

Meats, Seafood, and Poultry

Partnerships for Food Industry Development
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List of Acronyms and Abbreviations

AWP.....	Annual Work Plan
CCT.....	Cold Chain Technologies
CTO.....	Cognizant Technical Officer
EGAT.....	Economic Growth Agriculture and Trade
ES.....	Electrical stimulation
FSQ.....	Food Safety and Quality
GMP.....	Good Management Practices
HACCP.....	Hazard Analysis Critical Control Point
IARW.....	International Association of Refrigerated Warehousemen
LSU AgCenter.....	Louisiana State University Agricultural Center
M&E.....	Monitoring and Evaluation
MOU.....	Memorandum of Understanding
PFID.....	Partnerships for Food Industry Development
PFID-MSP.....	PFID-Meat, Seafood and Poultry
PHT.....	Post Harvest Technology
PHTC.....	Post Harvest Technology Center
PMC.....	Project Monitoring Chart
PSE.....	Pale, Soft, and Exudative
RCSA.....	Regional Center for Southern Africa
RSA.....	Republic of South Africa
SAR.....	Semi-Annual Report
SARDA.....	South African Refrigerated Distribution Association
TTT.....	Train the Trainer
USAID.....	United States Agency for International Development
WFLO.....	World Food Logistics Organization

Section I. Introduction

A. Summary

This document presents the second annual work plan (AWP) activities for the Partnerships for Food Industry Development in Meat, Seafood and Poultry (PFID-MSP) Project in the Republic of South Africa (RSA). However, this document is actually the South African component of PFID-MSP's sixth AWP as this corresponds to the sixth year of the Project's worldwide operations.

The Work Plan covers activities for the Project's three objectives in South Africa and general management activities: Post Harvest Technology Center (PHTC), Food Safety, Quality and Security Compliance (FSQ) and Value-Added Post Harvest Technology for Cold Chain Technologies (PHT-CCT). In Section II, these activities include material preparation and staff will establish monitoring/evaluation procedures. The activities are further outlined in the schedule found in Section III.

B. Review of Year One Activities

The Project's South African operations officially started in August 2005 when the sub-contract between the Louisiana State University Agricultural Center (LSU AgCenter) and University of Stellenbosch (USt, the LSU AgCenter's South African partner institution under PFID-MSP) was signed. There were also delays due to personnel turnover. Since the beginning of December, 2005, Ms Sune Botha has been employed, primarily to coordinate the Post-Harvest Technology Center (PHTC). Most of the required office equipment has been purchased.

The PFID-MSP program has recorded several results during this reporting period. Among the highlights for this reporting period are:

- Formal establishment of the Post Harvest Technology Center (PHTC) in Stellenbosch, RSA, which has started to supply the game meat industry with relevant information;
- Initial assessment on FSQ issues for the South African game industry; and
- A short list of potential Cold Chain Technologies (CCTs) for PFID-MSP to examine in RSA.

Section II. Second Annual Work Plan

This section describes the activities relating to the Project's three objectives in South Africa. These activities are outlined in the schedule found in the next section.

A. Project Objective # 1 – Post Harvest Technology Center

The PHTC is formally established with a designated office (Suné Botha, Associate Coordinator; Tel: 27-21-8084739; e-mail PHTC@sun.ac.za). Ms. Botha's responsibilities regarding the PHTC include HACCP course development and conduct, other curriculum development and

training sessions for meat and seafood processors. She will also be involved in helping technology transfer for product development. The PHTC has already supplied and supported the meat industry in a number of ways (see Annual Report for more detail).

Through such activities, the PHTC is providing the following benefits to the South African food industry:

- Coordination of training needs to avoid duplication of effort;
- Increased access to technical information to assist enterprises; and
- Contact with international institutions, such as IARW/WFLO

In 2006, activities to meet this objective will include:

- a) *Training Assessment Finalization and Curriculum Development* – During 2005, a local round table meeting was held with key role players in South Africa. The key question posed to this group was: “What would you like to see in the curriculum of a Three Year Cold Chain Technology course?” From the answers received, a proposed curriculum was developed. This now needs to be refined with the WFLO conducting an additional assessment so as to ascertain what type of information could be drawn from their library and what needs to be developed. A workshop (to be held with WFLO specialists early in 2006) will address these issues. Throughout these activities, close collaboration with SARDIS will be maintained. One of the other factors that came out from the 2005 round table was that the course had to be generic enough to cover all perishable commodities (meat, fruit, dairy, vegetables, etc) and that where applicable, more specific courses within the module would be held. The feeling was also that it should be focused on middle management.

A second possibility that will be evaluated during the visit by the WFLO specialist is the suitability / need for short, specific course such as “cold chain management for retailers”. The need for these will also become evident from the results of the assessment.

During his visit to the USA (as a participant in the Train the Trainer course mentioned in the next sub-section), Dr Hoffman will also stay at the LSU AgCenter to help with the development of the curricula mentioned above.

- b) *Initial Course Conduct* – Depending on the results of the assessment as well as the outcome of the curriculum development, The PHTC will aim to start training later in this year, aiming for at least three courses (the “block men” training mentioned below as well as courses on game meat and cold chain issues) with a total participation for those three courses of at least twenty-eight participants.

PHTC staff members see particular possibilities in relation to “block men” training to ensure product quality within the whole red meat sector. This refers to training courses for abattoir and breaking plant workers regarding the typical primal cuts for beef, sheep, pork and ostrich carcasses. USt is awaiting a contract from Northlink (Junior) College to conduct the course on its behalf (RSA law restricts Universities’ authorization to directly provide labor training). Ms. Botha will continue writing some of the course content. The aims would be to have the course recognized and registered with the Government by the middle of 2006 and then to start the training. There will be two target groups: the first

would be unemployed people (the RSA Government supplies R900 per person per month for food and travel logistics while they participate in the training) and the second group would be the training/retraining of people already working in the industry.

From this course material, it is envisaged to provide an abridged manual and a short course to the game industry, focusing on the processing of game meat.

B. Project Objective # 2 – Food Safety, Quality and Security Compliance

Within this facet, three activities have been identified: Train the Trainer (TTT), development of an overall HACCP strategy for the game meat industry in South Africa and develop a HACCP for Sweetwell Farms meat processing facility.

The TTT program will enable team members of the PHTC to train participants in the seafood industry in the principles in HACCP and will also empower them to design and implement HACCP within the meat industry.

USt has identified a need for HACCP interventions to improve the market access potential of the South African game industry (the full rationale for the HACCP for the game meat industry is in the Second Semi-Annual Report). The key issues to be addressed during the Project's duration are:

1. *Baseline study* - Conduct a baseline study (National and International) on problems/needs experienced with existing game meat quality/safety management plans by using retrospective and existing data.
2. *Situation analysis in South Africa* - Conduct an analysis of policies, procedures/codes of conduct and practices followed by all three tiers of Government.
3. *Development of Integrated model* - Develop a model for intervention for the following: National Government, Provincial Government, Municipal (District/Metro) Administrations and the Game/game meat industry (including National parks).
4. *Pilot Model Review* - Expose the developed model to the various Government departments and the Game/game meat industry.
5. *Implementation* - Apply the model to the various levels of Government and the Game/game meat industry and monitoring thereof.
6. *Evaluation* - Evaluate the implementation results against the baseline and implement changes to the model.

The fore-mentioned project falls under both Project Objectives #2 and #3 in that, ultimately, a HACCP policy/strategy will be available for implementation, but also to achieve this, work on the development of cold chain strategies will be required.

Sweetwell Farm has obtained permission to build a newer processing plant within the next few years and will develop a HACCP plan in collaboration with PFID-MSP under the USAID/RCSA-funded Associate Award. However, prior to this being implemented, GMPs have

to be developed for all the processes. These GMPs will then be incorporated into the HACCP plan.

Work items to initiate PFID-MSP efforts to meet this objective will include:

- a) Support two stakeholders' training in seafood TTT¹
- b) Conduct the Baseline study as well as initiate as many of the other phases as possible (some of these are such that they can run concurrently).
- c) Develop a minimum of one GMP for Sweetwell farm

C. Project Objective # 3 – Value-Added Post Harvest Technology – Cold Chain Technologies

This core activity is a capacity-building exercise for the South African food industry; it examines and promotes post-harvest technologies that increase the value of agricultural products. For year one, this specific activity examined cold storage/warehousing technologies as a first step to increased efficiency in the cold chain. In this activity, host country Project staff and stakeholders identified a specific process, in the cold chain, the improvement of which may have led to increased operational efficiency. However, after identifying this procedure, the company implemented the suggested change prior to any data being collected.

Something that has come out from this initial investigation (and was frequently alluded to in the reports from the experts during the past year) is the paradox within the meat industry in South Africa: that of having elements of both the first world and third world scenarios in terms of technology and food safety. PFID-MSP was initially focusing on the first world group and their activities to try and find an intervention that can be implemented with a minimum of costs yet save them substantial money. At the same time this must be a type of intervention that can be carried out in other plants as well. The problem lies in finding such an intervention as most of these abattoirs would already have adopted them.

Nonetheless the project is still seeking such potential topics and the following are being considered:

- 1) *Hot de-boning of Ostriches at Swartland Ostriches*. The research pertaining to this technique has been completed and the first scientific paper on this project has been published by USt in the South African Journal *Meat Science*. This research gives scientific credibility to the hot de-boning technology. When this technology is granted approval, the PHTC can help guide the stakeholder factory in the new technique. Of particular value will be the expertise of WFLO pertaining to the redesign of the cold rooms and the development of a chilling tunnel. At present, the general idea is to decrease the size of the first two cold rooms and increase the size of the de-boning area. The cold rooms then become containment areas to keep excess freshly slaughtered birds in, prior to them being de-boned. The added advantage of this is that the de-boning room could run at a temperature that is 2°C higher than at present (<8°C) which will result in greater worker comfort. After the warm muscles (most will still be above

¹ Immediate follow-up to this TTT activity, namely training additional stakeholders for basic certification in seafood HACCP, will be conducted under the USAID/RCSA-funded associate award.

20°C) are vacuum packed, the idea is to pass them through a cold water/ice chiller that is linked to the de-boning room and packaging plant so that they can be removed from this chiller at a temperature <2°C prior to being boxed and stored in the super chiller. Such a chiller would be similar but a lot smaller to that operating in broiler abattoirs.

- 2) *Electrical stimulation (ES)*. In this scenario there are two options: application to cattle and sheep and application to game. South African abattoirs are aware of the benefits of ES and most of the large abattoirs apply this on a regular basis. Dr. Hoffman of USt has noted though, that some of the smaller abattoirs either do not have the apparatus or do not use it. This may be a possible intervention where PFID-MSP can look at the costs of such an apparatus versus the improvement in chilling efficiency and better quality that can be gained. However, USt will need to find out how many abattoirs do not have such equipment. The second option is a longer term one that Dr. Hoffman has earmarked for a MS/PhD student who will be starting in 2007. This includes development of a suitable apparatus that can function off a vehicle in the bush at night (without scaring away the other game); issues to explore include time of application post mortem: duration of application: voltage/amp, etc. Dr. Hoffman has recently contacted the Department of Nature Conservation and Tourism of the Free State Province who have indicated their likely approval of a research proposal. This will mean that the project will be able to get the required animals for free.
- 3) *Slaughter of pigs at night*. This should minimize Pale, Soft, and Exudative (PSE) meat. This is the result of a rapid post mortem pH decline while the muscle temperature is too high. This combination of low pH and high temperature adversely affects muscle proteins, reducing their ability to hold water (the meat drips and is soft and mushy) and causing them to reflect light from the surface of the meat (the meat appears pale). Muscles with a low pH in combination with a high muscle temperature lead to an increased protein break-down. Once more we would have to first see how many of the larger commercial abattoirs that slaughter pigs will be capable of changing to such a procedure. But it has possibilities. Dr. Hoffman has recently spoken to Winelands Pork in Cape Town, an export abattoir that is interested analyzing the effects of night slaughtering, particularly during very warm weather, to reduce heat stress losses
- 4) *Spray chilling of carcasses*. This is an intervention study that is used internationally to help reduce the weight shrinkage that occurs in carcasses during post mortem chilling. Carcasses can loose up to 3-5% of their weight during this chilling period. Spray chilling of for example beef carcasses with an intermittent water mist (1°C, intermittent for 4-16 h) reduces carcass shrinkage (reduced by 0.08g per 100g per hour of spraying), without compromising quality or increasing spoilage losses; however, there should be sufficient time after the end of spray chilling to prevent the carcass from having an undesirable pale color and wet surface, which would increase bacterial growth. Weak acid solutions can also be used to enhance the shelf life of spray chilled carcasses. A number of abattoirs have indicated an interest in this technology. The legal implications of this technology would also need to be evaluated.

As the year progresses, one or two of the preceding topics will be selected, based on the following criteria:

- Importance to food industry;

- Potential impact to the stakeholders, particularly the small-scale enterprises with limited access to technology;
- Potential viability; and/or
- Relevance to the cold chain/role of WFLO.

In 2006, this objective can be addressed through the following items:

- Evaluation of the four projects and selection of one (or more) for cased study analysis;*
- Case Study Design - development of case study methodology for the selected technology or technologies, including identification of participating stakeholder plants; and*
- Begin case study implementation of the selected technology – with an initial focus on technical viability (economic feasibility will be the focus of later analysis).*

D. Management, Monitoring and Evaluation

1. Travel Priorities

To date, USAID/EGAT has only provided \$300,000 of the \$630,000 obligated for PFID-MSP in Year 2. Furthermore, budgetary constraints have prevented the donor from guaranteeing that the balance will be available this year. Therefore, Project management has developed the following priority list of travel that was originally budgeted for this year in RSA.

- High Priority – PFID-MSP is committed to conduct with existing funds
 - Seafood HACCP Train-The-Trainer (US-based Participant Training; currently budgeted as Meat and Poultry HACCP Train-The-Trainer)
 - Economic Impact M&E (required for leveraging Associate Award funds)
- Low Priority – not to be considered without additional funds
 - Administrative Management

PFID-MSP should be able to conduct the high priority travel with existing funds. The donor has given favorable consideration for this priority list.

2. Branding and Marketing Strategy

PFID-MSP has been informed of the recent USAID policy initiative in which Agreement Officers will incorporate marking requirements in awards obligated after January 2, 2006. The new USAID policy is that all programs, projects, activities, public communications, and commodities, partially or fully funded by a grant or cooperative agreement or other assistance award or sub-award must be marked appropriately overseas



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USAID Logo - To be inserted in all official PFID-MSP documents.

with the USAID Identity of a size and prominence equivalent to or greater than the recipients, other donor's or other partner's logo.

PFID-MSP management is committed to complying with this requirement as evidenced by the following elements in its branding strategy/marketing plan. All official project information materials, leaflets, brochures, training manuals, web-sites etc., (and possibly even staff business-cards) will acknowledge USAID support whenever possible, primarily by displaying the accompanying USAID logo at a size that is at least as large as all implementing or collaborating entities. Note that this new requirement may necessitate negotiations with HACCP Alliances so that cover pages of translated HACCP manuals can include the USAID logo. Any difficulty arising from such negotiations will be communicated to USAID/EGAT's CTO.

Incorporating this branding strategy should not incur any significant expenses to the project. There are no budgeted equipment purchases requiring the acquisition of decals. USt already has the logo as a graphic file so it can incorporate it into any necessary documentation at no cost. USAID does not require contractees or sub contractees to immediately replace stationary supplies with those containing the logo but instead draw down on remaining supplies. When those supplies are replaced with those containing the logo, the cost will be covered under existing budgetary line items.

PFID-MSP is prepared to have its CTO review this plan's development as well as its implementation over this coming year.

3. Monitoring, Evaluation and Planning

To ensure that the various Project teams have the capacity to fulfill their responsibilities, the PFID-MSP has established a quarterly project monitoring mechanism to collect information pertaining to progress toward this AWP's targets. This mechanism is designated the Project Monitoring Chart (PMC). In addition, implementation, meeting and reporting schedules will be regularly communicated to all Project staff. Lastly, Dr. Hector Zapata of the LSU AgCenter's Department of Agricultural Economics is scheduled to travel to the RSA to collect initial data and provide guidance on how the Project's economic results and impact will be monitored and evaluated.

Based on PFID-MSP's Scope of Work and the progress made during this year this project will initiate a planning process for Year 3 activities by November 2006.

Section III. Schedule of Project Activities

Activity	Work Item	Indicator Targets	Results/Consequences
A. January – March 2006			
<i>Project Objective # 1- Post Harvest Technology Center (PTC)</i>			
Training Assessment Finalization and Curriculum Development	Hold meeting with Cold Chain role players and WFLO representative	Documentation of the following <ul style="list-style-type: none"> • WFLO representative’s travel • Finalized Training Assessment • PHTC curricula directions 	PHTC has programmatic framework on which to base its curricula development
Initial Course Conduct	Initialize course design for Block man training	Manual outline is documented	The manual can be finalized
<i>Project Objective # 2 – Food Safety, Quality and Security Compliance</i>			
HACCP Baseline Study	Initiate Baseline study on game HACCP	Documented outline, including proposed methodology for data collection and analysis on game meat processing and export industry	Baseline study can be started
<i>Project Object #3 – Value Added Post-Harvest Technology – Cold Chain Technologies</i>			
Evaluation and Selection	USt and WFLO evaluate suitability of four projects	Documented selection of at least one technology for case study analysis	Case study can be initiated
Case Study Design	Initialize case study methodology for the selected technology or technologies (conducted during WFLO visit)	<ul style="list-style-type: none"> • Outline or draft protocol describing how technical feasibility will be determined • Identification of at least one interested stakeholder 	Methodology can be finalized

Activity	Work Item	Indicator Targets	Results/Consequences
<i>Management, Monitoring and Evaluation</i>			
Branding	Verify that all Project-disseminated materials meet USAID branding strategy to the greatest degree possible	<ul style="list-style-type: none"> • Copy of each Project-disseminated material available for donor review • Documented verification that all newly purchased equipment and supplies are appropriately branded 	Donor receives appropriate credit for PFID-MSP funding
Monitoring and Evaluation (M&E)	Project Monitoring Chart	Internal submission of PMC	Project issues can be addressed in a timely manner
	Economic Monitoring and Evaluation – Trip Preparation	Documented Travel Scope of Work and initial preparation for LSU AgCenter’s Agricultural Economist	Dr. Zapata can collect initial data and provide guidance on economic M&E for the Project
B. April – June 2006			
<i>Project Objective # 1 – Post Harvest Technology Center (PTC)</i>			
Curriculum Development	USt and WFLO develop curricula	Documented refinement of curricula involving at least one proposed course	PHTC has programmatic framework on which to base its capacity building activities
Initial Course Conduct	Continue course design for Block man training	Draft manual is designed for expert or stakeholder review	A course can be conducted later in the year.
<i>Project Objective # 2 – Food Safety, Quality and Security Compliance</i>			
Seafood HACCP TTT	TTT participants gain training in USA	Documentation for two participants completing TTT instruction	Participants obtain qualification in instruction for Basic HACCP Certification
HACCP Baseline Study	Initiate Baseline study on game HACCP	Documented compilation of initial data on game meat processing and export industry	Baseline study can be continued

Activity	Work Item	Indicator Targets	Results/Consequences
<i>Project Object # 3 – Value Added Post-Harvest Technology – Cold Chain Technologies</i>			
Case Study Design	Finalize case study methodology for the selected technology or technologies	<ul style="list-style-type: none"> • Finalized protocol describing how technical feasibility will be determined • Documented intent of participation be at least one stakeholder (possibly through an MOU) 	Case study can be initialized
<i>Management, Monitoring and Evaluation</i>			
Branding	Verify that all Project-disseminated materials meet USAID branding strategy to the greatest degree possible	<ul style="list-style-type: none"> • Copy of each Project-disseminated material available for donor review • Documented verification that all newly purchased equipment and supplies are appropriately branded 	Donor receives appropriate credit for PFID-MSP funding
Monitoring and Evaluation	Project Monitoring Chart and SAR	<ul style="list-style-type: none"> • Submission of 11th SAR to USAID/EGAT • Internal submission of PMC 	<ul style="list-style-type: none"> • Donor is appropriately informed of Project's key issues • Project issues can be addressed in a timely manner
	Economic Monitoring and Evaluation – Trip Conduct	Documented Travel Report by LSU AgCenter's Agricultural Economist regarding initial data collection and guidance on economic M&E for the Project	The Project can better measure its results and impact in economic terms
C. July – September 2006			
<i>Project Objective # 1 – Post Harvest Technology Center (PTC)</i>			
Curriculum Development	USt and WFLO further develop curricula	Documented refinement of curricula involving at least one additional proposed course	PHTC has programmatic framework on which to base its capacity building activities

Activity	Work Item	Indicator Targets	Results/Consequences
Initial Course Conduct	<ul style="list-style-type: none"> • Complete course design for Block man training • Register course with appropriate the government body (RSA Government body) • Start training 	<ul style="list-style-type: none"> • Finalized manual with at least six modules • Documented course registration • At least ten participants have started training 	PHTC establishes reputation for capacity building for industry
	Give short course on game meat	8 people trained in hygienic practices in game meat	
<i>Project Objective # 2 – Food Safety, Quality and Security Compliance</i>			
HACCP Baseline Study	Continue Baseline study on game HACCP	Draft baseline study with documented compilation of additional data on game meat processing and export industry	Baseline study can be continued
GMP Development	Draft GMP at Sweetwell meat processor	Draft GMP developed for stakeholder/expert review	GMP recommendation can be finalized
<i>Project Object #3 – Value Added Post-Harvest Technology – Cold Chain Technologies</i>			
Case study implementation	Initialize technical case study	Documented trial adoption of technology by stakeholder	Case study can be continued
<i>Management, Monitoring and Evaluation</i>			
Branding	Verify that all Project-disseminated materials meet USAID branding strategy to the greatest degree possible	<ul style="list-style-type: none"> • Copy of each Project-disseminated material available for donor review • Documented verification that all newly purchased equipment and supplies are appropriately branded 	Donor receives appropriate credit for PFID-MSP funding
Monitoring and Evaluation	Project Monitoring Chart	Internal submission of PMC	Project issues can be addressed in a timely manner

Activity	Work Item	Indicator Targets	Results/Consequences
D. October – December 2006			
<i>Project Objective # 1 – Post Harvest Technology Center (PHTC)</i>			
Curriculum Development	USt and WFLO finalize curricula development	Documented completion of curricula involving at least one additional proposed courses	PHTC has programmatic framework on which to base its capacity building activities
Initial Course Conduct	Conduct short course on Cold Chain technologies	10 persons from industry attend course	PHTC establishes reputation for capacity building for industry
	Continue Blockman course	10 people continue training	
<i>Project Objective # 2 – Food Safety, Quality and Security Compliance</i>			
HACCP Baseline Study	Complete Baseline study on game HACCP	Final baseline study with documented analysis of data and recommendations on game meat processing and export industry	PFID/RSA has programmatic framework on which to base its FSQ activities for game meat
GMP Development	Finalize development of GMP at Sweetwell meat processor	At least one documented GMP recommendation to stakeholder	Sweetwell can consider adoption of a GMP
<i>Project Object #3 – Value Added Post-Harvest Technology – Cold Chain Technologies</i>			
Case study implementation	Continue technical case study	Documentation of initial findings pertaining to technical feasibility	Technical and economic feasibility can be determined next year
<i>Management, Monitoring and Evaluation</i>			
Branding	Verify that all Project-disseminated materials meet USAID branding strategy to the greatest degree possible	<ul style="list-style-type: none"> • Copy of each Project-disseminated material available for donor review • Verification that all newly purchased equipment and supplies are appropriately branded 	Donor receives appropriate credit for PFID-MSP funding
Monitoring and Evaluation	Project Monitoring Chart and SAR	<ul style="list-style-type: none"> • Submission of 12th SAR to USAID/EGAT • Internal submission of PMC 	<ul style="list-style-type: none"> • Donor is appropriately informed of Project's key issues • Project issues can be addressed in a timely manner
Year 3 (7) Planning	Prepare AWP	1 st Draft Submitted	2 nd AWP can be finalized

