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1. Accession	Agency Identification No.	5. Work Unit/Project No.	6. Status	
0212209	2. CSREES 3. LAB	LAB93869	Final Report	
7. Title				
Separation Technologies for Cane Sugar Processing				
12. Investigator Name(s) (Last Name and Initials)				
Kochergin, V. N.				
20. Termination Date 09/30/2012		40. Period Covered (mo/da/year): 10/01/2007 TO 09/30/2012		
Outputs:				
A new generation of clarification equipment has been developed and implemented in three Louisiana sugar factories. Performance of the new Louisiana Low Turbulence clarifiers exceeds industry standards providing cost savings of about \$0.5M per installation compared to alternative designs. A patent has been applied for new invention, and an industrial company, Chrompion, purchased the exclusive license from LSU AgCenter for worldwide marketing of new equipment. Ion exchange technology for softening clarified juice has been tested in a three-year pilot trial in an operating sugar factory. The technology is ready for commercialization. Production and storage of very high pol (VHP), and very low color (VLC) sugar has been studied for the duration of the project. A new technology for production of VHP and VLC sugar Louisiana has been tested in two sugar factories with positive outcomes. New technology is ready for commercial implementation.				
Outcomes/Impacts:				
New Louisiana short residence time low turbulence clarifiers have been operated successfully in three factories. Samples have demonstrated that no microbial contamination was observed in clarifier mud. A clarifier skid was constructed using new principles of equipment design and will handle 60 gallons per minute of filtrate, which constitutes 25 percent of total factory flow. The newly designed clarifier provides less than 10 minutes of residence time, which exceeds industry standards by a factor of three. Technical assistance was provided during off-crop season to two more Louisiana factories that plan to modify their clarifiers. The cost of new clarifiers is estimated at 35-40 percent of alternative models. Analysis and survey of crystal size and uniformity and boiling house operation audits have become a standard service for all 11 Louisiana sugar factories. A program on generating basic heat and material balance programs for each Louisiana sugar factory using SUGARS TM software has been continued. The new technology for producing very high pol (VHP) and very low color (VLC) has significant financial implications for the Louisiana sugar industry. The implementation of the new technology of juice softening by the Louisiana sugar industry could mean a significant savings in energy and improvement in sugar quality. New clarification equipment may be useful for specialists involved in sugar, water treatment, waste treatment, mining and other industries requiring separation of solid and liquid streams.				
Publications:				
Lohrey, C. and Kochergin, V. 2012. Biodiesel Production from Microalgae: Co-location with Sugar Mills. Bioresource Technol. 108: 76-82. Kochergin, V., Wittenberg, A., Van Noord, F., Goudeau, S.L., Tischechkina, I. 2012. Investigation of Color Transfer During Crystallization of Raw and Beet Sugar Blends. Proc. of Sugar Ind. Technologists 2012, May 6-9, 2012, Auckland, New Zealand, Paper #1033, pp.231-241. Savoie, S., Kochergin, V. 2012. Experience with Operation of LLT Clarifier at Lula factory. Amer. Soc. Sugar Cane Technol., Louisiana Division, Lafayette, Louisiana, Feb 8-9, 2012.				
Participants:				
Vadim Kochergin (PI), Iryna Tischechkina and Lenn Goudeau, Stella Polanco, Cy Gaudet, Christian Lohrey, LSU AgCenter. Partner organizations include the 11 sugar factories operating in Louisiana.				
Target Audiences:				

The target audiences included technical specialists for all 11 Louisiana sugar factories and two sugar refineries and over 500 sugar cane growers.

Project Modifications:

Not relevant to this project.

Approved (Signature)	Title	Date
		