Standards and Trade Development Facility

project SafeNut

http://www.stdf-safenutproject.com/

# Third Progress Report:

Reporting Period from 1 June to 30 September 2007

**Project coordinators:**
Catherine BRABET, CIRAD, France - General Coordinator
Monica OLSEN, NFA, Sweden - Scientific Coordinator

**Date of Report:** October 2007

Ministério da Agricultura, Pecuária e Abastecimento
GOVERNO FEDERAL

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## GENERAL DATA ON THE PROJECT

**Donor number**: STDF 114

**Title:** Validation and transfer to the key stakeholders of a sustainable and effective aflatoxin management system in the Brazil nut production chain for recovering and consolidating export markets, particularly in Europe.

**Duration**: 2 years (1 June 2006 – 31 May 2008)

**Executing agency**: CIRAD (Centre de coopération internationale en recherche agronomique pour le développement), France

**Partners:**
NFA (National Food Administration), Sweden
CSL (Central Science Laboratory), United Kingdom
R-Biopharm AG company, Germany – As a sub-contractor of CSL
MAPA (Ministério da Agricultura, Pecuária e Abastecimento), Brazil
EMBRAPA (Empresa Brasileira de Pesquisa Agropecuária), Brazil

**Specific objectives:**
1. Characterization of the Brazil nut production chain, and formulation of organizational and incentive strategies for safety control.
2. Validation of recommended good practices in the Brazil nut production chain for aflatoxin control.
3. Validation and implementation of a rapid aflatoxin surveillance system for use along the Brazil nut production chain.
4. Knowledge and technology transfer to the key stakeholders.
5. To strengthen the public-private dialogue and partnership in the Brazil nut sector.

**PROJECT STATUS**

**1. Describe briefly the major tasks or activities achieved during this reporting period (attach details on available training material, summary reports, etc...)**

**1.1. Management project activities**

Signature of the contracts of technical and financial cooperation between CIRAD and the Brazilian partners

The two following contracts which were prepared by following the model of the contract signed by CIRAD and WTO were signed:

- Contract CIRAD-EMBRAPA-FUNARBE signed on June 2007,
- Contract CIRAD-MAPA-FUNARBE signed on September 2007.

All the contracts between CIRAD and the Safenut partners are now signed.

☞ *A copy of the Brazilian contracts will be sent by mail to WTO with this third progress report.*

Fund transfer to the Safenut partners after signature of the contracts

CIRAD transferred funds to EMBRAPA (50 % of their total budget after deducing the expenses assumed directly by CIRAD up to the date of transfer). Fund transfer to MAPA will be carried out in October 2007.

Organization and participation in project meetings

Annual progress and open meetings held in Belém-Pará, September 26-28 (see § 1.2. Specific objective 5).

Meeting of the general and scientific coordinators (C. Brabet and M. Olsen) at WTO, with M. Roberts and M. Spreij, Geneva, September 4: Presentation of the project current status, problems encountered and actions taken to resolve them, and outline plans until the end of the project.
An extension of the Safenut project until the end of 2008 was discussed. A written official request will be submitted by CIRAD to the STDF working group before their next meeting in November 2007. The realization of a training video has also been considered.

Meetings for organizing and follow up the Safenut activities:

- Meetings in Belém-Pará, June 11-14 – C. Brabet, CIRAD + MAPA local team – Field support for Brazil nut sample collection in a processing plant.
- Meetings in Belém-Pará and Rio Branco-Acre, July 8-12 – J. Garcia, LANAGRO-MG/MAPA + EMBRAPA and MAPA local teams – Methodological support for the Brazil nut sample preparation.
- Meeting in Germany, June 25-27 - John Banks, CSL + R-Biopharm local team – Finalisation of the statistical analysis, interpretation and discussion of the results of ELISA & LFD validation tests.

Meeting in Stockholm, September 14 - M. Olsen, NFA with STDF (M. Spreij) and SIDA (Swedish International Development Cooperation Agency: www.sida.se) - Presentation of the background and expected results of the Safenut project.

Supervised students and contracted consultants for Safenut activity support

Students under the supervision of project partners:
- Felicia Maria Nogueira Leite, Brazilian student, UFAC (Universidade Federal do Acre) / SEAPROF (Secretaria de Extensão Agroflorestal e Produção Familiar), MSc in post-harvest technology, January 07-May 08: Execution of the activities A2.1, A.2.2 and A.2.4 in the state of Acre (project specific objective 2).

Consultants:
Two consultants were contracted by the Safenut project:
- Douglas Storto**,** Brazilian engineer, 3 months (March-June 07): Support for Brazil nut sample preparation and water activity analysis in the LANAGRO-PA/MAPA (project specific objective 2),;
- Edna Lúcia da Silva Lima, Brazilian technician, 3 months (July-September 07): Support for Brazil nut sample preparation in the LANAGRO-PA/MAPA (project specific objective 2) and the organization of the ELISA & LFD training course / Progress & Open meetings in September 07 (see § 1.2 Specific objective 5).

Reporting to STDF
The annual scientific and financial reports were sent to WTO for the reporting period June 06-May 07.

### 1.2. Scientific & dissemination project activities

The deliverables and milestones expected during the reporting period are presented within the corresponding project specific objectives, and other relevant project progress.

**Specific objective 1**:
Characterization of the Brazil nut production chain, and formulation of organizational and incentive strategies for safety control

**Deliverables expected during the reporting period:**
A report documenting the major constraints and opportunities for aflatoxin control by month 13 (June 07).

**Milestones expected during the reporting period:**
Major constraints and opportunities in the Brazil nut production chain identified by month 13 (June 07)

Due to the delay in completing the report documenting the current conditions of Brazil nut production and commercialisation in the Brazilian states of Acre and Pará through the collection of primary data (Activity A1.1 – See § 2), the major constraints and opportunities in the Brazil nut production chain could not be identified, and consequently the report delivered.
This identification will be based not only on the characterization of the Brazil nut production chain (A1.1) but also on the evaluation of the costs/benefits of the implementation of good practices for aflatoxin control at each step of the production chain in both the states of Acre and Pará.

**Specific objective 2**:
Validation of recommended good practices in the Brazil nut supply chain for aflatoxin control

**Deliverables expected during the reporting period:**
A report documenting the effectiveness of the already published code of practices, and at which steps in the BnFD the mycotoxin hazard originates, or concentrations increase to unacceptable levels by month 13 (June 07)

This report was not completed, but the compilation and analysis of the collected data in both states of Acre & Pará were initiated.

**Milestones expected during the reporting period:**
Data collection completed by month 13 (June 07)

The data collection was completed in the state of Pará, but not yet in the state of Acre.

In the state of Pará, 42 Brazil nut samples were collected: 32 in the rainforest and communities of the selected association of producers and 10 in the selected processing plant (Annex 1 & 2). The analysis of water activity, fungi and aflatoxins by using HPLC method and environmental factor registration (temperature and relative humidity) were completed.

In the state of Acre, the Brazil nut sample collection and environmental factor registration were initiated in the rainforest and two associations of producers. At the time of reporting, 46 Brazil nut samples were collected (Annex 3) and analyzed (water activity and fungi), as well as 20 samples of leaves and soil (4 samples in five production areas - only fungi analysis).
The data collection in the selected processing plant and the aflatoxin analysis by HPLC method will be completed until December 08.

The Brazil nut sampling points in both states of Acre and Pará are illustrated with photos in Annex 4.

A flow diagram of Brazil nut sample reception, preparation, storage and analysis in the laboratories of EMBRAPA Acre and LANAGRO-PA/MAPA is given in Annex 5. The procedures used for sample collection and preparation were based on the regulation CE N° 401/2006.

It is envisaged to collect new samples in the rainforest and processing plant in both states of Acre and Pará during the next Brazil nut harvest season (beginning of 2008) in order to have a more comprehensive study.

**Other relevant project progress**
A2.3: Development of a simple predictive model for aflatoxin and fungi production in the Brazil nut production chain

The experiments with storage of Brazil nuts in a respirometer, which started in March 07, were finalized in the end of June 07. All samples (n=81) have been analyzed for aflatoxigenic moulds, total moulds and aflatoxins by an HPLC method improved by NFA to suit Brazil nuts. Recoveries for this HPLC method are for aflatoxin B1: 91.1%, B2: 92.5%, G1: 74.6% and G2: 82.3%.

The data have been used to develop the predictive model for fungal growth and aflatoxin production. The preliminary statistical analyses of the aflatoxin positive samples showed that water content and levels of aflatoxin producing fungi influenced the toxin level. In addition, the results showed that water content has an effect on the growth of the inoculated fungal isolate.
However, further statistical analyses with the dependent variable “aflatoxin formation” and two independent factors (“mould growth” and “water content”) resulted in that only “mould growth”

remained significant. Hence, the water content, expressed as water activity, does not seem to influence the correlation between "aflatoxin production" and "mould growth".

The effect of the infection level of naturally occurring aflatoxigenic fungi on toxin levels was not significant (may point towards presence of non aflatoxigenic A. flavus strains).
Regression analysis showed that log cfu of the inoculated A. parasiticus" value > 2 seems to be necessary for toxin formation and that all inoculated samples where the A. parasiticus level is ≥ log 2, exceeds the legislative limit of 4 ppb.

In a predictive model, (a binary logistic regression model where cases where no toxin has been detected have been assigned a "0" and cases where toxin has been detected have been assigned a "1"), only the mould content, and not the water content, had a significant effect on the probability of aflatoxin formation. The model confirms again that the probability of toxin formation rapidly increases when the log cfu value of the inoculated fungus exceeds 2. This model is currently being further developed to predict the probability of aflatoxin levels above the European legislative levels. The work will be finalised in October 2007.

The predictive model will be compared with data (relative humidity, temperature, fungal and aflatoxin levels) collected in the state of Pará and Acre.

**Specific objective 3**:
Validation and implementation of a rapid aflatoxin surveillance system for use along the Brazil nut production chain

**Deliverables expected during the reporting period:**
No deliverables expected during the reporting period.

**Milestones expected during the reporting period:**
Rapid on-site LFD for aflatoxins in Brazil nuts set up in Brazil in the laboratory, the Brazil nut production area and one processing plant in conjunction with Specific objective 3 by month 14 (July 07)

A training course in both ELISA and LFD kits was organized for the Safenut partners in Belém-Pará on 24-25 September 07 (see Specific objective 4) in order to complement the course that took place on October 2006 in Rio Branco-Acre.

In conjunction with project specific objective 4, further training courses for Brazil nut producers and processors will be organized in 2008 at the same period than the training courses in good practices, with the aim to set up the methods in the Brazil nut production area and one processing plant.

**Relevant project progress:**
A3.1: Adapt and validate existing rapid ELISA brought in to the project for aflatoxins in Brazil nuts
A3.3: Adapt and validate existing rapid, on-site Lateral Flow Device (LFD) brought in to the project for aflatoxins in Brazil nuts

A report was completed in August 07 documenting the fit for purpose study carried out in March 07 on Brazil nut material naturally incurred with aflatoxins (over a range of about 2 to 300 ppb total aflatoxins). This report was in addition to the previous interim report on Brazil nut samples spiked with aflatoxin B1 (0 & 20 ppb) that was delivered in 2006.

Paired samples were analyzed by both HPLC and R-Biopharm ELISA and LFD kits (RIDASCREEN® FAST Aflatoxin multi-standards, RIDASCREEN® FAST Aflatoxin SC single control and RIDA®QUICK Aflatoxin LFD for the measurement of total aflatoxins ; RIDASCREEN® Aflatoxin B1 30/15 for the measurement of aflatoxin B1).

The results of the kits compared to the reference HPLC method appeared not to be statistically different. However, at the Safenut progress meeting organized in September 07 (see Specific objective 5), there were discussions on the possible effects of the lower cross reactivity of the antibodies to aflatoxin G1 compared to B1 in the kits used for the measurement of total aflatoxins. This expressed concern was because of the high G1 to B1 ratio in some Brazil nut samples.

In the fit for purpose study some samples contained a high ratio of G1 to B1 (up to 3:1) but despite this, the line of equality in the statistical analysis was within the 95% Prediction Limits. Nevertheless, it was agreed that further samples with a high G1 to B1 ratio would be analysed at the R-Biopharm laboratory in São Paulo.

The analysis of the collected Brazil nut samples in the states of Acre and Pará by both the R-Biopharm kits and HPLC method will provide another series of data.

**Specific objective 4:**
Knowledge & technology transfer to the key stakeholders

**Deliverables expected during the reporting period:**
Training materials for the technical transfer of LFD by month 13 (June 07).
Training courses in LFD by month 14 (July 07)

**Milestones expected during the reporting period:**
Complete preparation of materials for training course in LFD, and ensure trainers are full prepared and have all equipment necessary by month 13 (June 07)

A two days training course in both ELISA and LFD kits was organized at LANAGRO-PA/MAPA, Belém-Pará on 24-25 September 07 in order to complement the course that took place on October 2006 at EMBRAPA, Rio Branco-Acre, for the implementation of both methods in the laboratories of EMBRAPA Acre and LANAGRO-PA for data collection of the project specific objective 2.

The course was organized and led by R-Biopharm Brazil (Guilherme Andrade) and CSL (John Banks) with the support of LANAGRO-PA/MAPA and CIRAD for its organization. It was offered to the EMBRAPA and MAPA partners involved in the aflatoxin analysis (Annex 6) and counted also with the participation of Kelly Marcelino and Luiz Mascaretti, ALKA Tecnologia em Diagnósticos (www.alka.com.br). The course gave instruction and hands on experience in ELISA and LFD kits. Training materials were developed and distributed.

As already mentioned in Specific objective 3, further training courses for Brazil nut producers and processors will be organized in 2008 at the same period than the training courses in good practices, with the aim to set up the methods in the Brazil nut production area and one processing plant.

**Other relevant project progress:**

A4.4: Development of a project specific website
Updating of the project specific website (http://www.stdf-safenutproject.com/), and up-loading of project working documents for the Safenut partners on the project room on the NFA web page (www.slv.se/safenut).

A4.5: Scientific and specific sector publications

Oral presentations in congresses and meetings

- Olsen M., 2007. Aflatoxins in the Brazil nut production chain. In: International Commission on Food Mycology workshop, 4-6 June 2007, Key West, USA. (same presentation as in IUPAC in May 2007, see Status report May 07 and First annual report) (http://www.foodmycology.org/abstracts/Abstracts%20Key%20West%2007.pdf )
- Olsen M., 2007. Presentation of background and expected results of the Safenut project. In: Meeting with STDF (Melvin Spreij) and SIDA (the Swedish development cooperation agency: www.sida.se), 14 September 2007, Stockholm. (Similar presentation as the above)

Posters presented in congresses

- Banks J., Hasnip S., Anderson S., Colyer A., Luebbe W., Reck B., 2007. Rapid immunoassays for aflatoxins in Brazil Nuts. In: IXth International Conference on Agri-Food Antibodies (organised by the Society of Food and Agriculture Immunology), 10-13 September, 2007, Vettre (near Oslo), Norway. (same poster as in IUPAC in May 2007, see Status report May 07 and First annual report)"

**Specific objective 5**:
To strengthen the public-private dialogue and partnership in the Brazil nut sector

**Deliverables expected during the reporting period:**
Progress meeting by month 13 (June 07)

A two days progress meeting was organized in Belém, State of Pará, 26-27 September 07 with the participation of key representatives of all the project partners (Annex 7).
This meeting which was initially planned by month 13 was postponed in order to make sure that enough scientific data would be available for fruitful discussions, as well as the key representatives of all the Safenut partners.

The project results and future plans until the end of the project were presented by the different Safenut partners and discussed within each specific objective. The administrative and financial rules to be respected by all the partners for project running and management were also reminded by the Safenut general coordinator (Annex 8).
As a result of the progress meeting, the Safenut action plan will be updated and disseminating to the project partners.

The progress meeting was preceded by two days (24-25 September) of further training course in ELISA and LFD methods for the Safenut partners (see Specific objective 4), and followed by one day of open meeting (28 September) with the private sector (most of the Brazil nut processing industries of the state of Pará) and other Brazilian institution supporting the Brazil nut sector (Annex 9). This meeting also counted with the participation of a representative of the INC – International Nut and Dried Fruit Council Foundation (http://www.nutfruit.org/) and Besana industry (Dr Cameon Ivarsson, Director of Napasol AG - http://www.napasol.com/). The INC has already provided a financial support for the organization of the Safenut first workshop in July 2006.

The open meeting provided an opportunity to exchange and discuss relevant information and experiences on Brazil nuts, and in particular to present the Safenut project and first results to the private sector in the state of Pará as well as experience of other research projects related to the topic (Annex 10). It also contributed to strengthen the public-private dialogue.

The progress and open meetings were organized by CIRAD with the support of NFA and the local team of MAPA in Belém-Pará, and held at SFA-PA (Superintendência Federal de Agricultura do estado do Pará)/ MAPA.

The presentations of the Safenut partners will be up-loaded on the project room on the NFA web page.

**2. Briefly list any issues / problems which impeded project implementation during this reporting period or which might affect project implementation in the future:**

Project specific objective 1

The collection of primary data was delayed due to the difficulties in identifying consultants with relevant competence for developing the field work in Acre and Pará, and consequently the completion of the two reports documenting the current conditions of Brazil nut production and commercialisation in the Brazilian states of Acre and Pará and the major constraints and opportunities for aflatoxin control, respectively.

As a result of the Safenut progress meeting organized in September 07 (see Specific objective 5), it was decided:

- In Acre, Marcio Muniz, EMBRAPA, is responsible for the field surveys with the support of the COOPEACRE. On the request of COOPEACRE and EMBRAPA, a mail has been already sent to the president of COOPEACRE by the Safenut general coordinator in June 07 for formalizing this partnership;
- In Pará, if no candidate can be identified until December 08, Marcio Muniz will be in charge of the field surveys with the support of the local partners (MAPA and EMBRAPA).

A scientific support of the other members of the Safenut socio-economic team (MG Piketty, CIRAD and Jair Carvalho Santos, EMBRAPA) will be provided.

Project specific objective 2

The report documenting the effectiveness of the already published code of practices, and at which steps in the BnFD the mycotoxin hazard originates, or concentrations increase to unacceptable levels was not completed yet, but the compilation and analysis of the data already collected in both states of Acre and Para were initiated. Based on these results, a preliminary report will be produced and complemented with the data to be collected during the next Brazil nut harvest season in order to have a more comprehensive study.

Reporting

Delay occurred in the delivery of the annual scientific and financial reports by the Brazilian partners, despite the various contacts made by the general coordinator by email and telephone.

**3. Describe briefly any measurable project impacts in the reporting period (as distinct from project outputs)**

1) The organization of the Safenut open meeting on 28 September 07 contributed to improve and strengthen the dialogue and collaboration between the private and public sectors.
The involvement of a representative of INC in this meeting will create a global awareness of the Safenut project which will hopefully create a future platform for recovering export markets.

2) The organization of further training course in rapid ELISA and LFD methods for aflatoxin analysis on 24-25 September 07 contributed to reinforce the laboratory capacity of the Safenut partners in charge of these analysis within the project specific objective 2, in both states of Acre and Pará (in total 5 staff trained: 3 from EMBRAPA Acre and 2 from LANAGRO-PA / MAPA).

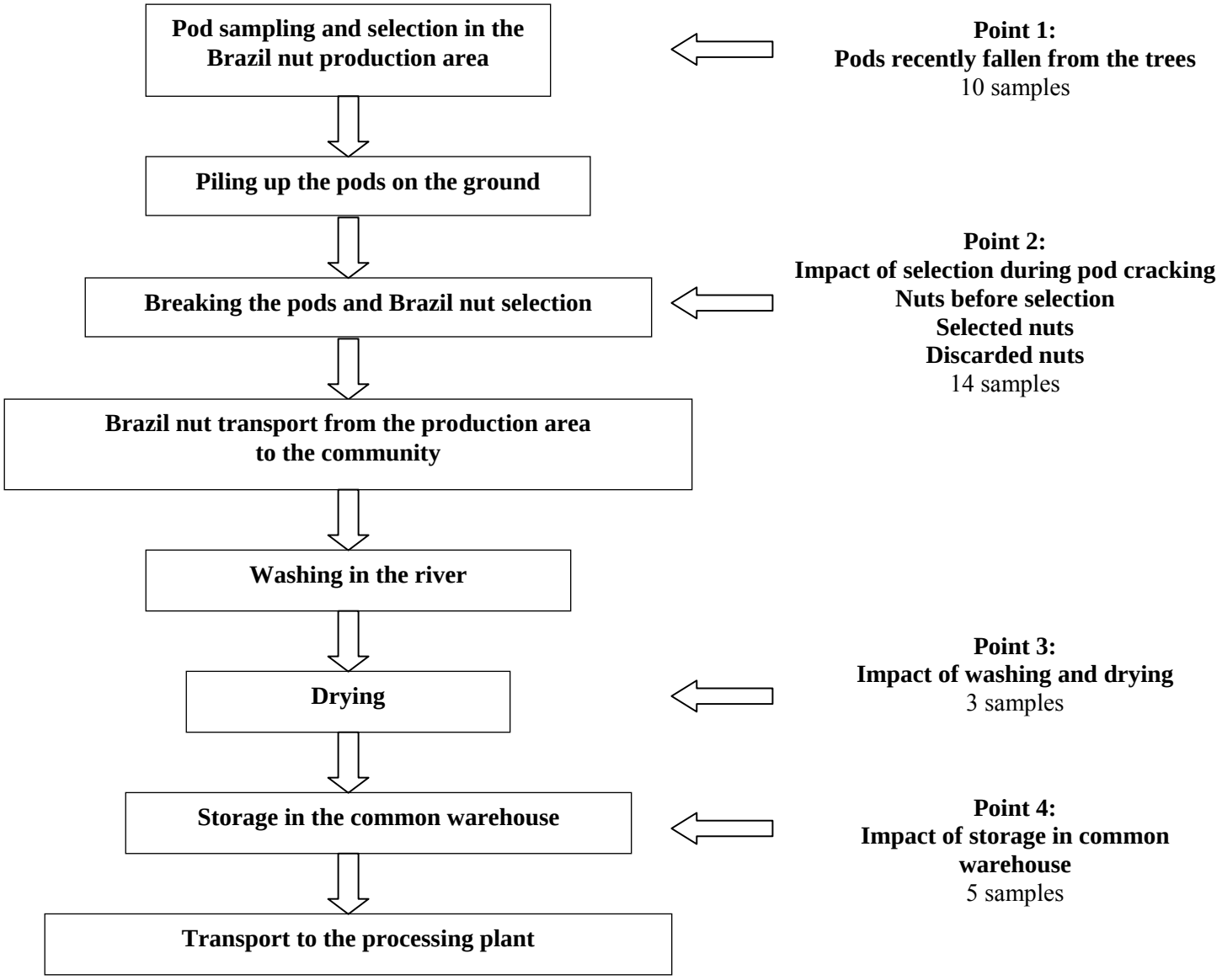
3) As a result of the meeting with STDF and SIDA on 14 September 07, Stockholm, SIDA asked for further written material and oral presentation to describe the situation concerning the Brazil nut production in the Amazon area.

# ANNEXES

# Annex 1:

# Brazil nut sampling points in the rainforest, state of Pará

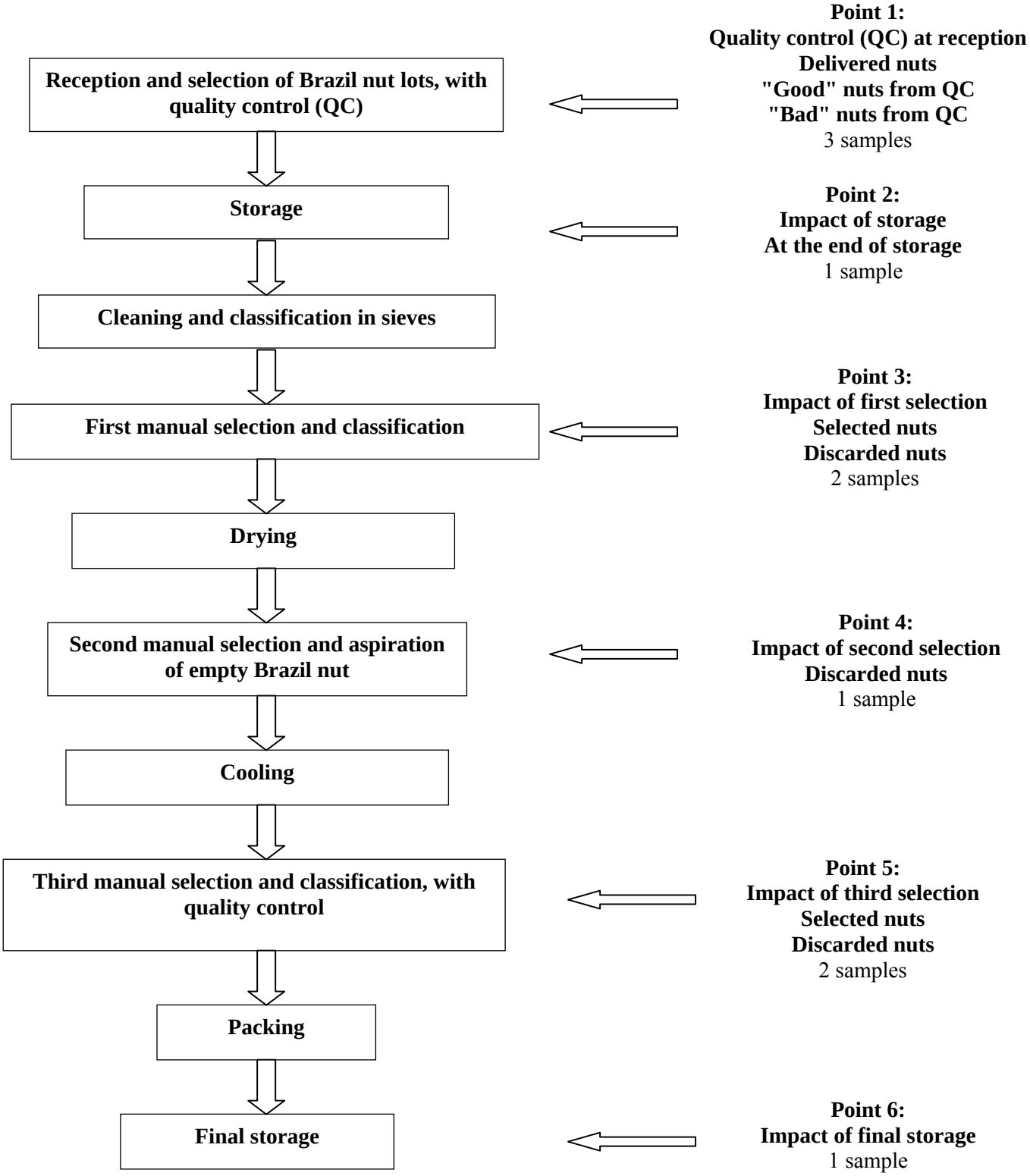
**Brazil nut flow diagram and sampling points**
**in the rainforest and communities of the selected association of producers, state of Pará**



# Annex 2:

# Brazil nut sampling points in a processing plant, state of Pará

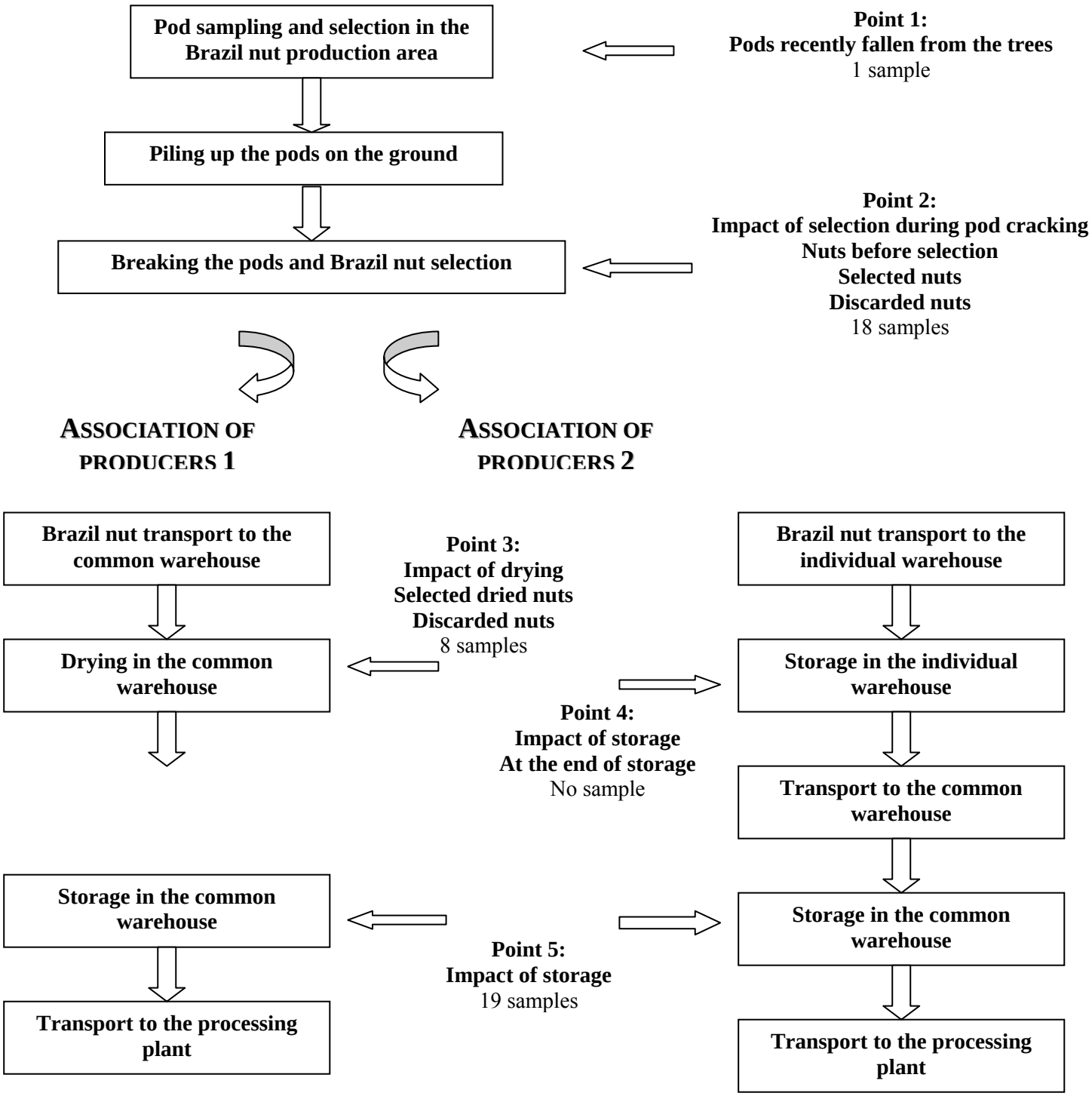
**Brazil nut flow diagram and sampling points in the selected processing plant, state of Pará**



# Annex 3:

# Brazil nut sampling points in the rainforest, state of Acre

**Brazil nut flow diagram and sampling points in the rainforest and two associations of producers, state of Acre**



# Annex 4:

# Photos illustrating the Brazil nut sampling points in both states of Acre and Pará

**In both Acre and Pará**

**1) Pod not mature**

**2) Brazil nuts from pod recently fallen (sampling point 1)**

**3) Old pod (after a certain time on the ground)**

**Pods piled on the ground**

**Breaking pods and Brazil nut selection (sampling point 2)**

**"Bad" nuts discarded after breaking the pods (sampling point 2)**

**In Acre:**

**Common warehouse, Association of producers 1**

**Drying on netting (sampling point 3)**

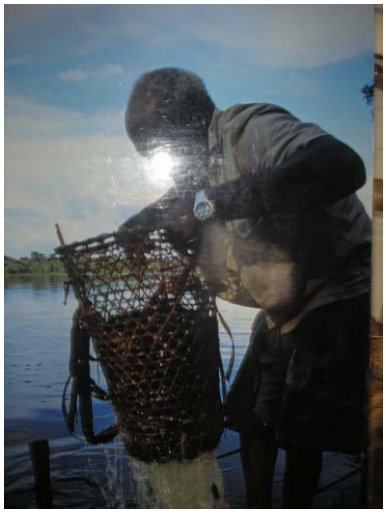



**Storage in bulk and bags by separating nuts providing from different producers (sampling point 5)**

**Common warehouse, Association of producers 2**

**Storage in bulk without separating nuts providing from different producers (sampling point 5)**

**In Pará:**



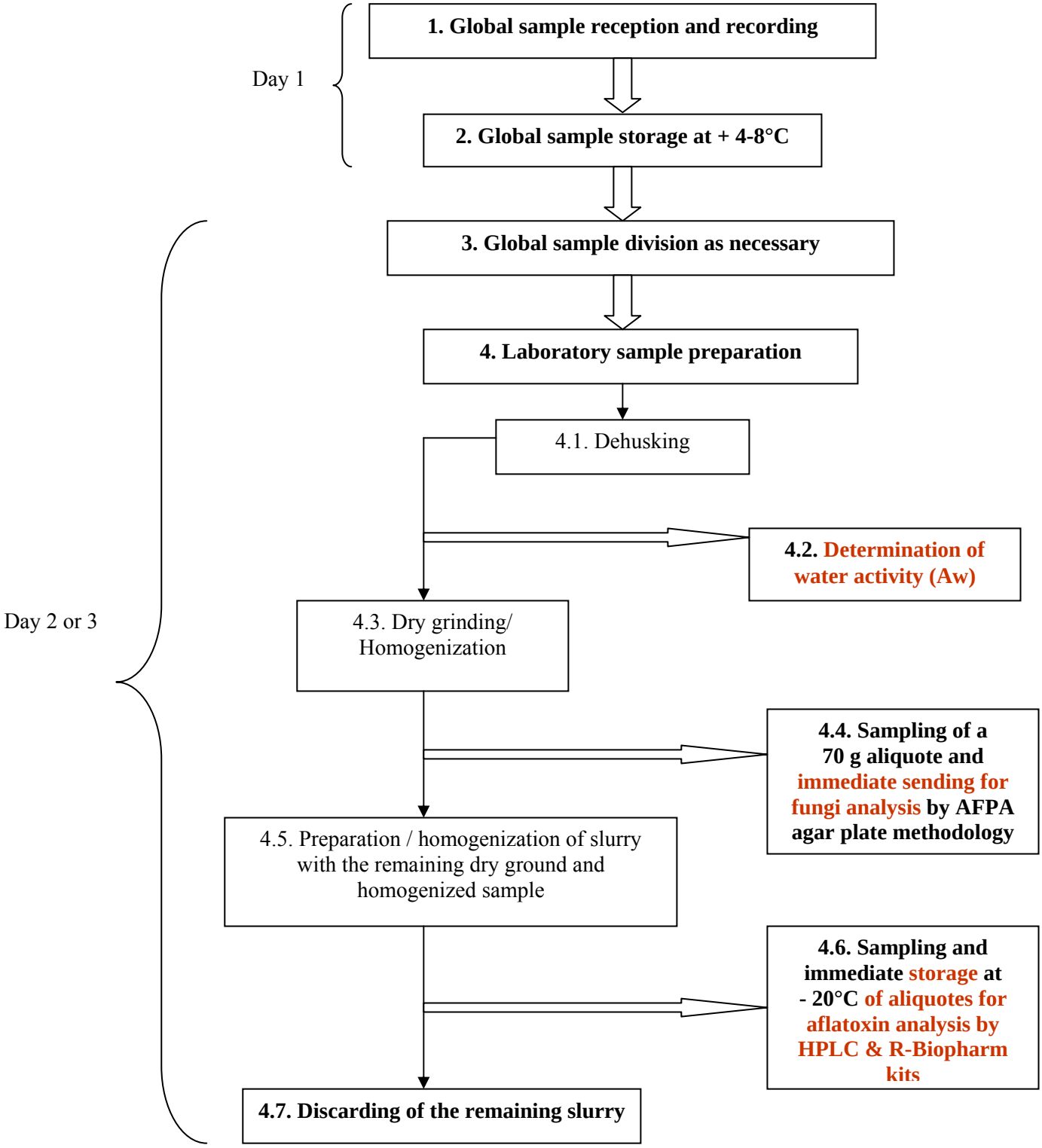
**Washing in the river**

**Drying (sampling point 3)**


**Storage in bulk in the common warehouse without separating nuts providing from different producers (sampling point 4)**

# Annex 5:

# Flow diagram of Brazil nut sample reception, preparation, storage and analysis in the laboratories of EMBRAPA Acre and LANAGRO-PA/MAPA & photos


Day 1
1. Global sample reception and recording
2. Global sample storage at + 4-8°C
Day 2 or 3
3. Global sample division as necessary
4. Laboratory sample preparation
4.1. Dehusking
4.2. Determination of water activity (Aw)
4.3. Dry grinding/ Homogenization
4.4. Sampling of a 70 g aliquote and immediate sending for fungi analysis by AFPA agar plate methodology
4.5. Preparation / homogenization of slurry with the remaining dry ground and homogenized sample
4.6. Sampling and immediate storage at - 20°C of aliquotes for aflatoxin analysis by HPLC & R-Biopharm kits
4.7. Discarding of the remaining slurry


**4.1. Brazil nut dehusking**

**4.3. Dry grinding/ Homogenization**

**4.5. Preparation / homogenization of slurry with the remaining dry ground and homogenized sample**

**4.4. Fungi analysis**

**Aflatoxin producing mould colonies differentiated by forming an orange coloured reverse in the AFPA medium**

# Annex 6:

# Training course in rapid ELISA and LFD assays: List of participants & photos

| Name | Institution |
|---|---|
| Joana Maria Leite de Souza | Embrapa Acre |
| Felicia Maria Nogueira Leite | Embrapa Acre |
| John Lennon de Oliveira Catão | Embrapa Acre |
| Mauricio Araujo | Lanagro-PA/MAPA |
| Edna Lúcia da Silva Lima | Sub-contracted by the Safenut project to support the activities in the Lanagro-PA/MAPA |


**Participants and teachers**

**G. Andrade, R-Biopharm (teacher) and 3 participants**

**LFD method**

**ELISA method**

# Annex 7:

# Safenut progress meeting: List of Participants & photos

| Name | Institution |
|---|---|
| Catherine Brabet | CIRAD |
| Marie-Gabrielle Piketty | CIRAD |
| Monica Olsen | NFA |
| John Banks | CSL |
| Guilherme Andrade | R-Biopharm |
| Joana Maria Leite de Souza | Embrapa Acre |
| Felicia Maria Nogueira Leite | Embrapa Acre |
| John Lennon de Oliveira Catão | Embrapa Acre |
| Jair Santos | Embrapa Acre |
| Márcio Muniz | Embrapa Acre |
| Eugenia Vargas | Lanagro-MG/MAPA |
| Ricardo Raski | CCRC-SDA/MAPA |
| Luzia Maria Souza | DIPOV-SDA/MAPA |
| Mauricio Araújo | Lanagro-PA/MAPA |
| Nilce de Medeiros | Lanagro-PA/MAPA |
| Jose Carlos Barroso | SFA-PA/MAPA |
| Gilson Santos | SFA-PA/MAPA |
| Edna Lúcia da Silva Lima | Sub-contracted by the Safenut project to support the activities in the Lanagro-PA/MAPA |
| Kelly Marcelino | ALKA Tecnologia em Diagnósticos |
| Luiz Mascaretti | ALKA Tecnologia em Diagnósticos |

**Safenut progress meeting**

# Annex 8:

# Safenut progress meeting: Program

**Wednesday 26 September 2007**

**9h00-9h10** Welcome
Catherine Brabet, CIRAD and Monica Olsen, NFA

**9h10-9h30** Presentation of the objectives and planning of the progress meeting
Catherine Brabet

**Specific objective 1: Characterization of the Brazil nut production chain**

**9h30-10h15** The Brazil nut productive chain in the state of Pará, including information still lacking
Ricardo Raski – MAPA (30 min + 15 min for questions/comments)

**10h15-10h30 Coffee-break**

**10h30-11h15** The Brazil nut productive chain in the state of Acre, including information still lacking
Marcio Muniz – EMBRAPA (30 min + 15 min for questions/comments)

**11h15-11h45** Activities for the project second year / Updating of the Safenut Action Plan
Marie-Gabrielle Piketty – CIRAD (15 min + 15 min for questions/comments)

**12h00-14h00 Lunch**

**Specific objective 2: Validation of recommended good practices**

**14h00-14h30** Sample collection and analysis in the state of Acre
Felicia Maria Nogueira Leite, EMBRAPA

**14h30-15h00** Sample collection and analysis in the state of Pará
Catherine Brabet

**15h00-15h30** Discussion

**15h30-16h00** Activities for the project second year / Updating of the Safenut Action Plan
Catherine Brabet (15 min + 15 min for discussion)

**16h00-16h15 Coffee-break**

**16h15-16h45** Predictive model for aflatoxin and fungi production
Monica Olsen (20 min + 10 min for questions/comments)

**16h45-17h15** Activities for the project second year / Updating of the Safenut Action Plan
Monica Olsen (15 min + 15 min for discussion)

**Thursday 27 September 2007**

**Specific objective 3: Validation and implementation of a rapid aflatoxin surveillance system**

**9h00-9h30** Validation of the ELISA and LFD kits
John Banks, CSL (20 min + 10 min for questions/comments)

**9h30-10h00** Activities for the project second year / Updating of the Safenut Action Plan
John Banks (15 min + 15 min discussion)

**10h00-10h15 Coffee-break**

**Specific objectives 4 / 5: Knowledge and technology transfer to the key stakeholders / To strengthen the public-private dialogue and partnership in the Brazil nut sector**

**10h15-10h45** Dissemination / Activities for the project second year / Updating of the Safenut Action Plan
Catherine Brabet (20 min + 10 min for questions/comments)

**10h45-11h45** Management aspects
Catherine Brabet (45 min + 15 min for questions)

**12h00-14h00 Lunch**

**Planning of the open meeting of September 28**

**14h00-15h00** Presentation of the objectives and outcome so far
Catherine Brabet and Monica Olsen

**15h00-15h15 Coffee-break**

**15h15-17h30** Finalization of the Safenut presentations by the different partners

Meetings of the Safenut Coordinators / Partners as necessary to solve specific scientific or management issues

# Annex 9:

# Safenut open meeting: List of Participants & photos

**Safenut Partners**

| Name | Institution |
|---|---|
| Catherine Brabet | CIRAD |
| Monica Olsen | NFA |
| John Banks | CSL |
| Guilherme Andrade | R-Biopharm |
| Joana Maria Leite de Souza | Embrapa Acre |
| Felicia Maria Nogueira Leite | Embrapa Acre |
| John Lennon de Oliveira Catão | Embrapa Acre |
| Jair Santos | Embrapa Acre |
| Márcio Muniz | Embrapa Acre |
| Ricardo Raski | CCRC-SDA/MAPA |
| Luzia Maria Souza | DIPOV-SDA/MAPA |
| Mauricio Araujo | Lanagro-PA/MAPA |
| Jose Carlos Barroso | SFA-PA/MAPA |
| Gilson Santos | SFA-PA/MAPA |
| Edna Lúcia da Silva Lima | Sub-contracted by the Safenut project to support the activities in the Lanagro-PA/MAPA |

**Other participants**

| Name | Institution |
|---|---|
| Cameon Ivarsson | Napasol AG<br>Representative INC |
| Vildes Maria Scussel | Laboratório de micotoxinas, Depto. Ciência e Tecnologia de Alimentos, Centro de Ciências Agrárias, Universidade Federal de Santa Catarina (UFSC)<br>Florianópolis-SC |
| Ariane Mendonça Pacheco | UFSC / UNIP<br>Manaus-AM |
| Florêncio Jorge da Silva Leite | Jorge Mutran exportação e importação Ltda<br>Belém-PA |
| Manuel Francisco Casemiro Florenzano Filho | Exportadora Florenzano Ltda<br>Oriximiná-PA |
| Manuel N. F. Rodrigues | Renmero indústria e comercio Ltda<br>Cametá-PA |
| Cristiane de Nazaré Paes dos Santos | Exportadora Mutran Ltda<br>Belém-PA |
| Marcos Jaime B. Nelicqq<br>José Jaime Gabbay Belicha | Caiba indústria e comercio S/A<br>Belém-PA |
| Robinson Fraderico Hasselmann Jr. | Urubatan Piatã Produto da Floresta<br>Niterói-RJ |

Safenut partners from MAPA, Brazil nut processors and Ariane Pacheco (UFSC)

Jose Barroso, SFA-PA/MAPA
Felicia Nogueira Leite, Embrapa Acre
Brazil nut processor

Cameon Ivarsson, Napasol AG
Vildes Maria Scussel, UFSC

# Annex 10:

# Safenut open meeting: Program

**9h00-9h30** **Welcome**
Ademir Conceição Carvalho Teixeira - Superintendente Federal de Agricultura no Pará
Catherine Brabet, CIRAD and Monica Olsen, NFA

**9h30-10h00** **Roundtable – Presentation of the participants**

**10h00-10h30** **The Safenut project** - Catherine Brabet

**10h30-10h45** **Coffee-break**

**Moderator: Catherine Brabet**

**10h45-11h10** **Brazil nut productive chain in Brazil** - Safenut results: Specific objective 1
Ricardo Raski, MAPA

**11h10-11h30** **Discussion**

**11h30-12h00** **Aflatoxin and the producing fungi in the Brazil nut production chain** - Safenut results: Specific objective 2
Monica Olsen (10 min: predictive model)
Joana Leite de Souza, EMBRAPA (10 min: occurence in the supply chain, Acre)
Mauricio Araujo, LANAGRO-PA/MAPA (10 min: occurrence in the supply chain, Pará)

**12h00-12h30** **Discussion**

**12h30-14h00** **Lunch**

**Moderator: Monica Olsen**

**14h00-14h30** **Good practices and strategies for prevention and control of aflatoxins in the Brazil nut production chain**
Catherine Brabet (based on the guidelines developed by EMBRAPA and the Codex)

**14h30-15h00** **Discussion**

**15h00-15h20** **Rapid methods for aflatoxin monitoring along the Brazil nut production chain** - Safenut results: Specific objective 3
Guilherme Andrade, R-Biopharm Brazil

**15h20-15h40** **Discussion**

**15h40-16h00** **Coffee-break**

**16h00-17h30** **Experience from industry and other research projects** - What are the current needs and deficiencies? Round table discussion and short presentations of work going on beside Safenut
Brazil Nut Characteristics and Criteria of Quality: Profa. Vildes M. Scussel, UFSC and Ariane Pacheco, UFSC / UNIP, Manaus-AM (45 min)

**17h30-18h00** **Conclusions** - Catherine Brabet and Monica Olsen