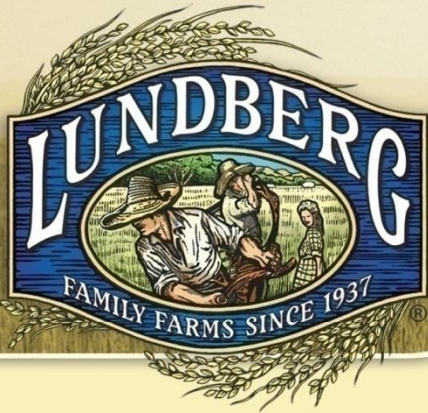


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Experiences with Heat Treatment

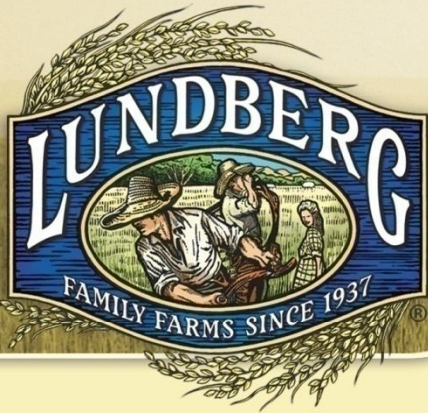
Chad Brunit
QA Manager



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- Lundberg Family Farms (LFF) is the largest organic rice company in the US.
- LFF only uses organically approved materials in and around the facilities.
- No fumigants

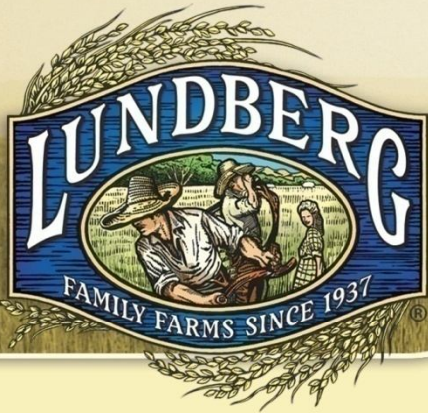


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1999-2000

- Outbreak of insects in our Mill and Warehouses
- Hired a consultant
- Inspections and training
- Started using Heat Treatment
- Implemented pheromone monitoring system
- Increased sanitation department

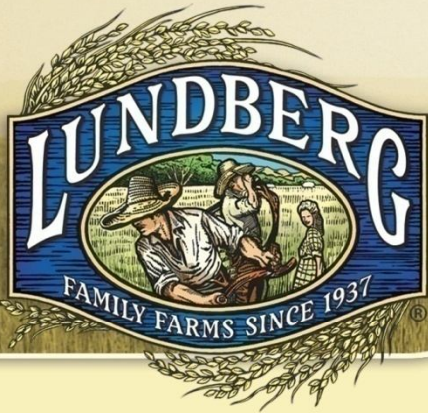


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Sanitation

- Sanitation is the most important tool we have.
 - Sanitation is key to having a successful IPM program.
 - Clean, clean, clean.
 - Remove harborage areas
 - Remove food sources
 - Clean, clean, clean



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Facility Design

- Rat doors, air curtains and high speed doors.
 - Keep pests outside!
- Concrete – eliminate harborage areas.
- Weed control
- Screens on vents and windows.







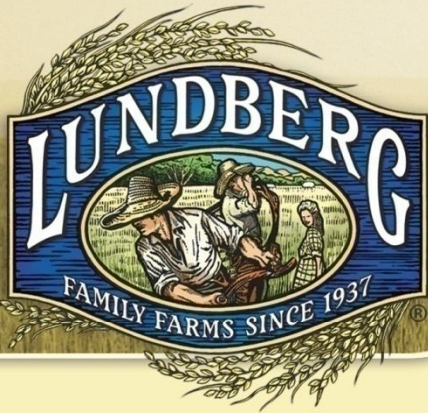


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Monitoring and Trapping

- Insects
 - Grain Insects:
 - Lesser Grain Borer
 - Granary Weevil
 - Rice Weevil
 - Red/Confused Flour Beetle
 - Indian Meal Moth and Angoumois moth
 - Mites (under storage bins)



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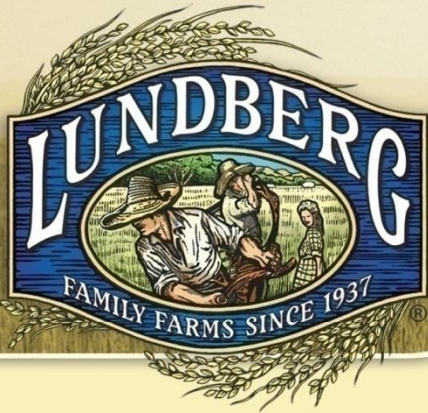
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Monitoring and Trapping, cont.

- Grain Insects
 - Pheromones/Keramones (over 300 traps facility wide)
 - Probe samples
 - Pitfall Traps





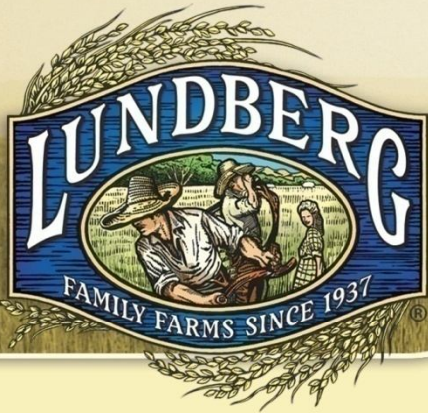


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Heat Treating Areas

- Storage bins (metal and concrete)
- Rice Drying units
- Facilities (mill, warehouses, rice cakes, processing)
- Spot treatments (walls, trailers, equipment)

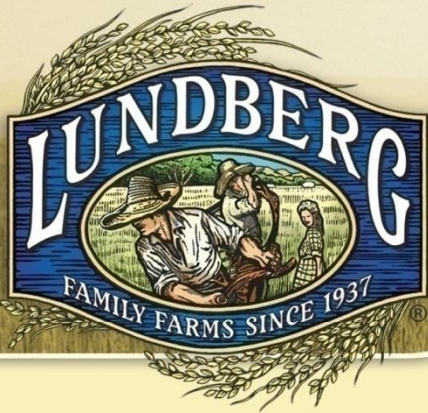


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Facilities

- Processing Department w/Coldroom
 - 15,600 sq.ft.
 - Heat Treat yearly or as needed

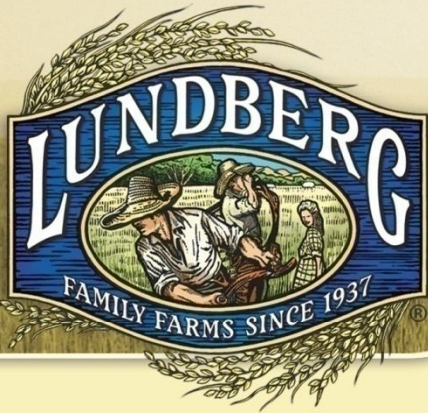


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Facilities (cont.)

- Rice Cakes
 - 7,700 sq.ft.
 - Heat Treat yearly or as needed

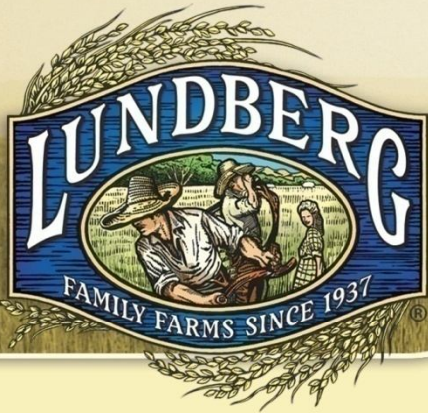


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Facilities (cont.)

- Mill
 - 7,700 sq.ft.
 - Heat Treat yearly or as needed
 - Pheromone monitoring

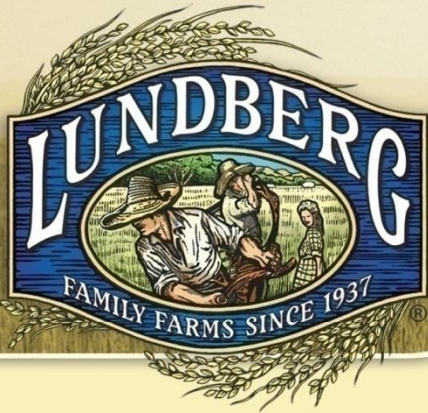


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Facilities (cont.)

- Warehouses
 - 65,500 sq.ft.
 - Heat Treat as needed
 - Pheromone monitoring

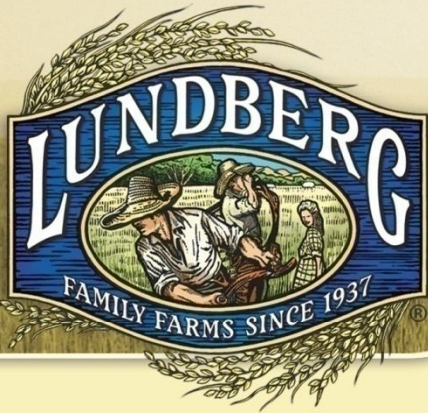


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S storage Bins

- 135 separate storage bins
 - Heat Treat yearly or when empty



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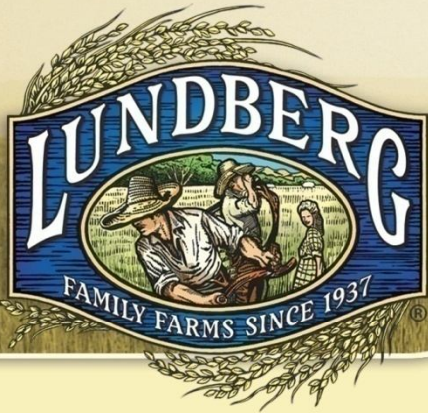
Heat Treating Equipment

- Portable trailer
 - 8/400,000 btu heaters (from our friends @ Temp-Air)
 - Thermocouples / clamps / sand snakes / hand held digital reader / IR temperature gun / ice chests / blankets / ducting / fans / hourly temperature log / gas leak detectors / extension cords / gloves / 14" to 8" duct reducers / fire extinguishers / radios
 - Portable Propane Tanks







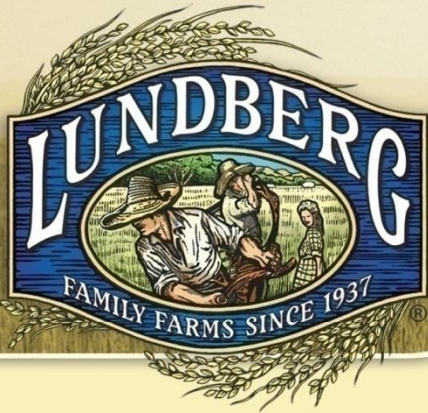


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Advantages of Heat Treating

- Clean, safe process.
- Employees can enter area under treatment to monitor.
- Production time losses are kept to a minimum (hundreds of hours).
- Can spot treat areas and individual pieces of equipment without shutting down surrounding work areas.
- Minimum of labor required to prepare for treatment.
- Most areas can be completed within 8-24 hours.

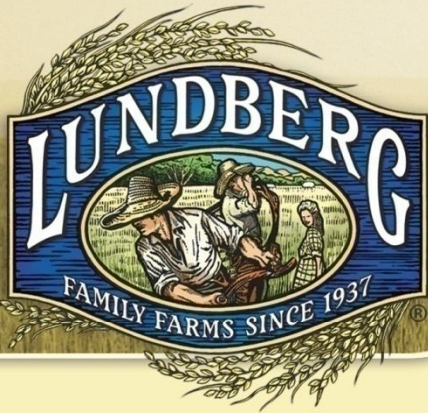


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Disadvantages to Heat

- Possible damage to equipment if temperatures are not monitored correctly.
- Heat stress/stroke/exhaustion if there is prolonged exposure or not hydrated.



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Our First Heat Treatment

- Set up thermocouples, heaters and ducting
- Checked and double checked to make sure everyone was out
- Took temperatures before heating
- Fired up heaters

I GUESS WE FORGOT TO GO OVER THE CHECKLIST!!!!





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Heat Treatment equipment can
be set up anywhere

Roll Up Doors



Personnel Doors



Windows











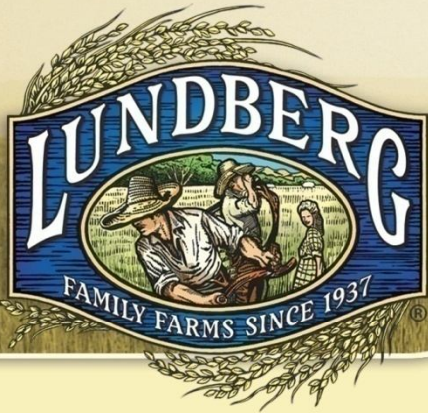








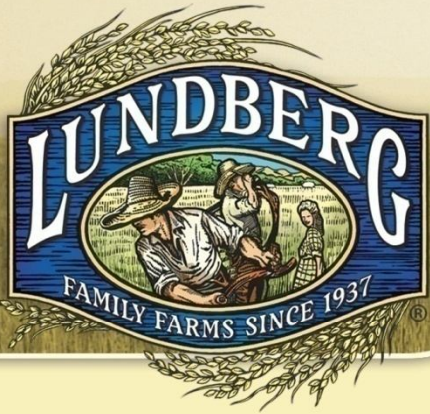




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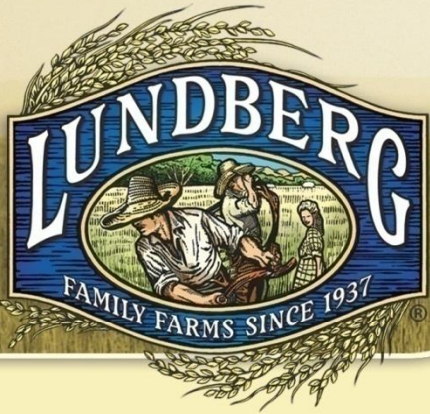
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Questions??



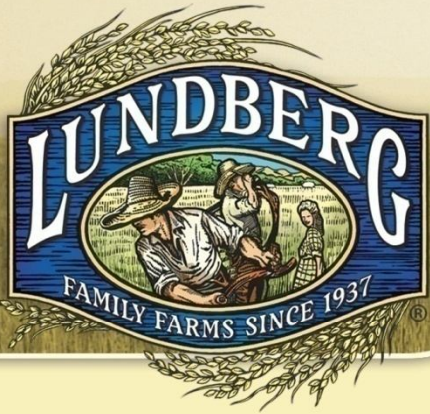
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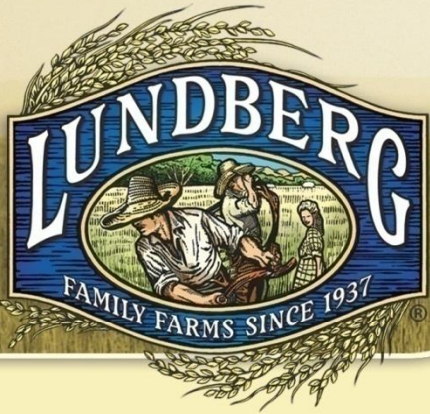
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