

# EDUCATING PRODUCE GROWERS & WORKERS IN THE FARM FOOD SAFETY ASPECTS OF EFFICIENT REASONABLE CLEANING OF WASH-LINE EQUIPMENT

ROBERT HADAD  
REGIONAL VEGETABLE SPECIALIST  
CORNELL VEGETABLE PROGRAM  
CORNELL COOPERATIVE EXTENSION  
585-739-4065 [RGH26@CORNELL.EDU](mailto:RGH26@CORNELL.EDU)

# EDUCATIONAL PROGRAMMING DEVELOPED FROM RESEARCH RESULTS

- **NORTHEAST EXTENSION RISK MANAGEMENT EDUCATION  
FUNDED PROJECT**





# EDUCATIONAL PROGRAMMING DEVELOPED FROM RESEARCH RESULTS

- NECAFS FUNDED PROJECT

# EDUCATIONAL PROGRAMMING DEVELOPED FROM RESEARCH RESULTS

- NECAFS FUNDED PROJECT
- FOCUS ON FIGURING OUT HOW TO CLEAN PRODUCE  
WASH EQUIPMENT THAT WASN'T DESIGNED TO BE EASILY  
CLEANED

# PRODUCE BRUSH WASHER

## 3-SECTIONS: CONVEYOR, BRUSH WASHER, ABSORBER



# EDUCATIONAL PROGRAMMING DEVELOPED FROM RESEARCH RESULTS

- NECAFS FUNDED PROJECT TO INVESTIGATE HOW TO CLEAN PRODUCE WASH EQUIPMENT
- FOCUS ON FIGURING OUT HOW TO CLEAN PRODUCE WASH EQUIPMENT THAT WASN'T DESIGNED TO BE EASILY CLEANED
- CONVEYOR, BRUSH WASHER, AND ABSORBER THAT MAKE UP A PRODUCE WASH LINE
- ROOT BARREL WASHER

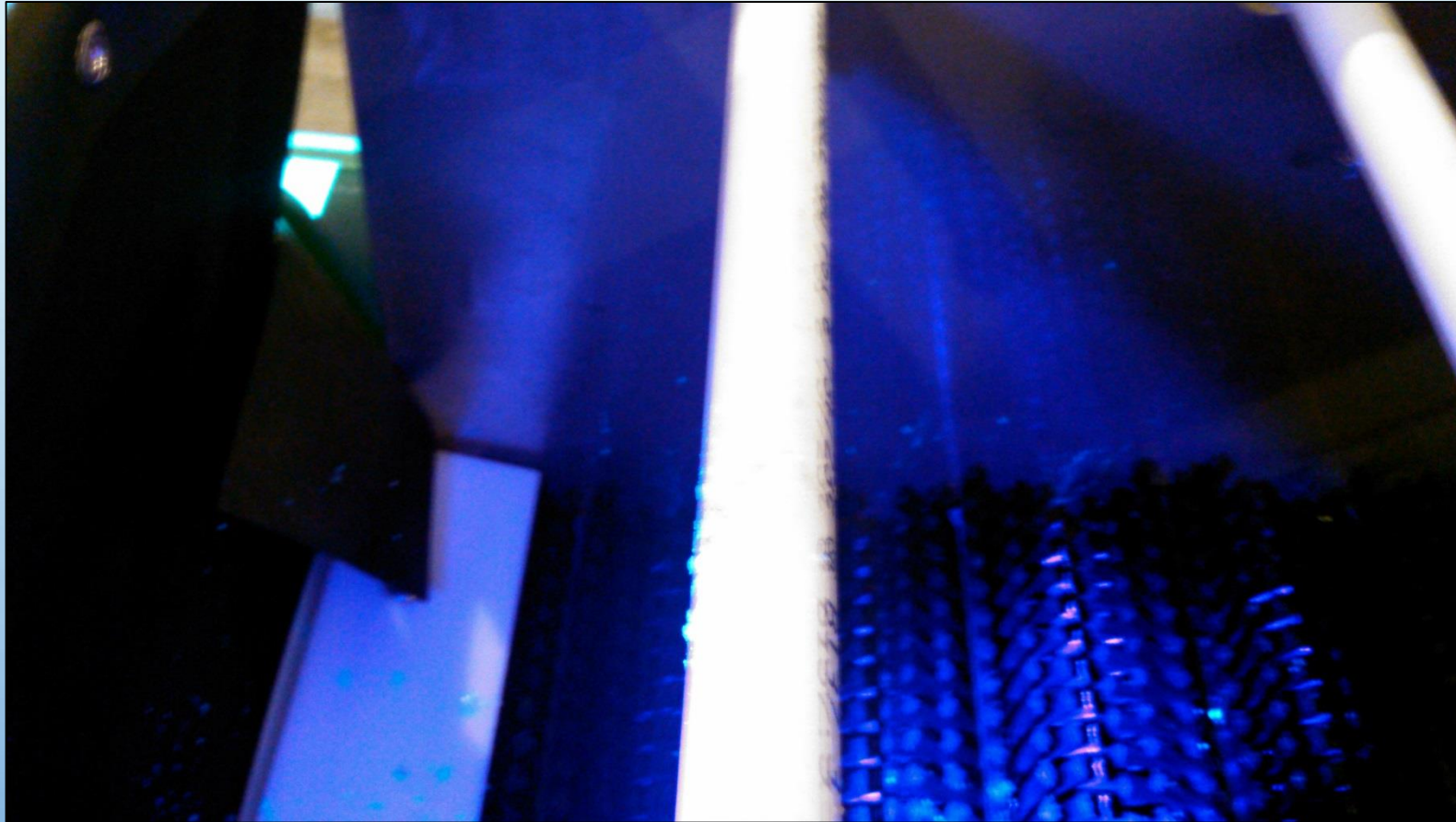


# RESEARCH CONDUCTED

- IDENTIFY WHERE DIRT AND DEBRIS FROM THE OPERATION OF THE EQUIPMENT GOES
- IDENTIFY WHERE DIRT AND DEBRIS SPREADS WHEN RINSED
- IDENTIFY WHAT PROCEDURES WORK FOR CLEANING
- IDENTIFY WHAT TOOLS CAN CLEAN EFFECTIVELY & GETTING INTO HARD TO REACH PLACES
- VERIFYING THE EQUIPMENT IS “CLEAN” AFTER THE CLEANING STEPS
- DEVELOPING CLEANING CHECKLIST FOR EACH PIECE OF EQUIPMENT



# TRYING TO VISUALIZE DEBRIS TO DETERMINE EFFECTIVENESS OF CLEANING





# AFTER DEALING WITH SCRUBBING A LOT OF CRUD OFF EQUIPMENT...

- CAME UP WITH DETAILED GUIDELINES FOR DOING A  
“REASONABLE” JOB

# EQUIPMENT CLEANING

- THOROUGH OR DEEP CLEANING



# EQUIPMENT CLEANING

- THOROUGH OR DEEP CLEANING
- TAKES TIME TO REALLY DIG INTO



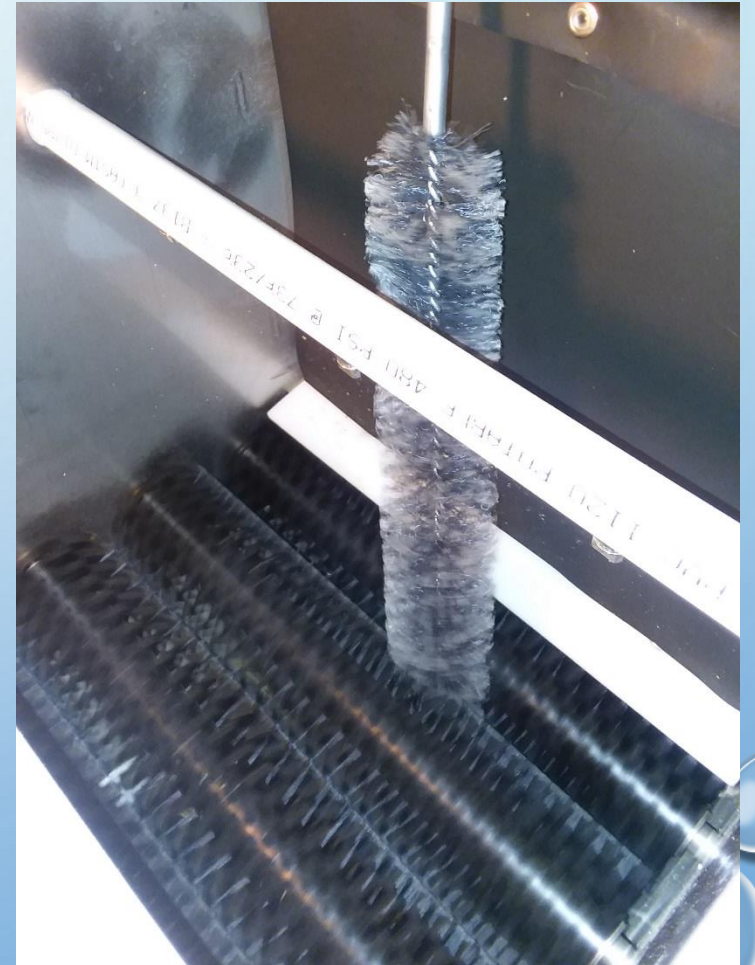
# EQUIPMENT CLEANING

- THOROUGH OR DEEP CLEANING
- TAKES TIME TO REALLY DIG INTO
- DO IT OFF-SEASON AFTER HARVEST



# EQUIPMENT CLEANING

- THOROUGH OR DEEP CLEANING
- TAKES TIME TO REALLY DIG INTO
- DO IT OFF-SEASON AFTER HARVEST
- REMOVING DRIED CAKED-ON CRUD



# EQUIPMENT CLEANING

- THOROUGH OR DEEP CLEANING
- TAKES TIME TO REALLY DIG INTO
- DO IT OFF-SEASON AFTER HARVEST
- REMOVING DRIED CAKED-ON CRUD
- REQUIRES KNOWLEDGE OF HOW TO TAKE EQUIPMENT APART (AND PUTTING BACK TOGETHER)



# EQUIPMENT CLEANING

- THOROUGH OR DEEP CLEANING
- MAINTENANCE OR ROUTINE CLEANING



# EQUIPMENT CLEANING

- THOROUGH OR DEEP CLEANING
- MAINTENANCE OR ROUTINE CLEANING
- STARTING CLEAN, DAILY AFTER USE

# EQUIPMENT CLEANING

- THOROUGH OR DEEP CLEANING
- MAINTENANCE OR ROUTINE CLEANING
- STARTING CLEAN, DAILY AFTER USE
- RINSING & QUICK SCRUB BEFORE CRUD DRIES ON
- THEN DRYING OFF REMAINING MOISTURE



# PLACES FOR CRUD TO HIDE



# CHECKLISTS

## Getting Started

All equipment should be on wheels with foot locks. Cleaning in and around portable equipment is easier.

**IMPORTANT:** Unplug the equipment while cleaning it to avoid injury.

To better reach into washer to clean, first remove top covers. Drill out rivets and replace with machine screws. For safety reasons, replace covers when equipment is in operation.



## Cleaning the Conveyor



### Conveyor - Exterior Checklist

- Belt
- Belt connector/splicer\*
- Flaps - underside\*
- Seams on the frame between sheet metal plates
- Frame lip



To clean conveyor, wrenches are needed to remove the end cap plate.

To best clean the conveyor belt, the splicing rod needs to be removed. Measure where the nut is on the tension bolt to speed up the reassembly process. Loosen nut with wrench.

\* critical cleaning point

## Cleaning the Conveyor (continued)



Turn the power on, temporarily, to run belt to move splice so it's lined up with opening on side of housing. Unplug the machine.



Needle nose pliers or vise grips can be used to grab the splicing rod and start to slide it out.



Once the rod clears the housing, grab it with pliers and pull it all the way out. This then opens up the belt for easier cleaning.



The underside of the belt gets caked-on debris. The support rods and axles also can get messy. Scrub brushes and sponges work well for the interior cleaning.

### Conveyor - Interior Checklist

- Belt underside\*
- Belt support rods\*
- Rollers/axle\*
- Frame lips\*
- Legs
- Crossbars/angle supports
- Chain drive shield
- Space around bolts

\* critical cleaning point

## Getting Started

**IMPORTANT:** Unplug the equipment while cleaning it to avoid injury. It may be necessary to turn the barrel to clean all the areas. Unplug again before continuing the cleaning process.

### MOTOR AREA

- Motor drive
- Drive sprocket
- Drive chain
- Chain channel
- Chain channel screw heads



### BANDS\*

- Screw holes\*
- Screw heads\*
- Space under bands\*
- Wheels and brackets (both sides)\*



### FRAME AREA

- Area that make up the frame where uprights meets cross beam
- Cross bars and rough welds\*
- External bolts
- Support pipe/open ends\*
- U-bolts - threads and spaces
- Water pipe threads/cap
- Water pipe channel-bolts
- Around valve
- Hose fitting
- Barrel channels\*



### FEED CHUTE\*

- Screw holes\*
- Feed chute lumber configuration\*
- Spaces between boards\*
- Corners\*
- End grains\*
- 2x4 supports
- Wood on underside



\* critical cleaning point

### INTERIOR\*

- Carriage bolt heads from chain drive bolts\*
- Stave screw points sticking through stave from exterior side\*
- Board cracks\*
- Spaces between staves\*
- Water pipe\*



### EXTERIOR STAVES\*

- Cracks, checks, knots, splits\*
- Stave end grain\*
- Stave screw heads\*



### SUPPORT STRUCTURE & FLOOR AREA

- Sawhorses
- Cross boards
- Floor and surrounding area



\* critical cleaning point

# GROWER AND WORKER TRAINING



# FOCUS ON WASH/PACK TOPICS

- BEGINS IN THE FIELD



# FOCUS ON WASH/PACK TOPICS

- BEGINS IN THE FIELD
- ASSESSING & MINIMIZING RISK



# FOCUS ON WASH/PACK TOPICS

- BEGINS IN THE FIELD
- ASSESSING & MINIMIZING RISK
- TRANSPORT FROM FIELD TO FACILITY





# FOCUS ON WASH/PACK TOPICS

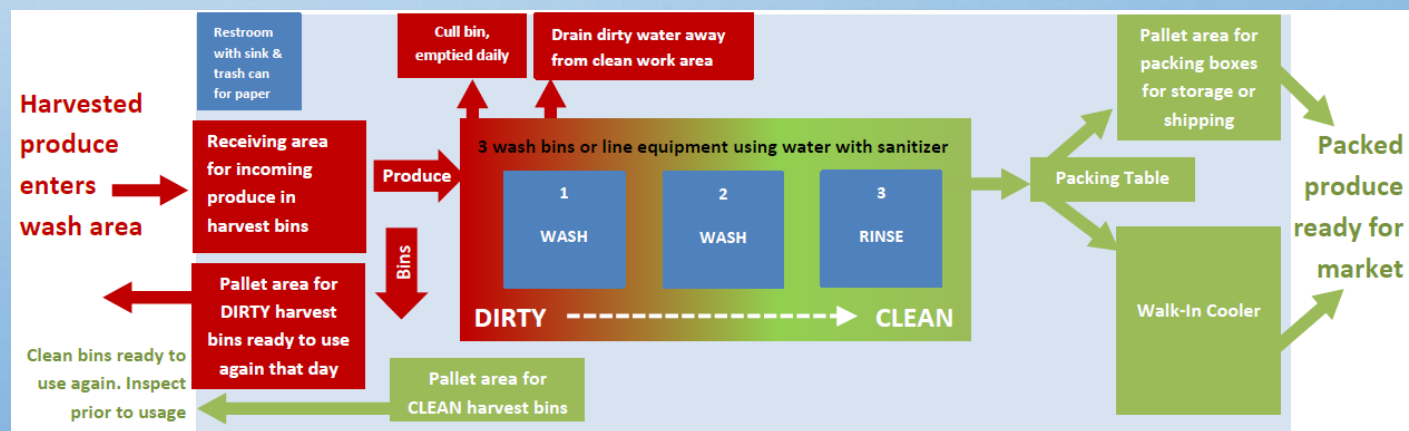
- BEGINS IN THE FIELD
- ASSESSING & MINIMIZING RISK
- FACILITY DESIGN & OPERATION



# FOCUS ON WASH/PACK TOPICS

- BEGINS IN THE FIELD
- ASSESSING & MINIMIZING RISK
- FACILITY DESIGN & OPERATION
- SET-UP AND EFFICIENCY

“Ideal Wash/Pack Design”



# FOCUS ON WASH/PACK TOPICS

- BEGINS IN THE FIELD
- ASSESSING & MINIMIZING RISK
- FACILITY DESIGN & OPERATION
- SET-UP AND EFFICIENCY
- OPERATION INCORPORATING GOOD AGRICULTURAL PRACTICES



# FOCUS ON WASH/PACK TOPICS

- HEAVY EMPHASIS ON CLEANING



# FOCUS ON WASH/PACK TOPICS

- HEAVY EMPHASIS ON CLEANING
- INCLUDING HANDS AND ALL

FOOD CONTACT SURFACES



# FOCUS ON WASH/PACK TOPICS

- HEAVY EMPHASIS ON CLEANING
- FROM HANDS TO ALL FOOD CONTACT SURFACES
- TO ZONE 4 AND BEYOND!



## WHERE WE ARE AT...

- **CREATED TRAINING PRESENTATIONS**
- **CHECKLISTS AND SOPS (TRIPLE SINKS, DRAINS, TANKS, AERATOR)**
- **CREATING HANDS ON TRAINING ACTIVITIES**
- **ADDITIONAL REVISIONS TO PRESENTATION**