre d'unités..

    525- Prix de l'unité...

    526- Raisons de la dégradation qualitative..

    527- A quelle fin le poisson dégradé a t-il été utilisé...

53- En moyenne à quel prix vous avez vendu du poisson de bonne qualité

    531- Espèce de poisson...

    532- Unité de mesure...

    533- Nombre d'unités..

    534- Prix de l'unité...

54- Avez-vous jeté du poisson suite à la dégradation de sa qualité ou pour d'autres raisons? **Si oui**

    541- Espèce de poisson...

    542- Type de traitement...

    543 -Unité de mesure...

    544- Nombre d'unités..

    545- Cause de la dégradation...

    546- Utilisation finale du produit...

Fin des questions posées aux commerçants

V- Tableau de synthèse des unités de mesure

Espèces de poisson	unité	Poids moyen de l'unité
1-		
2-		
3-		
4-		

Appendix 8　　　　Scoring to Assess Losses

The Use of Scoring in Post-harvest Fish Loss Assessment

Scoring had been used to a limited degree during previous loss assessment work in Tanzania. It was tried during the Abidjan training seminar and the results suggested that it should be tested further in loss assessment work. Scoring was the focus of much of the MARP work conducted during the second loss assessment training seminar in Mbour. It was seen as an appropriate tool for the Mbour team since it could be facilitated by team members who were not literate.

During the Mbour seminar several scoring exercises were planned and tested by the team, amongst themselves, and then used by the team with fishermen and processors. The scoring exercises were used during semi-structured interviews and focused on fish quality and losses in relation to:

- fishing gear type
- seasonality
- fish species

A further scoring exercise was also tested which enabled loss levels to be calculated.

Scoring proved useful since it enabled the team to gain a rapid understanding of how losses vary according to variables.

Scoring exercises with groups of operators stimulated discussion and generated additional valuable information. A Senegalese post-harvest fisheries specialist who had worked in Mbour several times before said he had learnt a lot of new information from only a couple of relatively quick scoring exercises.

Fishermen appeared to be much more comfortable during the scoring than during straightforward questioning.

Once the actual scoring has been completed and a matrix is in front of a group of operators it was relatively easy to probe and ask questions. For example once a seasonal scoring exercise had been completed it was possible to ask questions about the reasons for loss at certain times of year. Once peak and low loss seasons have been discussed it is then relatively easy to follow on with a scoring exercise which can estimate the level and value of losses during each season.

Scoring According to Fishing Gears
An initial exploratory scoring exercise was done with two separate groups of fishermen as part of an SSI. The first group was composed of members of the team carrying out the loss assessment studies and was used as a training exercise. The second group were fishermen from Mbour and it was the team which facilitated the scoring exercise. Two groups were used to build an element of cross checking into the

exercise. The scoring was done using a matrix drawn on the ground (sand). Stones were used as counters.

The first step was to identify the fishing gears used by Mbour fishermen. The group were asked which was the gear that produced the best catches per trip, in terms of volume. This gear was given a score of 10 and the other gears were scored accordingly in turn. In some instances the scoring went beyond 10 which was a reflection of the extreme attributes of the particular gear according to the particular criteria. The results of this exploratory scoring are shown in Figures 1 and 2.

Figure 1 Results of Scoring with Fishermen (Team), Mbour 9/10/97.

	Trap	Surround Gill Net	Beach Seine	Line	Octopus Jig	Surround Net	Deep Gill Net	Long Line (100 hooks+)
Quantity of Fish Caught per trip (10=most)	1	4	2	3	1	10	3	3
Quality of Fish (1=poor, 10=best)	11	4	8	10	4	8	1	8
Physical Losses (0=lowest)	0	8	8	1	1	8	10	2
Number of Gears in Village (1=lowest)	1	2	1	5	1	10	3	5
Cost of Gear (1=cheapest)	1	5	7	3	3	15	4	3

Figure 2 Results of Scoring with Fishermen Group, Mbour 9/10/97.

	Trap	Surround Gill Net	Beach Seine	Line	Octopus Jig	Surround Net	Deep Gill Net	Long Line (100 hooks +)	Drift Net
Quantity of Fish Caught per trip (10=most)	3	2	1	3	5	10	5	5	1
Quality of Fish (1=poor, 10=best)	14	2	7	10	8	5	1	7	1
Physical Losses (0=lowest)	0	6	8	1	0	10	8	1	5
Number of Gears in Village (1=lowest)	5	1	2	10	6	7	4	8	1
Cost of Gear (1=cheapest)	2	6	8	2	3	20	6	6	3

Figs 1 and 2 show that high physical losses are associated with Surround Nets. The highest catches are also recorded with these gears. Fig 1 suggests that there are more Surround Nets than any other gears in the village. Fig 2 suggests that it is the second most popular gear.

Seasonal Scoring
As a result of the exploratory scoring it was decided by the team that the next step of the assessment study should be to focus on the Surround Net losses since high losses were associated with these gears and catches were also high. This gear is mainly used to catch Sardinella spp. Which are thought to account for 80% of the annual fish catch at Mbour, in terms of volume.

A seasonal scoring exercise was planned based on work done in Tanzania on sweet potato quality (Thompson 1997). The exercise was carried out within the team, since the team composed of two surround net fishermen (Group A). It was then done with a group of 12 surround net fishermen (Group B). The results of the two scoring exercises are given in Figures 3 and 4, which show that losses of Sardinella caught by surround nets are seasonal. Both groups identified August as the month with the highest physical loss, although Group B also indicated that losses are equally as high in June. Group A identified December as the month with the lowest losses and Group B as January. Figures 3 and 4 show both the traditional calendar which is made up of four seasons and the European. Both were used during the exercises.

Figure 3 Seasonal Scoring with Fishermen for Surround Net Fishery, Mbour, Oct 1997 (Group A)

		Nor			Tioron			Nawet			Loly	
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Quantity per trip	••••••	•••••	••••••••	•••••••••••	•••••••••	••••••••••	•••••••	•••••••	•••••	••••	•••	•
Price per basket	••••••••	•••••••	•••••	•	•••	•••	•••••••	•••••••	••••••••	•••••••	••••••	••••••••••
Physical Loss	•	••	••••	•••••••	•••••••	••••••	•••••••	•••••••••••	••••	•••	•	•
Quality of fish	•••••••••	•••••••••••	••••••••••	•••••••	••••	•••	••	•	•••	••	•••	••••••••

• = lowest or poorest

•••••••••• = highest or best

Figure 4 Scoring with Surround Net Fishermen for Sardinella, Mbour, 11/10/97 (Group B)

		Nor			Tioron			Nawet			Loly	
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Quantity per trip	•••••••••	•••••••	••••••	••••••••••	•••••••	••••	•••••••	•••••••••	•••••	•••••	•	•••••••
Price per basket	•••••••••	•••••••	••••••••••	••••••	••••	•	•••••	••••	•••••	•••••••	••••••••••	•••••••••
Physical Loss	•	••	••	••••	•••••	•••••••••••	•••••••	••••••••••	•••••	•••	•••••	••
Quality of fish	•••••••••	•••••••••	••••••••••	•••••••	•••••	•	••••	•	••	••••	•••••	•••••••

• = lowest or poorest

•••••••••• = highest or best

Discussion during the scoring exercises revealed that high losses in June, July and August are due to the high temperatures leading to rapid spoilage. In addition, this is also the rainy season and if fish are rained on between capture and landing they also spoil more rapidly and buyers are more likely to reject fish. Typically at this time of year the first catch of the day will often be landed in a spoilt condition. Furthermore, if it rains then processors, who normally buy both good and poor quality fish, will not process hence reducing the demand for fish, leading also to physical losses.

Quantifying Losses

After identifying when peak and low losses occur, a further scoring exercise was carried out with each group to estimate the level and value of loss during August, when losses are highest and during January and December when physical losses are lowest.

A hundred stones were used to symbolise a catch of 100 baskets of fish (a basket being the traditional measure for fish with an average weight of 60 kg). The groups were asked to assume that this was a catch in August and then in December and were asked to divide the 100 baskets according to the amount of good quality fish, poor quality fish and fish thrown away according to month.

During the exercise a number of questions must be asked which will provide additional data to enable calculations of loss levels to be made. The questions are:

- on average how many baskets of fish do you land per trip in the month of peak losses?

- how many fishing trips do you make on average in the month of peak losses?

- what was the price of a basket of good quality fish during the month of peak losses?

(repeat questions for month of loss losses)

- what is the weight of the traditional unit of measurement (basket)?

Another useful question to ask but which was not used during this exercise would be:

- how often do you experience losses during the month of peak/low losses?

Given the extra information generated by the questions it is possible to go on and estimate the quantity and value of physical losses during the peak and low loss times. The results of this exercise are shown in Figures 5 and 6 which show that physical losses are between 13 and 30% for August. During the period of least physical loss, Group A suggest 5% in December and Group B suggest 0% in January, for physical losses.

In terms of value, physical losses according to Group A are calculated to be equivalent to 124,000 CFA per trip in August whereas Group B suggest a much lower

figure of 21,050 CFA. These values are based on selling the fish physically lost for the best price at the time.

Clearly there is some difference between the results and it was suggested that the team should conduct another group scoring exercise as well as conduct scoring with individuals.

Figure 5 Scoring to Assess Level of Loss for Surround Net Fishing (Group A)

		High Loss	Low Loss
		Aug	Dec
•	No baskets Sold for Good Price	50	80
•	No baskets Sold for Low Price because of Quality	20	15
•	No of baskets of Fish Thrown Away	30	5
1	No of Fishing Days	30	30
1	Average No Baskets per Trip	150	42
1	Average Weight of Basket	60	60
a	Weight of Fish Landed per trip (kg)	9000	2520
1	Price of Good Quality Fish per basket (CFA)	2500 - 3000	2000
a	Good Quality Price (kg)	46	33
1	Price of Poor Quality per basket	500 - 1000	800 - 1000
a	Poor Quality Price (kg)	12.5	15
a	Weight of Physical Loss per trip (kg)	2700	126
a	Max Value of Physical Loss per trip (CFA)	124,200 (£132.13)	4,158 (£4.40)

(£1 = 940 CFA)

• results of scoring exercise
1 data from questions posed during the scoring exercise
a calculated after exercise completed

Figure 6 Scoring to Assess Level of Loss for Surround Net Fishing (Group B)

		High Loss	Low Loss
		Aug	Jan
•	No baskets Sold for Good Price	57	80
•	No baskets Sold for Low Price because of Quality	30	20
•	No of baskets of Fish Thrown Away	13	0
1	No of Fishing Days	25	20
1	Average No Baskets per Trip (avg 30 days)	108	100
1	Average Weight of Basket	60	60
•a	Weight of Fish Landed per trip (kg)	6480	6000
1	Price of Good Quality Fish per basket	1500	2000 - 2500
a	Good Quality Price (kg)	25	37.5
1	Price of Poor Quality per basket	400	1500
a	Poor Quality Price (kg)	7	25
a	Weight of Physical Loss per trip (kg)	842	0
a	Max Value of Physical Loss per trip	21,050	0

(£1 = 940 CFA)

• results of scoring exercise
1 data from questions posed during the scoring exercise
a calculated after exercise completed

During the scoring exercise it was possible to ask questions about what happened to fish of low quality and the fish physically lost. The low quality fish was sold locally for processing and the fish physically lost were either discarded at sea or left on the beach. The good quality fish were sold fresh in Dakar.

Scoring Losses According to Different Fish Species

Another scoring exercise was tried with a group of fishermen in Mbour. The exercise was done to try and see if losses were associated with certain fish species. The first step was to get the fishermen to list the key species caught. In this case, by surround nets. Once the species were identified then scoring was done according to four criteria: quantity caught, price, physical losses and fish quality. The results of the exercise are given in Figure 7.

Figure 7 Scoring According to Fish Species, Fishermen's Group, Mbour, Senegal Oct 1997

	Sardinella (yaboye)	Horse Mackerel (diai)	Caranx spp (saka)	Carpe Blanche (sompat)	Small Caranx spp (lagna lagna)	Barracuda (seude)
Quantity Caught	••••••••••	••	•••••	••••••	••••	•••
Selling Price to Fishermen	•••	•••••	••••••	•••••••••	•	••••••••••
Physical Losses	••••••••••	•••••	•••	••	•••••••••	•
Quality of Fish	••	••••	•••••••••	••••••••••	••	••••••••••

Figure 7 shows that the highest physical losses are associated with Sardinella and small Caranx spp and that the general quality of Sardinella landed is poor as is that of small Caranx spp. On the other hand losses of barracuda are lowest and the selling price to the fishermen is highest.

Seasonal Scoring with Processors

A similar seasonal scoring exercise to that done with the fishermen's groups was done with a group of women fish processors in Mbour. The group consisted of Tamabjan and Guedj processors (types of salted a dried products). The group were not able to relate to the European calendar so the traditional calendar was used. Figure 8 shows the results of the exercise.

Figure 8 Seasonal Scoring with Women Processors (Guedj and Tambajan), Mbour, Senegal, October 1997.

	NOR	TIORON	NAWET	LOLY
	Jan - Mar	Apr - Jun	Jul - Sept	Nov - Dec
Quantity of fish processed	•••••••••• (•)	•••••• (•••••••)	•• (•••••••••••)	••••••••• (••)
Price paid for raw material	•• (••)	•••••• (••••••)	•••••••••• (•••••••••••)	••••••••• (•••••••••)
Quality of raw material	•••••••••• (••••••••••)	••• (•••••••••)	• (•)	•••••• (•••••••)
Physical losses before and during processing	•• (•)	••••• (•••••••••••)	•••••••••• (••••••••••)	•••• (••)

(Scores in brackets are for Tambajan)

From Figure 8 it can be seen that losses are seasonal and that the highest losses occur during "nawet". This is the hottest time of year and corresponds with high losses in the fishing sector. The quality of fish is at its lowest at this time of year also.

During the scoring exercise the processors identified three main types of loss:

- during the sorting of the fish prior to processing fish can be discarded because they are either of poor quality or because they are too small or are the wrong species.

- during the first stage of processing which is maturation in a tank with salt, fish can spoil and be discarded

- after maturing fish can be discarded before they are put out to sun dry.

During "nawet" on average 30 baskets of fish are processed for Tambajan per day. Out of these on average 2.5 baskets are physically lost for the above reasons. During sorting 0.5 of a basket can be discarded. A further basket can be lost during maturation and another basket during washing. When the processors were asked how often they suffered such losses they replied saying that "it happens often". During "nor" up to 3 baskets of fish can be discarded at the sorting stage because the baskets contain mixed species and small fish. The problem is not so much one of spoilage but of size and species. The scoring results do not clearly indicate this. This data was picked up after the scoring had been completed.

This data indicates that during "nawat" up to 10% of fish purchased can be lost before processing is completed. The exercise was only done for part of the processing stage. It was not done for fish after processing and before distribution.

This exercise cross checked the data generated by the scoring exercises with fishermen. It confirmed the fact that during June, July and August the quality of fish landed is at its lowest and physical losses are high.

References

Thompson M (1997) Development of methods for testing the relationship between quality and economic value. Draft NRI article for publication.

QUESTIONNAIRE A : PERTES AUPRES DES PECHEURS

Enquêteur: Assurez-vous que toutes les réponses se font par rapport à une seule pirogue dans laquelle la personne concernée a pêché elle-même.

1. Quel est le nom de la pirogue dans laquelle vous avez pêché ou quel est votre nom?

[a] numéro

2. Quand avez vous pêché des sardielles pour la dernière fois avant la date d'aujourd'hui?

[a] date (estimée)

Enquêteur: Si la date remonte à plus de sept jours, arrêtez de répondre au questionnaire

DITES: TOUTES LES QUESTIONS QUI SUIVENT SONT POSEES PAR RAPPORT A LA SEMAINE PASSEE OU VOUS AVEZ PECHE. TOUS LES POISSONS CAPTURES ONT DEJA ETE VENDUS.

3. Quels engins de pêche avez- vous utilisés? (préciser)

[a] les engins

4.Combien d'heures le poisson a-t-il passé dans la cale avant le débarquement ?

[a]heures

5. A quelle heure avez-vous débarqué votre poisson?

[a] heures (par exemple : 09h00)

6. Avez vous rejeté du poisson en mer avant le débarquement? Si oui pourquoi?

[a] unité de mesure
[b] nombre d'unités
[c]raisons pour lesquelles le poisson a été rejeté

7. Quelle quantité de poisson est autoconsommation?

[a] unité de mesure
[b] nombre d'unités

8. Quel volume de poisson avez-vous débarqué sur la plage?

[a] espèces de poissounité de mesure
[b] nombre d'unités

ENQUETEUR: Q8 DEVRAIT INCLURE LE POISSON AUTO-CONSOMME (Q 7)

9. Avez- vous rejeté du poisson immediatement après le débarquement pour cause d'altération?

[a] unités
[b] nombre d'unités
[c] raisons pour lesquelles du poisson a été rejeté

10. Du poisson a t-il été jeté plus tard du fait de sa dégradation?

[a] unités
[b] nombre d'unités
[c] raisons pour lesquelles le poisson a été rejeté

11. A quel prix avez vous vendu du poisson bon qualité?

[a] unités mesure
[b] nombre d'unités
[c]prix moyen à l'unité
[d] à qui ?

12.   Avez vous vendu du poisson à un prix plus bas aux transformatrices et autres?

[a] unités de mesure
[b] nombre d'unités
[c] prix moyen de poisson de faible qualité
[d] Prix (prix moyen de poisson de basse qualité)
[e] qui achète ces poisson et pour quelle utilisation
[f] Raisons pour lesquelles le prix est bas

13.   Est- ce qu'une partie du poisson n'a pas été vendu (à l'exception du poisson auto-consommé ou bien rejeté à cause d'altération?

[a]unité de mesure
[b]nombre d'unités
[c] raisons de la non vente

Enquêteur: FIN DES QUESTIONS POSEES AU PECHEUR

15.   Enquêteur: remplissez le tableau ci-dessous. Vos réponses doivent être basées sur les poids, les prix d'aujourd'hui et seulement pour les unités mentionnées dans cet entretien

[a] unités de mesure
[b] nombre unités
[c] Poids moyen de l'unité
[d] Prix moyen pour le poisson de bonne qualité

QUESTIONNAIRE B: PERTES AUPRES DES TRANSFORMATEURS

1. Quel est votre nom?

[a] Nom

2. Quand avez-vous vendu pour la dernière fois un lot de poisson que vous avez transformé ?

[a] Date (estimation)

Enquêteur : SI CELA REMONTE A PLUS DE 14 JOURS, ARRETER L'ENTRETIEN ICI

Dites : LES QUESTIONS SUIVANTES SONT POSEES PAR RAPPORT A LA DERNIERE FOIS OU VOUS AVEZ TRANSFORME DU POISSON

3. Quelle est la quantité de poisson que vous avez acheté pour être transformé?

4. Quelle est la quantité de poisson perdue avant transformation?

[a] unité de mesure
[b] nombre d'unités
[c] raisons des pertes

Enquêteur: VEUILLEZ NE PAS CHANGER LES UNITES PENDANT CET ENTRETIEN

5. Quelle est la quantité de matière première de bonne transformée

[a] unité de mesure
[b] nombre d'unités
[c] prix d'achat de l'unité

6. Quelle est la quantité de matière première de faible qualité transformée?

[a] unité de mesure
[b] nombre d'unités
[c] prix de l'unité

7. Avez vous rejeté du poisson pendant ou après la transformation?

[a] unité de mersure
[b] nombre d'unités
[c] raisons
[d] utilisation finale du produit

8. Avez vous perdu du poisson pour d'autres raisons?

[a] unité de mesure
[b] nombre d'unités
[c] raisons

10. Quel est le prix de vente moyen du poisson transformé de bonne qualité.

[a] unité de mesure
[b] nombre d'unités
[c] prix de vente moyen du produit transformé de bonne qualité

10. Avez vous vendu du poisson transformé à prix réduit du fait de son altération?

[a] Espèces de poissounité de mesure
[b] nombre d'unité
[c] Prixde vente moyen du poisson de qualité réduite)
[d] Raison
[e] Utilisation finale (nutrition animale par exemple)

Enquêteur: VEUILLEZ REPONDRE A LA QUESTION SUIVANTE SEULEMENT PAR RAPPORT AUX UNITES DE MESURE UTILISEES AU COURS DE CET ENTRETIEN

11.

[a] Espèces de poisson
[b] Unité
[c] Poids moyen (kg)

Appendix 10 - Terms of Reference for the Research Team Leaders

Terms of Reference for Dr Paul Anoh, team leader Post-harvest Fish Loss Assessment Research, Abidjan.

As team leader, co-ordinate, participate in and complete the series of post-harvest fish loss assessment activities that were agreed with NRI and Infopeche during the October training seminar. The team will conduct MARP studies, load tracking work and a questionnaire survey to asses post-harvest fish losses at four sites in and around Abidjan: Vridi Ako, Vridi Zimbabwe, Vridi Sir and Chicago Market. The work will be done between the end of October 1997 and the end of February 1998.

Provide Infopeche with a brief written monthly report of activities and progress. The report should reach the Infopeche office no later than 7 days after the month end.

Provide Infopeche with a detailed report of the work from October to February. The report should include all the relevant data collected, including data generated by MARP studies, load tracking and copies of completed questionnaires. The report should suggest any modifications which should be made to the three methodological approaches used.

Be responsible for the proper disbursement of funds advanced for project work, including payment of team members. A monthly financial report should be forwarded to Infopeche, to reach the Director no later than 7 days after the month end.

Terms of Reference for Mr B Diakité, Team Leader Post-harvest Fish Loss Assessment Research, Mbour, Senegal.

As team leader, co-ordinate, participate in and complete the series of post-harvest fish loss assessment activities that were agreed with NRI and Infopeche during the October training seminar. The team will conduct MARP studies, load tracking work and a questionnaire survey to asses post-harvest fish losses at Mbour fish landing in Senegal. The work will be done between the end of October 1997 and the end of February 1998.

Provide Infopeche with a brief written monthly report of activities and progress. The report should reach the Infopeche office no later than 7 days after the month end.

Provide Infopeche with a detailed report of the work from October to February. The report should include all the relevant data collected, including data generated by MARP studies, load tracking and copies of completed questionnaires. The report should suggest any modifications which should be made to the three methodological approaches used.

Be responsible for the proper disbursement of funds advanced for project work, including payment of team members. A monthly financial report should be forwarded to Infopeche, to reach the Director no later than 7 days after the month end.