6" Evaporative Cooling System Maintenance & Cleaning
I. Obvious Maintenance
   a. General
   b. Mineral Deposits
   c. Algae

II. Unseen Problems

III. Frequently Asked Questions

IV. Summary
I. Obvious Maintenance

Late Spring

&

Early Summer
Need a weed eater?

Decreases air flow and pad life
Dirt in pad system

Causes all sorts of problems !!
OUTSIDE - *LOOKS GREAT!*
INSIDE? – NOT SO GOOD
If you are going to do a good job, you have to go inside too!
Dirty Trough?

- FLOAT TO STICK
- PUMPS CLOG & BURN UP
- DIST. PIPE HOLES
- PIPES CLOG
- HARBOR DISEASES
Dirty Storage and Water

- Dirty Water = Dirty Pads
- Algae & Scale
- System
- Malfunctions
- Pumps
- Filters
- System Life
CLEAN STORAGE & WATER

- FRESH WATER
- LOWER MIN. CONT.
- SMOOTH OPERATION

- LESS ALGAE
- LESS FILTER PROBLEMS
- LONGER PAD & SYSTEM LIFE
CLEAN FILTERS & STRAINERS

• REMOVE
• RINSE
• USE CLEANER
• RESTORE
• MAINTAIN CLEAN FILTERS!!
PUMPS & STRAINERS

- STOPPED UP
- BURNED UP
- LEVEL IN SUMP
- FLOAT ADJUSTEMENT
- NON-UNIFORM PAD WETTING
FLUSH TRASH FROM SYSTEM

• REMOVE TRASH

• FLUSH SYSTEM
  – SUMP
  – TROUGH
  – HEADER PIPE
CLEAN HOLES & FLUSH

- LOOSEN SCREWS
- LOOSEN UNION
- ROTATE PIPE

- HOLES
- SCREW DRIVER
- WIRE
- FLUSH
IF YOU DON’T DO THIS

- HOLES
- DISTRIBUTION
- WRONG ANGLE
- PAD STREAKS
MINERAL BUILDUP
CLOGGED PADS

• OBVIOUS PROBLEM
• Restricts Air Flow
• Increases SP
• Decreased Cooling
• Needs Immediate Attention
REMOVE LOOSE MATTER

- Brush
- Use blower
- Pressure sprayers?
- Cobb webs
- Insects
- Loose matter
- Dust
- Scale
- Trash will clog filters and holes in pipe
BRUSH LOOSE MATTER OFF

• DRY PAD
• BRUSH UP/DWN
• REMOVE SCALE
• NO DAMAGE
Flush Tanks

- Trash and debris will settle in tanks
- By shutting off upper ball valve and opening lower valve, all water should be removed and replaced with fresh water
REFILL & ADD CLEANER

- RESTORE WATER TO TROUGH AND SUMP
- ENOUGH FOR SYSTEM TO CYCLE

- START UP WATER CIRCULATION SO CLEANING SOLUTION IS DISTRIBUTED
ADD CLEANER AND CYCLE

• PICK APPROVED CLEANER
• APPLY CLEANER TO SYSTEM
  – BACKPACK SPRAYER
  – “MIRACLE-GROW” APPLICATOR
  – HYDRO FOAMER ATTACHMENT
  – DIRECTLY TO WATER SYSTEM
• FOLLOW DIRECTIONS
  – OVERNIGHT
  – SEVERAL HOURS
  – ALLOW CLEANER TO WORK
WHAT CLEANERS CAN BE USED?

• PICK APPROVED CLEANER
  – AQUA MAX – BIOSENTRY – ½ oz/gal into sump or 1 gal/25 gal water for spray cleaning
  – ICE WAND (algae control)
  – PWT BY JONES HAMILTON CO. (PH water treatment)
  – AGRI-COOL II by RXV Products (algae control)
  – ICE GUARD BY NU-CALGON WHOLESALER, INC. (algae control)
  – ZEROTOL (algae control)
  – VIROCID (cleaner)
  – PHYSAN 20 (algae control)
  – GREEN-SHIELD (algae control)
  – COOL-N-KLEAN (cleaner) - .5 oz/1 gal of water
  – TRIATHLON (algae control)
  – JR’S EVAPORATIVE COOLING TREATMENT (cleaner)
  – PRO-KLEEN 235 (cleaner)
  – SENTRAMAX (cleaner)

• FOLLOW DIRECTIONS
NEVER! NEVER! NEVER! NEVER! NEVER!

- USE UNAPPROVED CLEANERS
  - CHLORINE BLEACHES
  - BROMINES
  - POOL TABLETS
  - ROUNDUP OR ERASER
ALLOW CLEANER TO WORK

- pH LOWERED
- DEPOSITS BACK INTO SOLUTION
- FREED FROM PAD
- CAN BE REMOVED
- DISINFECTED

- ADDED SATURATION
RINSE PADS & DRAIN

- CLOSE CURTAIN
- RINSE PAD WITH LOW PRESSURE – TOP DOWN
- FLUSH SYSTEM
- REMOVE CLEANER FROM SYSTEM
- PROLONGED CONTACT CAN DAMAGE PADS
- IF TRASH STILL EXISTS IN SYSTEM
- REPEAT PROCESS
WHAT ARE WE LOOKING FOR IN A CLEANER?

• BRING PH DOWN
• MILD ACIDS!!!
• QUATS ARE LIKE SURFACTANTS = PUT MINERAL DEPOSITS INTO SOLUTION
• NON CORROSIVE TO RESIN AND PAD
• CLEANS WITHOUT BLEACHING
• HAS DETERGENT IN IT
• HAS A FUNGICIDE INCLUDED
ALGAE CONTROL

- ALGAE – Requires 3 components (Water, Food, Sunlight)
- Shade the pads and sump.
- Allow pads to dry out completely every 24 hours.
- Avoid contaminants from contacting the pads and water. Dust, fumes, fertilizer, phosphates, etc. Provide nutrients for algae growth.
- PICK APPROVED ALGICIDE
  - PHYSAN 20 – MARIL – 1 tsp/15 gal water
  - EVAP 100 ALGAECIDE – BIOSENTRY – 4 oz/100 gal water initially then 2 oz/100 gal water weekly
  - GREEN-SHEILD – WHITMIRE RESEARCH – 1 oz/6 gal water for cleaning
  - TRIATHLON – OLYMPIC HORTICULTURE – 1 oz/30 gal water every other week
ALGICIDES?

• KILLS AND CONTROLS FUNGI, ALGAE, AND BACTERIA
• NON DESTRUCTIVE TO RESIN OR PADS
• KEEPS THE BUILDUP INTO SOLUTION
• FLUSHED WHEN YOU BLEED-OFF
• KEEPS WATER IN SYSTEM TO ACCEPTABLE PH LEVEL = 6 TO 8 PH
II. UNSEEN PROBLEMS
Can you see pH?
• Sometimes you have to dig a little deeper to find the source of your problem.
III. Frequently Asked Questions
I. How much water does a system hold?

- 1.75 gallons per linear ft
II. How much water does a float valve let in?

- When plumbing is done using standard $\frac{3}{4}''$ PVC, 1 plumbing line per float valve - 15 gal per min
III. How much water does a cooling system use?

<table>
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<th>Total Tunnel Fan Air Moving Capacity (ft³/min)</th>
<th>Pad System Max Water Usage (gal/min)</th>
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IV. SUMMARY
DURING HIGH USE

• DAILY PAD COOLING USE REQUIRES DUMPING WATER IN SYSTEM ONCE PER WEEK OR BUILDUP & SCALE WILL STICK TO PADS

• MIGHT HAVE TO DO ONE HOUSE PER DAY IF WATER SOURCE IS ISSUE

• USE BLEED – OFF SYSTEM DURING HIGH USE

• MAINTAINING FRESH CLEAN WATER IS THE NAME OF THE GAME
CLEAN SYSTEM TWICE YEAR

- GREATLY DEPENDS ON WATER QUALITY
- POOR WATER = CLEAN MORE OFTEN
- GOOD WATER = LESS OFTEN
- FREQUENTLY INSPECT SYSTEM FOR PROBLEMS
- TAKE ACTION WHEN YOU SEE A PROBLEM
HELPFUL FEATURES
WINTERIZE SYSTEM

- CLEAN OUT DOG HOUSE
- CLEAN OFF PADS
- FLUSH TRASH FROM SYSTEM
- CLEAN SYSTEM
- LEAVE ALL VALVES OPEN FOR WINTER TO PREVENT FREEZING
- MAKES SUMMER PREPARATION EASIER
- LAST LONGER
By using a seasonal maintenance plan, you can get back to enjoying your summers on the farm...
The End