

Process Equipment Supported Capabilities  
for Food and Industrial Applications

Ambient and Heated Mixing  
Atmospheric and Vacuum Canning  
Batch and Continuous Centrifugation  
Blanching  
Coating  
Comminuting  
Compression Molding  
Culinary Steam  
Cutting  
Emulsifying  
Extrusion (Single and Double Screw)  
Fermentation  
Fiber Spinning  
Filtration (Ultrafiltration, Reverse Osmosis)  
Freeze Drying  
Freezing  
Heat Transfer  
Homogenizing / Emulsification  
Milling  
Pasteurizing  
Peeling  
Plastics Molding and Extrusion  
Puffing  
Reverse Osmosis  
Screen Separation  
Size Reduction  
Solvent Extraction  
Solvent Processing  
Spray Drying  
Ultra Filtration  
Ultrasonic Treatment  
Vacuum Evaporation  
Materials Testing Instrumentation

**Working space** physical overhead varies from one to four stories. Research bays may be compartmentalized for confidentiality. An acre (45,000 square feet) of total floor space.

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*Celebrating*  
**75**  
*Years*

**WRRC**  
**PILOT PLANTS**  
A UNIQUE RESOURCE



United States Department of Agriculture  
Agricultural Research Service  
Western Regional Research Center



# Industrial & Food Processing

## Partnerships

We are eager to explore new partnerships that would make use of the WRRC Pilot Plants in such areas as development of new biobased products, biofuels and bioenergy from agricultural products/byproducts; new healthy food forms utilizing fruits, vegetables, and cereal grains; and water and energy-efficient new methods for food processing and preservation. Partnerships may take the form of Cooperative Research and Development Agreements, Trusts, and Reimbursables.

## Resources

Specifically defined areas are available for safe and confidential processing of agricultural crops and marine products leading to edible food products and non-food biobased products and fuels. The space is flexible allowing use of modular equipment as well as the assembly of coordinated process sequences. The pilot labs are equipped with process equipment representing most important unit operations needed for foods and crop conversion and component separation.

## History

Past collaborations have led to ground-breaking products and advances. The WRRC R&D Facility was first used in the early 1940's. The facility played a key role in the advancement of freezing, drying and blanching technologies. In 2002, WRRC received an American Chemical Society, National Historic Chemical Landmark award for its role in the development of frozen foods.



Persimmons ready for drying



Tara McHugh, Research Leader



Bill Orts, Research Leader



Ginger-carrot film sushi roll

## Food Processing

Equipment	Capability
Steam Blancher	Blanching
Atmospheric/Vacuum Canner	Canning
Laboratory Coater	Coating
Comminuting Processor	Cutting, Slicing, Chopping
Culinary Steam Producer	Culinary Steam
Twin Screw Extruder	Food Product Extrusion
Filter Press, Paddle Finisher, Vibratory Sieve	Filtration
Separator	Reverse Osmosis/Ultra Filtration
Drying Freeze Drier	Freezing
Cabinet Freezer	Freezing
Heated Mixer, Steam Injector	Heating
Ambient, Heated and V Mixer	Mixing
Plate Exchanger, Pasteurizer	Pasteurizing
Peelers	Peeling apples, potatoes
Puffer	Puffing
Filter	Reverse Osmosis, Ultra Filtration
Paddle Finisher, Vibratory Sieve	Separation
Spray Drier/Chiller	Spray Drying
Ultrasonic Immersible System	Ultrasonic Treatment

## Industrial Processing



Greg Glenn & Artur Klamczynski



Guayule Tire

Equipment	Capability
Twin Screw Extruder	Compounding Plastic, Fiber & Starch
1" Single Screw Extruder	Extruding Materials
¾" Single Screw extruder	Extruding Materials
Pelletizer	Pelletizing, Size Reducing
Roll Take Off	Auxiliary Extrusion Equipment
Take Off System, 2 Units	Auxiliary Extrusion equipment
Take Off Belt	Auxiliary Extrusion equipment
Injection Molding Unit	Injection Molding
Cryo Mill	Size Reduction, Fine Milling
Mill	Size Reduction
Jet Cooker	Fast Cooking in Jet of Steam
Hot Press	Pressing, Film Making
Melt Mixer	Compounding
Press	Pressing, Concrete Testing
Feeder	Auxiliary Extrusion Equipment
Respirometer	Decomposition, Respiration, Tests
BioFlo IV Reactor	Bioreactor
Assorted Tanks	Storage
Mixer	Mixing, Dough Development