

Fiscal Year:	FY 2006	Task Last Updated:	FY 06/22/2009
PI Name:	Wijeratne, Wilmot Ph.D.		
Project Title:	Development of a Multipurpose Extruder/Press Food Processing System		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Space Human Factors Engineering		
Joint Agency Name:	TechPort:	No	
Human Research Program Elements:	(1) SHFH :Space Human Factors & Habitability (archival in 2017)		
Human Research Program Risks:	None		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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Zip Code:	50322-3600	Congressional District:	3
Comments:			
Project Type:	GROUND	Solicitation / Funding Source:	SBIR Phase II
Start Date:	01/02/2006	End Date:	03/01/2010
No. of Post Docs:	No. of PhD Degrees:		
No. of PhD Candidates:	No. of Master' Degrees:		
No. of Master's Candidates:	No. of Bachelor's Degrees:		
No. of Bachelor's Candidates:	Monitoring Center: NASA JSC		
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Flight Program:			
Flight Assignment:	NOTE: End date changed to 3/1/2010 per HRP Master Task List information dtd 1/11/2012 (Ed., 2/27/2012) NOTE: End date originally 1/02/2008; changed to 1/30/2009 per M. Perchonok/JSC (6/09)		
Key Personnel Changes/Previous PI:			
COI Name (Institution):			
Grant/Contract No.:	NNX09CB05C		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	<p>This project is to develop versatile, low mass, energy efficient, and easily maintained multipurpose seed processing (MSP) equipment for food processing in space environments. Phase-I of the project yielded a conceptual drawing for a MSP. Phase-II consists of six main tasks. The first model MSP will be manufactured, programmed and tested for ESM, function, and quality of processed product. The data will be used to refine the model and design multipurpose screws for the extrusion and press components of the MSP to simplify the equipment. Several models of MSP's will be fabricated and tested for versatility. The ESM criteria and functional parameters will be used to evaluate the optimum MSP for NASA applications and non-NASA applications. The final deliverables will be the test database, design drawings and the optimized MSP's for NASA and non-NASA applications.</p> <p>POTENTIAL NASA COMMERCIAL APPLICATIONS: The primary NASA application will be to perform a variety of food processing operations including size reduction, cooking, oil extraction, dehydration, stabilization, texturization, and expansion. This capability will lead to dry and shelf stable food products such as soy flour, textured soy protein, soy oil, breakfast cereals, expanded snacks, and pasta products. The proposed MSP will be unique in that the heat of processing will be generated internally by friction without dependence on an external heat source such as steam. The heat process will reduce microbial hazards in the space environment and also improve the stability of products by enzyme inactivation.</p>
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	<p>The technology developed in this project will enable the design and fabrication of MSP's of capacities between the NASA MSP and the commercial extruders currently marketed by the contractor. Such small capacity equipment has application in two sectors: The research and development community will have the capability to process small quantities of seed material coming out of specialized varieties being developed. Also, high value raw materials available only in small quantities can be processed with the miniature MSP's. Secondly, the smallest commercial extruder/press combination marketed by the contractor has a rated capacity of 300 kg/hr. This is still too large for small agribusiness in many developing nations. This project will enable development of customized processing systems that enhance the business of the contractor in the developing nations.</p>
Task Progress:	<p>Reporting not required for this SBIR Phase 2 project. Task added to Task Book in June 2009 when information received from JSC.</p>
Bibliography Type:	<p>Description: (Last Updated:)</p>