EXTENSION

SEAFOOD CONTROL PROCEDURES (SCP) AND BASIC SEAFOOD HACCP

During the winter of 2020, the LSU AgCenter and Louisiana Sea Grant hosted Sanitation Control Procedures (SCP) and Basic Seafood Hazard Analysis Critical Control Points (HACCP) workshops. Eighteen seafood processors from in and out-of-state attended. Based on an impact survey completed by participants, all attendees felt their knowledge and their confidence in completing duties associated with the presented material increased. The workshops were from January 27-30, 2020 in Efferson Hall (LSU AgCenter) on LSU's Baton Rouge campus.

GOOD MANUFACTURING PRACTICES – SPANISH VIDEOS

The U.S. Food and Drug Administration (FDA) and the Louisiana Department of Health (LDH) require seafood processors to comply with Good Manufacturing Practices to process seafood products for wholesale and retail. Spanish versions of the original six videos (released in October 2019) were released in May 2020. To access Spanish version of the videos, visit Louisiana Direct Seafood website.

1. Inocuidad del Agua (Spanish for Safety of Water)
2. Limpieza de Superficies en Contacto con Alimentos (Spanish for Clean Contact Surfaces)
3. Prevención de Contaminación Cruzada (Spanish for Cross-contamination Prevention
4. Salud del Empleado (Spanish for Employee Health & Sanitation)
5. Protección contra adulterantes/Almacenamiento de compuestos tóxicos (Spanish for Adulterant Protection & Toxic Compound Handling)
6. Exclusión de Plagas (Spanish for Exclusion of Pests)

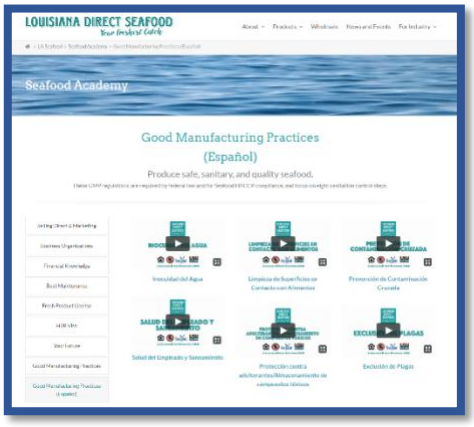

Figure 1. Louisiana Direct Seafood - Good manufacturing practices Spanish video website.

MAGAZINE ARTICLES

Watts, E. 2019. *Spicing Up Louisiana with Hot Sauce.* Louisiana Agriculture, 62(4):18. Online: www.lsuagcenter.com/~/media/system/1/3/0/e/130eec144013c14cdb2f420803ebb176/vol624_laagmag_fall2019_cmspdf.pdf

COVID-19 RESPONSE

In response to the COVID-19 public health emergency, Wenqing "Wennie" Xu, the AgCenter food safety specialist, and Evelyn Watts, the seafood extension specialist for the AgCenter and Louisiana Sea Grant joined efforts to create a series of extension material to assist different sectors of the community to respond to public health concerns associated with COVID-19. They created a series of four fact sheets in English and Spanish (with some available in Vietnamese) on a variety of issues including retail store managers, food delivery and take-out, fishing safety information and seafood processing plants. A complete list is provided below.

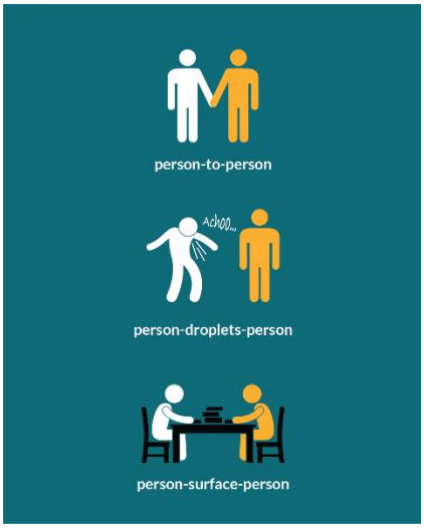

Figure 2. Transmission routes of the new coronavirus.

In addition, they created a series of six posters to create awareness of social distancing among store employees and customers. The posters were created in English, Spanish and Mandarin Chinese.

These materials have been shared through social media (45.6K engagement), state and national networks, program websites (14,459 unique page views) and direct email to stakeholders (over 1,200 emails). In addition, field agents and specialists have engaged with different members in the seafood industry to provide guidance on how to handle COVID-19 related issues.

In addition, Dr. Watts has maintained communications through conference calls and emails with different seafood processors in coastal Louisiana to assist with emergency response. She completed an interview for the article "With glut of crawfish on market, consider boiling, freezing at home," available on the LSU AgCenter website.

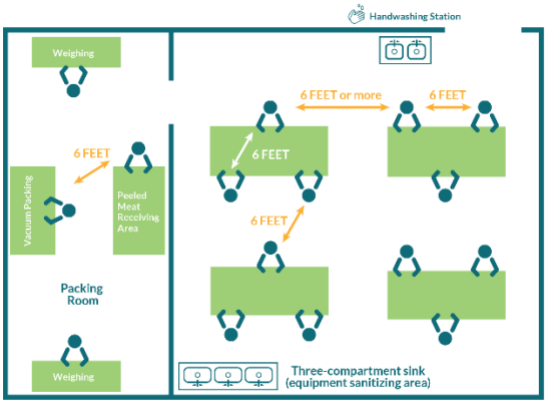

Figure 3. Example of processing floor with a safe distance.

As part of the Louisiana Sea Grant Marine Extension Project (MEP), Dr. Watts with other AgCenter Specialists and Marine Extension Agents are holding weekly meetings in response to COVID-19. The MEP COVID-19 response team is divided into ten sub committees: impact assessment and assistance, seafood safety (harvesting to processing), seafood marketing, legal issues and government policy, oysters, shrimp and crab, freshwater species (crawfish, finfish, alligator), recreational fisheries, youth modules and curricula and socioemotional wellness.

Business and consumer products include:

- Fishing Safety and Information During a Public Health Emergency (English, Spanish, Vietnamese)
- Public Health Emergency Response for Seafood Processing Plants During COVID-19 (English, Spanish, Vietnamese)
- Public Health Emergency Response for Retail Store Managers (English, Spanish)
- Food Takeout and Delivery During a Public Health Emergency (English, Spanish)
- A series of six posters Promoting Grocery Store Customer, Employee Safety (English, Spanish, Mandarin Chinese)

- Business Control and Prevention Checklist
- Employee/Worker Compliance Agreement

RESEARCH

EFFECT OF SLURRY ICE AND FLAKE ICE PRESERVATION TECHNIQUES ON THE MICROBIAL AND PHYSICAL/CHEMICAL PROPERTIES OF BLACK DRUM (*Pogonias cromis*)

Figure 4. Black drum shelf life sample preparation and evaluation. Photo: Hope Eseose

Soon after harvest, seafood starts bio-deteriorating if left unpreserved. The loss of physical/chemical characteristics creates huge economic loss for fish harvesters. The use of slurry ice as an emerging technique in seafood preservation presents promising results compared to conventional seafood chilling techniques like flake ice. The purpose of this study was to evaluate the benefits of using slurry ice as a chilling method when compared with flake ice for Gulf of Mexico seafood.

Thirty-six (36) fresh black drum of equal sizes were collected from boats, within 12 hours of harvesting. Fish were separated into two groups and stored in insulated containers for 18 days. One group was stored in flake ice (FI) in an ice-fish ratio of 2:1. The second group was stored in slurry ice (SI) in an ice-fish ratio of 3:1. Fish temperature was monitored continuously. At two-day intervals, fish fillets were analyzed for microbial stability and physical/chemical quality. Mean separation was analyzed using ANOVA and Tukey's studentized range test at $\alpha = 0.05$.

The average temperature for FI and SI treated samples ranged from -1.57°C to -3.30°C, and -2.89°C to -5.03°C, respectively. Aerobic plate count for FI samples reached 6.4±0.17 Log CFU/g at day 12, while SI never exceeded 5.1±0.88 Log CFU/g. Changes in color, pH and texture showed no significant difference ($P > 0.05$) between treatments. SI allowed for better storage of the fish, keeping bacterial load lower than FI. This feature was however, not enough to guarantee physical/chemical quality for a longer period.

Findings present fish harvesters with a cost-effective alternative for fish preservation to minimize post-harvest loss of product, amidst information on the properties of the preserved product.

TEACHING

In Spring 2020, Drs. Watts and Xu were invited to lecture the HACCP section of the course Foods of Animal Origin (ANSC 2053), due to COVID-19 pandemic the section was adapted to an online activity.

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