Department for International Development (DFID) Post Harvest Fisheries Research Programme

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

DFID PROJECT NUMBER R7008

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November 1997
Acknowledgments

Many thanks go to Dr Tall and his staff at INFOPECHE who provided both technical and office support throughout the visit. Dr Kane and Mercy Akeredolu of the WARF provided key inputs and advice which were very much appreciated. Last but not least - much of the success of the visit was due to the hard work of Ulrich Kleih of the Social Sciences Department of NRI.
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 assess 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.
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 - Senegal, 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 straightforward. 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**

<table>
<thead>
<tr>
<th>Colour/Sheen</th>
<th>Bright</th>
<th>Dull</th>
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<tbody>
<tr>
<td>Color</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Taste Gout</td>
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<tr>
<td>Sweet/Meaty</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Sour/Bitter</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Physical State</td>
<td>Whole</td>
<td>Broken</td>
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<tr>
<td>Physique Condition</td>
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<tr>
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<td>Brittle</td>
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<td>Complete</td>
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<td>2</td>
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</tbody>
</table>

**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

PECHEUR

ACHETEUR APPAT

INTRERMIARE

MAREYEUR (VENTE DE GROSS)

TRANSFORMATRICE

VENTE AU RETAIL

MAREYEUR

BANA BANA

BANA BANA

MAREYEUR

DIVERS MARCHES DE DAKAR

DAKAR - MARCHE CENTRAL

MARCHÉ LOCAL
Figure 4 Quality Assessment Tool For Fresh Sardinella

<table>
<thead>
<tr>
<th>Quality Attribute</th>
<th>Indicator and Score</th>
<th>Indicator and Score</th>
<th>Indicator and Score</th>
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<tbody>
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<td>Firm</td>
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<td>Very Soft</td>
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<tr>
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<td>Red</td>
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</tbody>
</table>

Maximum Good Quality = 0

Extreme Poor Quality = 8

Questionnaires

65. Two questionnaires that were used to assess 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 Mbou 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**

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


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

<table>
<thead>
<tr>
<th>COTE D'IVOIRE</th>
<th>Mr George KOUAKOU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Amadou TALL, Directeur d'INFOPECHE, Abidjan</td>
<td>Assistant Étude de Marché, INFOPECHE, 01 BP 1747 Abidjan 01, 19e etage Tour c, Tel: (225) 213198, Fax: (225) 218054, Email: <a href="mailto:tall@AfricaOnline.co.ci">tall@AfricaOnline.co.ci</a></td>
</tr>
<tr>
<td>Amadou TALL, Directeur, INFOPECHE, Abidjan, Côte d'Ivoire</td>
<td>Tel: (225) 213198, Fax: (225) 218054, Email: <a href="mailto:tall@AfricaOnline.co.ci">tall@AfricaOnline.co.ci</a></td>
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<tr>
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</tr>
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</tr>
<tr>
<td>Mr Mamadou SAMAKE, Grossiste marché de Chicago, 05 BP 559 Abidjan 05</td>
<td>Tel: (225) 362117</td>
</tr>
<tr>
<td>Mr Alassane RAOUl, Grossiste Marché de Chicago, 05 BP 559 Abidjan 05</td>
<td>Tel: (225) 362117</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GHANA</th>
<th>Mr Paul Anoh KOUASSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Ady-Amankwa PEARL, Food Research Institute, 4th Rangoon Close, M20 Accra</td>
<td>Enseignant-chercheur, Université de Cocody, 22 BP 1444 Abidjan 12, Tel: (225) 448160, Fax: (225) 448160</td>
</tr>
<tr>
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</tr>
</tbody>
</table>
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Appendix 4 Abidjan Training Itinerary

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

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 Marché de Chicago
Appendix 5  
Loss Assessment MARP Guide

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 poisson 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'IIEED (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 IIEED, 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 Accélérée 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 rôle.

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 objectifs 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 essentiel 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 tâches de chaque membre d’équipe sont bien définis.


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

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 emballage
* Pertes - Causes - Précautions

TRAITEMENT

* Type de traitement
* Etapes, méthodes, raisons
* Intrants (et pourquoi)
* Main d'oeuvres
* 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 sélectionné
- 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
- Transport
- Stockage
- Saisons
- Espèces
- Force du marché

REMERCIEMENTS
Diagrammes

Parmi les divers types de diagramme qui peuvent être utilisés dans le cadre d'un DP auprès des opérateurs économiques 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 à la présentation de l'équipe et ses objectifs. 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 cle 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 préférence des matériaux locaux sont utilisés 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

ECHELLES: 800.000

SOURCE : CARTE REALISEE EN COLLABORATION AVEC LES COMMERCANTS.
Abidjan, 29 sept 1954.
VARIATION SAISONNIÈRE DE LA QUANTITÉ DE POISSON SELON LES ZONES D'APPROVISIONNEMENT

LEGENDE

- approvisionnement des villages environnants
- approvisionnement du port de pêche

SOURCE : ENTRETIEN AVEC UN GROUPE DE COMMERCANTS DE CHICAGO
ORGANISATION SPATIALE DE VRIENDI-ZIMBABWE VUE PAR UNE 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 capturées, 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-après).

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 débarqué

89 grains de maïs

41 grains de maïs

Poison de mauvaise qualité

Poison de bonne qualité

Source : Résultat de l'entretien avec un groupe de décheurs de Zimbabwe représentant la qualité du poisson débarqué.
SELON LES FUMÉUSES DE UVIDI-ZIMBABWE

LEGENDE.

☐ : QUANTITÉ DE POISSON-, APRES L'ACHAT AU PORT

☐ : QUANTITÉ DE POISSON ENTIER.
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 préférable d’étudier des villages de chaque zone. Au niveau d’un village, le même principe de stratification peut s’appliquer en choisissant des différentes 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 séparées.

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 esprit 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 passé le Diagnostic Participatif a été surtout utilisé dans les villages agricoles. En ce qui concerne la pêche et les pertes par capture, les outils utilisé d'habitude pourrait certainement bénéficier d'un raffinement.
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Appendix 6  Load Tracking


Mission:
Développer un outil semi-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 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)

<table>
<thead>
<tr>
<th>Data/Protocol</th>
<th>How To Collect Data</th>
<th>Comments</th>
<th>Work Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>weather/temp</td>
<td>team équipé</td>
<td>random sample échantillon aleatoire</td>
<td>define sampling technique</td>
</tr>
<tr>
<td>Temps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choose batch of fish</td>
<td>team (équipe)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choisir un lot de poisson</td>
<td>ssi avec les pêcheurs qui ont opéré dans la pirogue d'où est débarqué le poisson</td>
<td>doit identifier les pirogues d'où le lot provient</td>
<td>définir l'échantillonnage technique</td>
</tr>
<tr>
<td>Time of capture</td>
<td>ssi avec les pêcheurs qui ont opéré dans la pirogue d'où est débarqué le poisson</td>
<td>must identify from which boat batch came</td>
<td></td>
</tr>
<tr>
<td>Time fish was landed</td>
<td>as above</td>
<td>as above</td>
<td>from exploratory study</td>
</tr>
<tr>
<td>Type of vessel (with engine or without)</td>
<td>as above</td>
<td>as above</td>
<td></td>
</tr>
<tr>
<td>Type de pirogue</td>
<td>idem</td>
<td>idem</td>
<td>à partir de l'étude préliminaire</td>
</tr>
<tr>
<td>(avec ou sans moteur)</td>
<td>Time between landing and leaving site</td>
<td>Temps écoulé entre le débarquement et le déplacement du poisson du site</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>ssi with buyer/owner</td>
<td>ssi avec vendre/propriétaire</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quality Assessment of batch</th>
<th>Evaluation de la qualité du lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>team using demerit scoring</td>
<td>équipe utilisant la cotation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Price according to quality</th>
<th>Prix en fonction de la qualité</th>
</tr>
</thead>
<tbody>
<tr>
<td>ssi with fishermen and cross check with trader</td>
<td>ssi avec pêcheurs et vérifier avec le commerçant</td>
</tr>
</tbody>
</table>
## 2. TRANSPORT

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

<table>
<thead>
<tr>
<th>Quality assessment</th>
<th>team at destination</th>
<th>random sample or same sample as landing</th>
<th>develop demerit scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation de la Qualité</td>
<td>L’équipe à la destination</td>
<td>échantillon aléatoire même échantillon qu’au débarquement</td>
<td>développer un barème de cotation</td>
</tr>
<tr>
<td>Physical losses during transport</td>
<td>ssi with buyer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pertes physiques durant le transport</td>
<td>ssi avec le commerçant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. PROCESSING (TRANSFORMATION)

<table>
<thead>
<tr>
<th>Data/Protocol</th>
<th>How To Collect Data</th>
<th>Comments</th>
<th>Work Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Données/Protocole</td>
<td>Comment collector les données</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>weather/temp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>time of arrival</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temps à l’arrivée</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>processing stages with time duration</td>
<td>ssi with processor</td>
<td>identify processing stages</td>
<td></td>
</tr>
<tr>
<td>Etapes de la transformation durée</td>
<td>ssi avec le transformatein</td>
<td>identifier les étapes de la transformation</td>
<td></td>
</tr>
<tr>
<td>Quality assessment of final product</td>
<td>team</td>
<td>develop demerit score chart for processed fish</td>
<td></td>
</tr>
<tr>
<td>Evaluation de la qualité du produit fini</td>
<td>équipe</td>
<td>développer un diagramme sur le produit traité</td>
<td></td>
</tr>
<tr>
<td>Prices</td>
<td>ssi with processor/buyer</td>
<td>accurate price information may be difficult to get</td>
<td></td>
</tr>
<tr>
<td>Prix</td>
<td>ssi avec transformateur/acheteur</td>
<td>une information fiable pourrait être difficile à obtenir</td>
<td></td>
</tr>
<tr>
<td><strong>Physical losses during processing</strong></td>
<td>ssi with processor (scoring)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pertes physiques durant le traitement</strong></td>
<td>ssi avec le transformateur (cotation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>time of sale/onward transport</strong></td>
<td>ssi with processor</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>temps écoulé avant la vente après le transport</strong></td>
<td>ssi avec le transformateur</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>who buys and where</strong></td>
<td>ssi</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Qui achète et où?</strong></td>
<td>ssi/observation</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>packaging (who, material)</strong></td>
<td>ssi/observation</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>emballage (qui? matériau utilisé)</strong></td>
<td>ssi/observation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data/Protocol</td>
<td>How To Collect Data</td>
<td>Comments</td>
<td>Work Needed</td>
</tr>
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<td>-------------</td>
</tr>
<tr>
<td>DONNÉES/PROTOCOLE</td>
<td>Comment collecter du données</td>
<td>Commentaires</td>
<td>Travail nécessaire</td>
</tr>
<tr>
<td>Date</td>
<td></td>
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<td></td>
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<tr>
<td>Site</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weather/Temp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time batch arrives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temps ou les lots sont réceptionnés</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time sold</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temps ou les lots sont vendus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processes at market (weighing, sorting, packing, storage) + times</td>
<td></td>
<td>info from exploratory study</td>
<td></td>
</tr>
<tr>
<td>Transformés au marché (pesée, classification, emballage, stockage)</td>
<td></td>
<td>information venant de l’étude exploratoire</td>
<td></td>
</tr>
<tr>
<td>Physical losses</td>
<td>ssi with trader (scoring)</td>
<td></td>
<td>develop demerit score chart</td>
</tr>
<tr>
<td>Pertes physiques</td>
<td>ssi avec les commerçants (cotation)</td>
<td></td>
<td>développer un diagramme de cotation</td>
</tr>
<tr>
<td>Quality assessment</td>
<td>demerit score sheet plus scoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation de la Qualité</td>
<td>barème de cotation</td>
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</table>
## WHOLESALE (Vente de Gros)

<table>
<thead>
<tr>
<th>Prices according to quality</th>
<th>Prix en fonction de la qualité</th>
</tr>
</thead>
<tbody>
<tr>
<td>ssi</td>
<td>ssi avec commerçant (cotation)</td>
</tr>
<tr>
<td>ssi with trader (scoring)</td>
<td>batch may be divided up</td>
</tr>
<tr>
<td>destination</td>
<td>les lots pouvant être divisés</td>
</tr>
<tr>
<td>Destination</td>
<td></td>
</tr>
<tr>
<td>Data/Protocol</td>
<td>How To Collect Data</td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td></td>
<td>Comment Collect</td>
</tr>
<tr>
<td></td>
<td>les données</td>
</tr>
<tr>
<td>Date</td>
<td>team</td>
</tr>
<tr>
<td></td>
<td>equipe</td>
</tr>
<tr>
<td>Site</td>
<td>team</td>
</tr>
<tr>
<td></td>
<td>equipe</td>
</tr>
<tr>
<td>weather/temp</td>
<td>team</td>
</tr>
<tr>
<td>Temps</td>
<td>equipe</td>
</tr>
<tr>
<td>time of arrival</td>
<td>ssi/observation</td>
</tr>
<tr>
<td>Temps à l’arrivée</td>
<td></td>
</tr>
<tr>
<td>duration of selling</td>
<td>ssi</td>
</tr>
<tr>
<td>Durée de la Vente</td>
<td></td>
</tr>
<tr>
<td>handling/preservation</td>
<td>ssi/observation</td>
</tr>
<tr>
<td>Méthode de Manutention/préservation</td>
<td>ssi/observation</td>
</tr>
<tr>
<td>Physical losses</td>
<td>ssi</td>
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</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality assessment</td>
<td></td>
</tr>
<tr>
<td>Evaluation de la Qualité</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Fundamental Issues for Discussion: (Sujets Fondamentaux à 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 opérateurs 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 expliquant 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 interressez unialement sur toute ou une partie de la chaîne?

4. How should the batch of fish be selected?
Comment les lots de poisson devront être sélectionnés?

- 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
  échantillonnage à 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 cooperation?

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 commerçants le long de la chaîne avec qui nous travaillons

- traditional measurements
  méthodes 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 utilisée l’opportunité de conduire une courte étude par diagnostic participatif 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
QUESTIONNAIRE
Communautés de pêcheurs

Localité................................................................. Fiche n°..........................................
Enquêteur:.......................................................... Date:.............................................

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

I- Données socio-démographiques

<table>
<thead>
<tr>
<th>Nom</th>
<th>Age</th>
<th>Sexe</th>
<th>Nationalité</th>
<th>Nombre d'année d'expérience</th>
<th>Niveau d'instruction</th>
<th>Situation matrimoniale</th>
<th>Nombre d'enfant</th>
<th>Religion</th>
</tr>
</thead>
</table>

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

II- Engins de pêche

<table>
<thead>
<tr>
<th>Nom ou numéro de l'embarcation</th>
<th>n°</th>
<th>Quel engin de pêche avez-vous utilisé?</th>
</tr>
</thead>
</table>

III- La pêche

<table>
<thead>
<tr>
<th>Lieu de pêche</th>
<th>Durée de la marée</th>
</tr>
</thead>
</table>

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

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

IV- Débarquement et commercialisation des produits de la pêche

<table>
<thead>
<tr>
<th>A quelle heure avez-vous débarqué votre poisson?</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Quelle quantité de poisson avez-vous débarqué sur la plage? (y compris le poisson destiné à l'autoconsommation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Espèce de poisson</td>
</tr>
</tbody>
</table>
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 jeté 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 altération)

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

<table>
<thead>
<tr>
<th>Espèces de poisson</th>
<th>unité</th>
<th>Poids moyen de l'unité</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### QUESTIONNAIRE
#### Transformateurs

<table>
<thead>
<tr>
<th>Localité</th>
<th>Fiche n°</th>
<th>Enquêteur</th>
<th>Date</th>
</tr>
</thead>
</table>

## I- Données socio-démographiques

<table>
<thead>
<tr>
<th>Nom</th>
<th>Age</th>
<th>Sexe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nationalité</td>
<td>Nombre d'année d'expérience</td>
<td></td>
</tr>
<tr>
<td>Niveau d'instruction</td>
<td>Situation matrimoniale</td>
<td></td>
</tr>
<tr>
<td>Nombre d'enfant</td>
<td>Religion</td>
<td></td>
</tr>
</tbody>
</table>

**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)

<table>
<thead>
<tr>
<th>Espèces</th>
<th>Union de mesure du produit acheté: Panier...</th>
<th>Cuvette...</th>
<th>Carton...</th>
<th>Autres...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combien d'unités avez-vous acheté?</td>
<td>A quel prix?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Où avez-vous acheté votre poisson:</td>
<td>Région d'Abidjan...</td>
<td>Hors d'Abidjan...</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Espèces de poisson</th>
<th>Unité de mesure: Panier...</th>
<th>Cuvette...</th>
<th>Carton...</th>
<th>Autres...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quelle quantité avez-vous transformé?</td>
<td>Type de transformation: Fumage...</td>
<td>Séchage...</td>
<td>Autre(préciser)...</td>
<td></td>
</tr>
</tbody>
</table>

## IV- Evaluation des pertes

<table>
<thead>
<tr>
<th>Avez-vous rejetté du poisson pendant ou après la transformation?</th>
<th>Si oui</th>
</tr>
</thead>
<tbody>
<tr>
<td>Espèce de poisson</td>
<td>Unité de mesure</td>
</tr>
<tr>
<td>Nombre d'unités</td>
<td>Raisons du rejet</td>
</tr>
<tr>
<td>Utilisation finale du poisson</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Avez-vous perdu du poisson pour d'autres raisons?</th>
<th>Si oui</th>
</tr>
</thead>
<tbody>
<tr>
<td>Espèce de poisson</td>
<td>Unité de mesure</td>
</tr>
<tr>
<td>Nombre d'unités</td>
<td>Raisons de la perte</td>
</tr>
</tbody>
</table>

## V- Vente du poisson transformé

<table>
<thead>
<tr>
<th>Donnez le prix moyen du poisson de bonne qualité vendu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Espèce de poisson</td>
</tr>
<tr>
<td>Unité de mesure</td>
</tr>
<tr>
<td>Prix de l'unité</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Avez-vous vendu du poisson à un prix réduit du fait de sa dégradation</th>
<th>Si oui</th>
</tr>
</thead>
<tbody>
<tr>
<td>Espèce de poisson</td>
<td>Type de traitement</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Espèces de poisson</th>
<th>unité</th>
<th>Poids moyen de l'unité</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-</td>
<td></td>
<td></td>
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<tr>
<td>2-</td>
<td></td>
<td></td>
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<td>3-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
QUESTIONNAIRE
Commerçants

Localité................................................................. Fiche n°.................................................
Enquêteur.............................................................. Date:......................................................

NB: Assurez-vous que toutes les réponses se font par rapport à un seul bateau dans lequel la personne concernée a péché 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
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- À 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

<table>
<thead>
<tr>
<th>Espèces de poisson</th>
<th>unité</th>
<th>Poids moyen de l'unité</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th></th>
<th>Trap</th>
<th>Surround Gill Net</th>
<th>Beach Seine</th>
<th>Line</th>
<th>Octopus Jig</th>
<th>Surround Net</th>
<th>Deep Gill Net</th>
<th>Long Line (100 hooks+)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quantity of Fish Caught per trip</strong>&lt;br&gt;(10=most)</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>10</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Quality of Fish</strong>&lt;br&gt;(1=poor, 10=best)</td>
<td>11</td>
<td>4</td>
<td>8</td>
<td>10</td>
<td>4</td>
<td>8</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td><strong>Physical Losses</strong>&lt;br&gt;(0=lowest)</td>
<td>0</td>
<td>8</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td><strong>Number of Gears in Village</strong>&lt;br&gt;(1=lowest)</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>10</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td><strong>Cost of Gear</strong>&lt;br&gt;(1=cheapest)</td>
<td>1</td>
<td>5</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>15</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>
Figure 2 Results of Scoring with Fishermen Group, Mbour 9/10/97.

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

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)

<table>
<thead>
<tr>
<th></th>
<th>Nor</th>
<th>Tioron</th>
<th>Nawet</th>
<th>Loly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td></td>
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<td>Feb</td>
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<tr>
<td>Mar</td>
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<tr>
<td>Apr</td>
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<tr>
<td>May</td>
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<td>June</td>
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<td>July</td>
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<td>Aug</td>
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<td>Sept</td>
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<td>Oct</td>
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<td>Nov</td>
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<tr>
<td>Dec</td>
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</tr>
</tbody>
</table>

**Quantity per trip**

- = lowest or poorest

**Price per basket**

- = highest or best

**Physical Loss**

* = lowest or poorest

**Quality of fish**

- = highest or best
Figure 4 Scoring with Surround Net Fishermen for Sardinella, Mbour, 11/10/97 (Group B)

<table>
<thead>
<tr>
<th></th>
<th>Nor</th>
<th>Tioron</th>
<th>Nawet</th>
<th>Loly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
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<td>Apr</td>
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<td>June</td>
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</tr>
</tbody>
</table>

| 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)**

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

(£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)

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

(£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 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.**

<table>
<thead>
<tr>
<th></th>
<th>NOR</th>
<th>TIORON</th>
<th>NAWET</th>
<th>LOLY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan - Mar</td>
<td>Apr - Jun</td>
<td>Jul - Sept</td>
<td>Nov - Dec</td>
</tr>
<tr>
<td>Quantity of fish processed</td>
<td>**********</td>
<td>*****</td>
<td>**</td>
<td>***********</td>
</tr>
<tr>
<td></td>
<td>(*)</td>
<td>(*****</td>
<td>(******** )</td>
<td>(**)</td>
</tr>
<tr>
<td>Price paid for raw material</td>
<td>**</td>
<td>*****</td>
<td>*******</td>
<td>*******</td>
</tr>
<tr>
<td></td>
<td>(***)</td>
<td>(*****</td>
<td>(******** )</td>
<td>(**)</td>
</tr>
<tr>
<td>Quality of raw material</td>
<td>**********</td>
<td>***</td>
<td>*</td>
<td>*******</td>
</tr>
<tr>
<td></td>
<td>(******** )</td>
<td>(*******</td>
<td>(*)</td>
<td>(******* )</td>
</tr>
<tr>
<td>Physical losses before and during processing</td>
<td>**</td>
<td>****</td>
<td>*******</td>
<td>****</td>
</tr>
<tr>
<td></td>
<td>(*)</td>
<td>(*******</td>
<td>(******* )</td>
<td>(**)</td>
</tr>
</tbody>
</table>

(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

QUESTIONNAIRE A : PERTES AUPRES DES PECHEURS

Enqueteur: 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 sardinelles pour la dernière fois avant la date d'aujourd'hui?
   [ a ] date (estimée)

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

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

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

9. Avez-vous rejeté du poisson immédiatement 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 POSEEES 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 mesure
   [ 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 poisson
[b] unité de mesure
[c] Prix de 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 UNITÉS DE MESURE UTILISÉES 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 assess 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 assess 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.