Annex 1

Agenda workshop

date	time		activity	details
21-11-2005	9.00-10.30	theory	Getting to know each other. Program outline. panel selection test	Who is who, background information (fish, laboratory, inspection etc.), education/experiences. more details of topics covered in the workshop. Odour identification test, colour deficiency test, basic taste test.
	10.30-11.00	break		
	11.00-13.00	theory	Theory sensory evaluation	Introduction, physiological and psychological foundations of sensory function. principles of good practice: testing environment
	13.00-14.00	lunch		
	14.00-15.00	theory	Theory Quality Index Method	
	15.00-15.30	break		
	15.30-16.30	practical	Practical QIM	Start development of QIM scheme for Victoria perch and tilapia; implementation of testing environment
22-11-2005	9.00		Start workshop	Evaluation first day
	9.00-10.30	theory	Theory sensory evaluation. Theory descriptive analysis	Principles of good practice: Test protocol considerations. QDA methodology: application of this method
	10.30-11.00	break		
	11.00-13.00	practical	Practical QDA	Sample preparation and panel training
	13.00-14.00	lunch		
	14.00-15.00	theory	Theory descriptive analysis	Use of scales
	15.00-15.30	break		
	15.30-16.30	practical	Practical QIM	Continuation with development of the scheme

23-11-2005	9.00		Start workshop	Evaluation second day
	9.00-10.30	theory	Theory sensory evaluation. Theory earthy off-flavour	Analytical versus consumer testing. Earthy off flavour problem and sensory method to be used.
	10.30- 11.00	break		
	11.00- 13.00	practical	Practical earthy off-flavour. Practical QDA	Training methodology Bett. Panel training QDA
	13.00- 14.00	lunch		
	14.00- 15.00	theory	Theory panel leader	Procedures/planning/statistics
	15.00- 15.30	break		
	15.30- 16.30	practical	Practical QIM	Continuation with development of the scheme

24-11-2005	9.00		Start workshop	Evaluation third day
	9.00-10.30	theory	Theory sensory evaluation.	Sensory evaluation in quality control
	10.30- 11.00	break		
	11.00- 13.00	practical	Practical QIM	Continuation with development of the scheme
	13.00- 14.00	lunch		
	14.00- 15.00	theory	Theory QIM	Further development QIM scheme calibration curve
	15.00- 15.30	break		
	15.30- 16.30	practical	Practical QDA	Evaluation shelflife

25-11-2005	9.00		Start workshop	Evaluation fourth day + missing topics
	9.00-10.30	Practical	Practical quality control	Use QIM method to assess quality of market samples + analysis results
	10.30- 11.00	break		
	11.00- 13.00	practical	Practical QDA analysis	Panel leader training and QDA analysis, incl. analysis results
	13.00- 14.00	lunch		
	14.00- 15.00	theory	Any other topic	To be planned during the workshop.
	15.00- 15.30	break		
	15.30- 16.30	practical	Any other topic	To be planned during the workshop.

Annex 2

Results panel selection tests

Name participant		**Right answers smell test (out of 40)**	Remarks smell test	Mistakes colour blindness	Mistakes taste test (out of 10)
Mbabazi	Ruth	**25**	have a cold	0	0,00
Baziwane	David	**30**		0	0
Katabi	Charles	**22**		0	0
Nabbengo	Annette	**29**		0	3
Ssemakula	Benard	**31**		0	
Mangeni	Humphrey	**31**		0	3
Ogwal	Julius	**15**	Many questions not answered	0	5
Akankwasa	Alfred	**24**		0	3
Atyang	Jimmy	**32**		0	0
Mulamba	James	**21**		0	0
Odongo	Ignatius	**28**			2
Bawaye	Sarah	**31**		0	
Ahimbisibwe	John Bosco	**4**		0	
Ssubi	Johnson	**33**		0	0
Omanyi	Paul	**28**		0	2
Mukalazi	Francis	**31**		0	0

The result of the smell identification test was, as expected, lower than average. This is due to the test being developed for American citizens and Ugandan people were not familiar with some of the odours presented in the test. Therefore it is advised to have the panel selection norm at 30 right answers instead of 33. For final selection of the panel other criteria should be included: availability for sensory testing, improvement by training, positive attitude towards sensory analyses. This is to be decided by the panel leader.

Annex 3

Draft Quality Index Method (QIM) scheme for Tilapia

Quality parameter		Description	Score
Appearance	Skin	Shiny grey, redish	0
		Grey not shiny	1
		Dull gray	2
		Creamy	3
	Scales	Very firm	0
		Firm	1
		Slightly loose	2
		Very loose	3
Eyes	Cornea	Very clear	0
		Cloudy	1
		Milky	2
			3
Gills	Colour	Bright	0
		Red	1
		Pale red/ maroon, brown red	2
		Brown	3
	Smell	Fresh, cut grass, aquatic weed	0
		Neutral	1
		Slightly musty	2
			3
	Mucus	Clear	0
		Cloudy	1
		Milky	2
		Brown-redish	3
Texture	backside	Very firm/in rigour	0
		firm, elastic	1
		Soft	2
		Very soft/depression	3
	belly	Firm	0
		Soft	1
			2
			3
Quality Index			

Annex 4

Draft Quality Index Method (QIM) scheme for Nile perch

Quality parameter		Description	Score
Appearance	Skin	Silver grey	0
		grey	1
		dull grey	2
			3
	Scales	very firm	0
		firm	1
		slightly loose	2
		very loose	3
Eyes	Cornea	clear, bright, transparent	0
		slight cloudy, milky,	1
		cloudy and red	2
		Blood shot/opaque	3
Gills	Colour	Bright red,	0
		red/maroon,	1
		pale/red, pink	2
		Brown	3
	Smell	Fresh fish smell	0
		Neutral	1
		Cut grass	2
		Fishy	3
	Mucus	Clear/bright	0
		Slightly milky/cloudy	1
		Milky, cloudy	2
		Thick, cloudy, brown	3
Texture	backside	Very firm/in rigor	0
		firm, elastic	1
		Soft	2
		Very soft/depression	3
	belly	Firm	0
		Soft	1
			2
			3
Quality Index			

Annex 5

Draft QDA scheme for Tilapia

Attribute	Description
Appearance	
White	White colour of the fillet at the bone side
Creamy	Creamy colour of the fillet at the bone side
Smell	
Boiled milk	The smell like boiled milk
Fresh tilapia smell	How fresh Tilapia smells
Fishy	Fishy off-odour
Taste	
Fresh tilapia	How fresh Tilapia tastes
Neutral	No specific taste, flat, water like
Sweet	Like sugar water
Savory	Little salty, broth from meat
Texture	
Tender	Easy to chew
Soft	No resistance during chewing
Firm	More resistance during chewing
Flakey	Flakes when pressing with fork easily apart.

Annex 6

Draft QDA scheme for Nile perch

Attribute	Description
Appearance	
White	White color of the fillet at the bone side
Creamy	Creamy colour of the fillet at the bone side
Brown	Brown colour at the bone side
Smell	
Boiled milk	The smell like boiled milk
Fresh	How fresh fish smells
Neutral	Neutral odour , no odour
Taste	
Fresh	How fresh fish tastes
Neutral	No specific taste, flat, water like
Sweet	Like sugar water
Fishy	Fishy off-taste
Salty	Like salty water
Texture	
Sticky	During chewing the fish sticks at teeth.
Soft	No resistance during chewing
Juicy	Amount of juicy during chewing

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Report

Number: C076/05

Summary sensory workshop Uganda, 21-25 November 2005, Uganda Fisheries Laboratory in Entebbe

Organized by RIVO-Netherlands Institute for Fisheries Research in cooperation with ICEIDA

Rian Schelvis-Smit

Commissioned by: Icelandic International Development Agency (ICEIDA)
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Project number: 356.12222.12
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List of participants

Surname	First name
Mbabazi	Ruth
Baziwane	David
Katabi	Charles
Nabbengo	Annette
Ssemakula	Benard
Mangeni	Humphrey
Ogwal	Julius
Akankwasa	Alfred
Atyang	Jimmy
Mulamba	James
Odongo	Ignatius
Bawaye	Sarah
Ahimbisibwe	John Bosco
Ssubi	Johnson
Omanyi	Paul
Mukalazi	Francis

1. Introduction

The Icelandic International Development Agency (ICEIDA) has requested The Netherlands Institute of Fisheries Research (RIVO) to organize a sensory workshop in Uganda. ICEIDA is establishing a fisheries laboratory in Uganda in cooperation with the Ugandan government. One of the tasks within this project is to develop a sensory laboratory. Assistance is needed to instruct the sensory panel on basic sensory analysis in theory and practice, related to local species like Nile perch and Tilapia.

2. Description of work performed

The workshop was given to 16 persons in total, of which six are from the fisheries laboratory and ten from the Ugandan inspection services. The inspection service was invited to follow this workshop as well to ensure harmonized methodology and guarantee analytical capacity in sensory assessments.

The aim of this workshop was to implement sensory analyses as a tool for quality assessment within the fisheries sector.
Four major blocks of work were considered in both theory and practice:

1. Theory sensory analyses
    - The human instrument
    - Panel selection and training
    - Lab facilities
    - Testing protocols
    - Different methods → different results
2. Quality Index Method (QIM)
    - Testing fish freshness
3. Quantitative Descriptive Analyses (QDA)
    - Sensory description of different fish products
4. Earthy off-flavour
    - Negative quality attribute for exports to Europe

See agenda for details (annex 1).

3. Deliverables

The following was delivered during the workshop:

- Printed instruction material needed for this workshop. This included copies from the book ‘sensory evaluation of food. Principles and practices’ (Lawless and Heymann), two papers about QIM, two papers about earthy off flavour and finally the printout of the PowerPoint slides.
- Three panel selection tests: odor identification test (sensonics), color deficiency test (ishihara) and a basic taste identification test.
- Preliminary setup of a QIM scheme and a QDA scheme (descriptive attributes) for Nile perch and Tilapia.
- Implemented and guidance for good sensory practice in the fisheries laboratory
- Practical training on three sensory methods to assess fish quality.

4. Conclusion and recommendation

The organization of the workshop was a great success; all participants found it very valuable and useful. Though the beginning of the workshop was mainly based on theory and more abstract practical work, in the end the more concrete finalization of draft schemes for both QDA and QIM were present. The practical implementation of these draft schemes in a more realistic tasting session at the final day proved to be a valuable ending of the workshop. All participants received a certificate for participation of the workshop.

For the follow-up of this workshop the following is needed: selection and further training of the panel leader, finalization of the two schemes and training of the panel for these schemes. Facilities should be finalized and utilities arranged.

Acknowledgements

Rian Schelvis would like to thank Kristinn Kristinnson for his valuable guidance in Uganda and his great assistance during the workshop, especially for the arrangements he and the staff of the fisheries laboratory had to make to get the fish samples needed for the workshop.

References

H.T. Lawless and H. Heymann, 1998
Sensory evaluation of food, principles and practices
ISBN 0-412-9941-0

Application of Quality Index Method (QIM) scheme in shelf-life study of farmed Atlantic salmon (*Salmo salar*)
(Journal of Food Science 67 (4) (2002) 1570-1579)

Quality Index Method (QIM) scheme developed for farmed Atlantic salmon (*Salmo salar*)
(Food Quality and Preference 14 (2003) 237-245)

Flavor-Quality Control in Freshwater Aquaculture
(American Fisheries Society, The Progressive Fish-Culturist 59: (1997) 149-154)

Detecting Seafood Off-Flavors: Limitations for Sensory Evaluation
(Food Technology 51 (8) (1997) 70-79)