

MAKING QUALITY MILK

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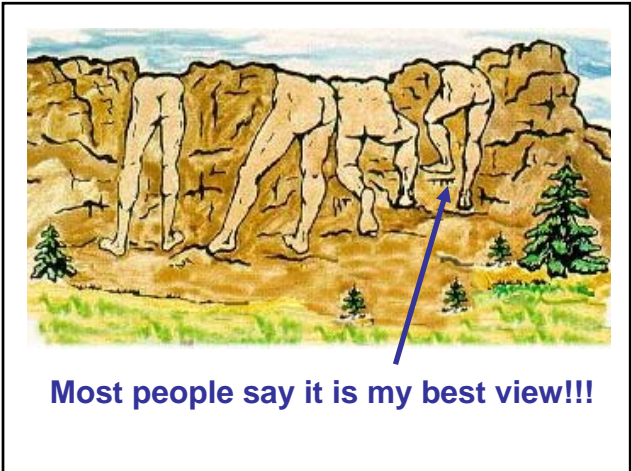
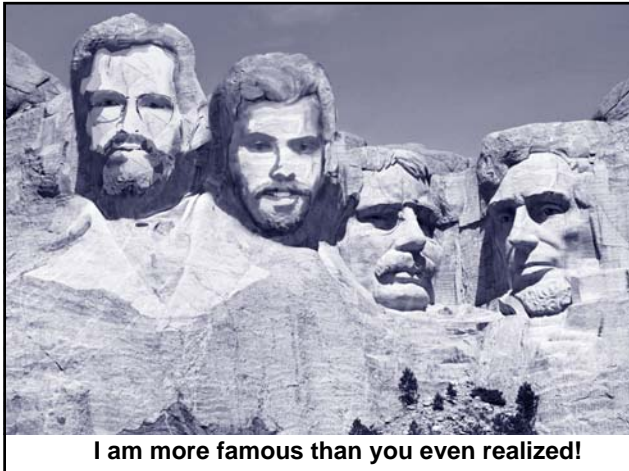
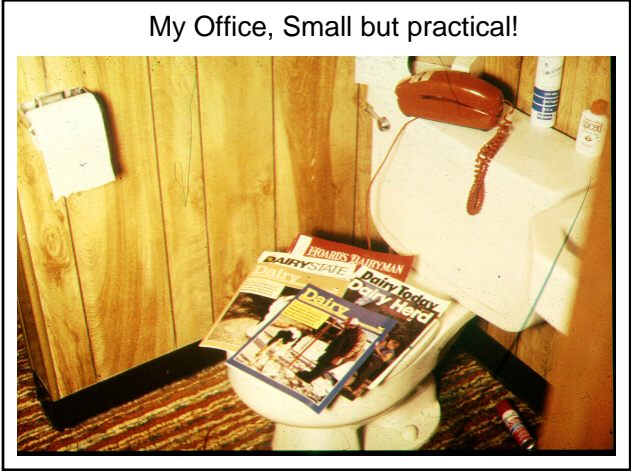
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The Udder Doctor

Work on milk quality
in 26 countries and 45 states

Work on herds ranging from
20 cows to over 22,000 cows

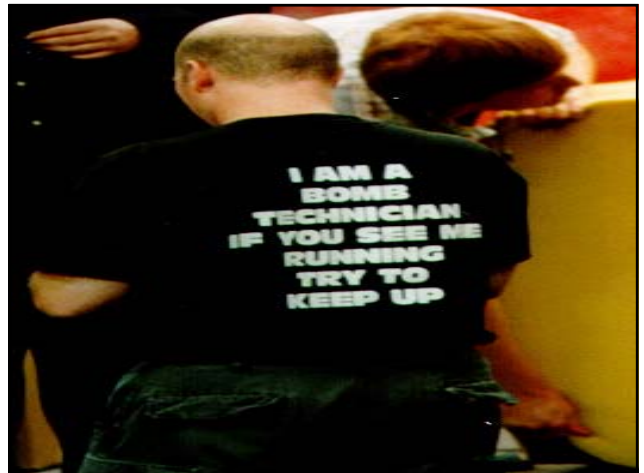




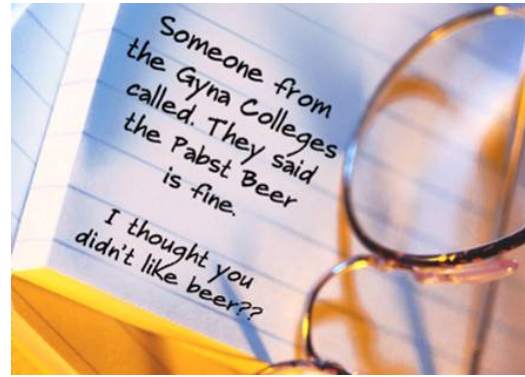
SUNDAY AFTERNOON ON THE DAIRY



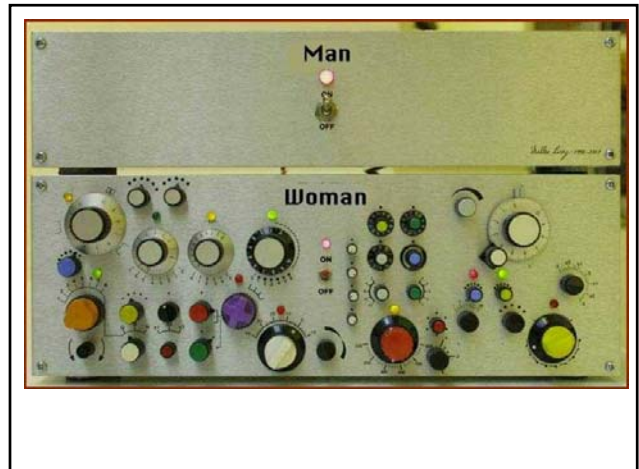
Dairy Farmers on Packer Game Day



Why Men Should
NEVER
Take Messages
for Their Wives!!



The Difference
Between
Men and Women



The Dairy Industry Is Changing Rapidly

You Need to Change to Stay Competitive

Those with quality milk will be competitive!



DAIRY FARMING:

Where else can you work 20 hours a day, 7 days a week, 365 days a year and still not make money

Milking cows can be extremely stressful.



Dairy Farming is stressful, but stress is relative!

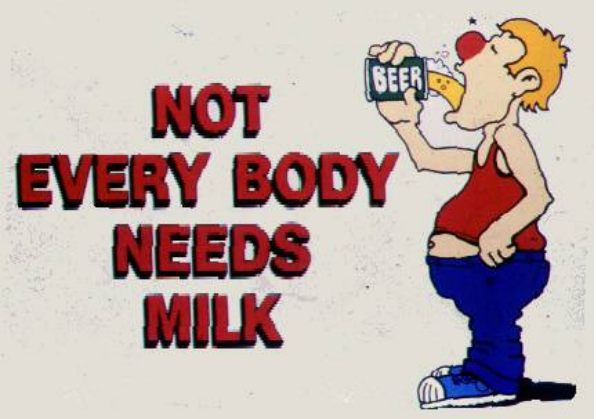
...AND YOU THINK YOU HAVE STRESS..

The Quality of Milk is Determined at the Dairy





Why Low SCC Is So Important!!



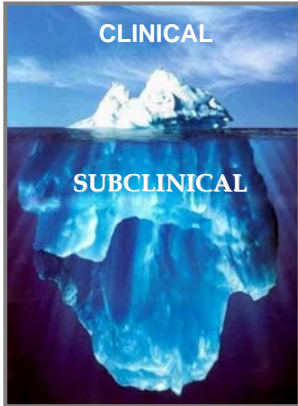
“The dairy industry will either have to keep up with the changing definition of **QUALITY** and ultimately get ahead of it, or get stomped by the stampede of public opinion.”



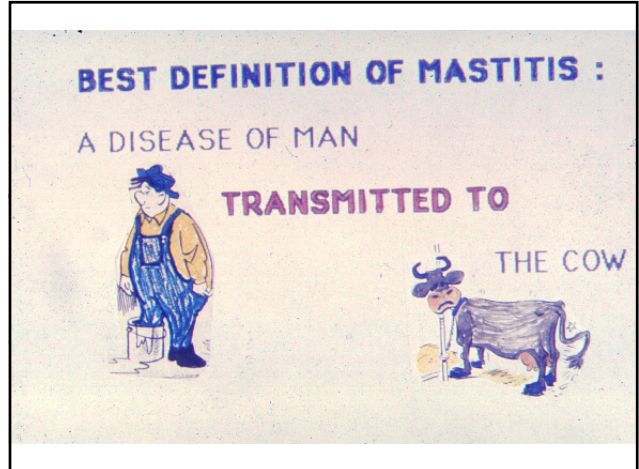
Dr. Rick Bennett
University of California

Clinical Mastitis





It is the subclinical mastitis that robs you blind!



**QUALITY MILK
IS IMPORTANT
TO ALL FARMS
REGARDLESS OF
HERD SIZE!**



Herd SCC

**Every herd is
capable of producing milk
with an SCC in the bulk tank
less than 150,000**

**Size doesn't matter,
attitude does!!**



What's Happening to SCC's*

☞ U.S. Somatic Cell Counts are getting worse based on 7000 herds with 60 months data

☞ Ott calculates U.S. producers could gain \$1/cwt if they reduced their SCC's below 200,000

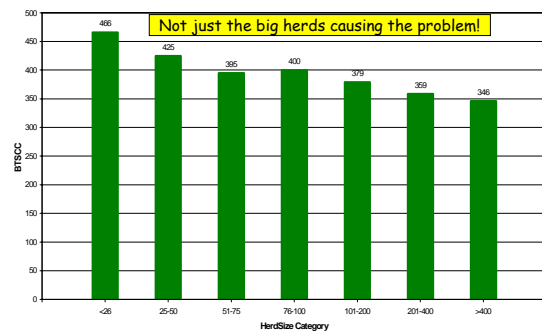
- 90% from increased production
- 10% from increased premiums

*From Dairy Today's E-Report of February 8, 2002, quoting USDA economist Stephen Ott

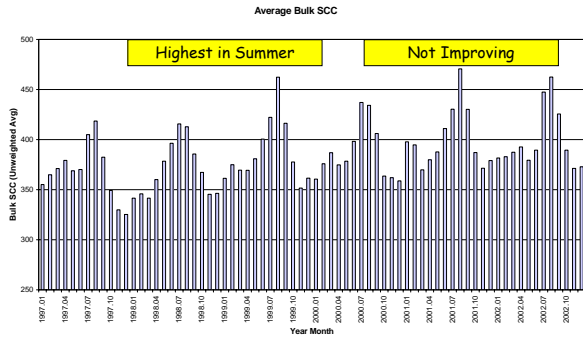


DHIA Test Day Averages Bulk Tank SCC by Herd Size - 2002

BTSCC by HerdSize Category



DHIA SCC Trends Six Years of Bulk Tank Somatic Cell Counts



Utilize Dairy Comp 305 SCC Records To Make Proper Decisions

		PRVLG		
		4.0		
NEW	110		81	191
	11%		8%	19%

UNINFECTED	692		84	776
	72%		9%	81%

	802		165	967
	83%		17%	100%

LGSCC: 4.0

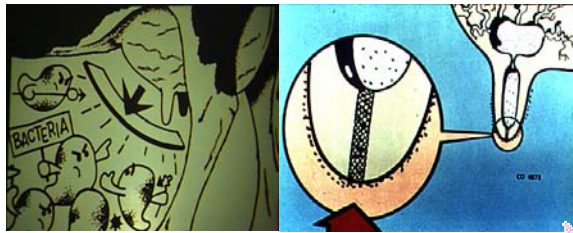
When It Comes to Discussions of Milk Quality and Udder Health -

Is there too much emphasis
on Somatic Cell Counts?

Somatic Cell Counts

- ☞ Certainly the higher the Somatic Cell Count is the lower the expected milk production from the cow (herd)
- ☞ Somatic Cell Counts are a response to damage in the udder (most often caused by bacteria)
- ☞ High S.C.C. follow infection
 - i.e. after the cause
- ☞ More enlighten discussions of mastitis control include cause of infection

The probability of mastitis increases with increasing germ loads on the teat ends



Somatic Cell Counts are not Overemphasized!

Specific bacterial identification and epidemiology are underemphasized!!!

SOURCES OF MICROORGANISMS



So where is the best place to start to improve milk quality?

Implement the Mastitis Triangle

- ☞ Great Milking Procedures
- ☞ Clean, Dry, and Comfortable
- ☞ Proper Functioning Equipment



Biggest Challenge in Mastitis Control

Fine Tune Milking Practices



Milking Routines:

Important to:

Tie Stall/Stanchion Barns
Parlors
Flat Barn Parlors



Consistent Milking Routine (Stanchion/Tie Stall)

- ☞ Step One
 - Strip and Predip next cow to be milked, leave
- ☞ Step Two
 - Return with unit, then dry and apply unit to cow

TIMING BIGGEST ISSUE!!



Consistent Milking Routine (Stanchion/Tie Stall)

Timing too long

- Most common
- Prep next cow after unit attachment of previous cow

Proper timing

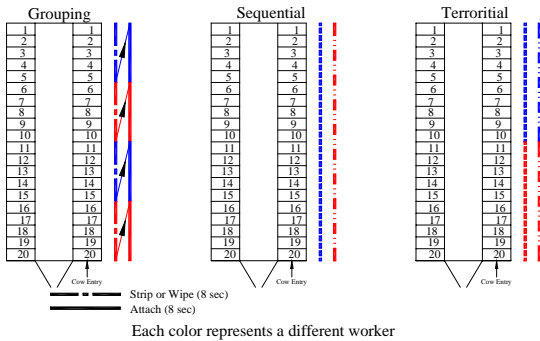
- When cow milking almost done, then strip and predip next cow.



Parlor Milking Routines:

1. **Territorial:** each milker performs all procedures within his/her territory.
2. **Sequential:** each milker performs one procedure(s) on all cows.
3. **Group:** Territorial with one milker working in two or more territories.

Different Milking Routines



SEQUENTIAL ROUTINE

Each person has their own task to do on each side of parlor

- Usually see at least two people in the parlor
- Very Difficult to control timing



Sequential At It's BEST!!

Consistent Milking Routine (Parlor)

☞ Territorial

- Most Consistent Timing
- Fastest Milking
- Best Quality

Consistent Milking Routine (Parlor)

☞ Step One

- Strip and Predip
group of 3-8 cows

☞ Step Two

- Dry and Apply
group of 3-8 cows

Parlor Performance Goal

The goal is to have all units attached to all cows within 4 to 5 minutes after the entrance gate opens.

Consistent Milking Routine (Flat Barn Parlor)

☞ Step One

- Predip cow and strip
5 squirts per teat

☞ Step Two

- Dry each teat for 5
seconds, then gently
apply unit



Consistent Milking Routine (Rotary Parlor)

☞ First Person

- Strip teats and Predip

☞ Second Person

- Dry teats and apply unit

☞ Third Person

- Monitor units and post dip



Rotary Parlors



Define people positions

Dairy with Mastitis Problem Take A Good History

- | | |
|------------------------|-----|
| ☞ Do you strip teats | yes |
| ☞ Do you predip | yes |
| ☞ Do you dry teats | yes |
| ☞ Do you teat dip | yes |
| ☞ Do you dry cow treat | yes |

Farm doing everything they should,
so why do they have a mastitis problem??



Biggest Challenge for Success

To know the difference between normal and abnormal.



Goals of Milking: “Milk Cows”

- * Quickly as Possible
- * Completely as Possible
- * Gently as Possible



Milking Practices Results in:

- ☛ Faster Milking
- ☛ More Milk Production
- ☛ Better Milk Quality



“Milkability”

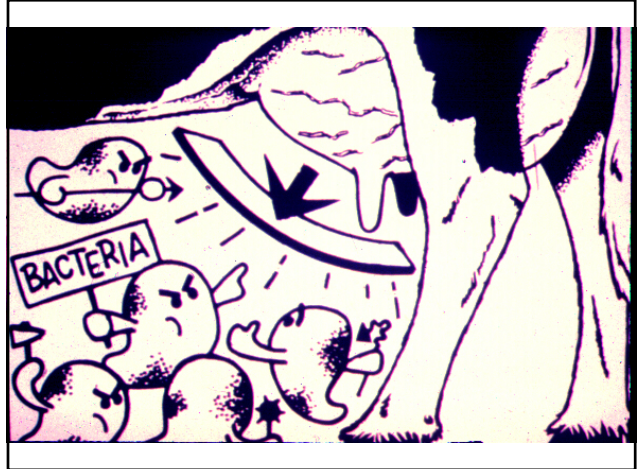
The Goal is to Attach a Machine to a Clean, Dry, Well Stimulated Teat!



Milking Management



Maximize oxytocin release by employing procedures that give clean, dry, and stimulated teats



Gloves Decrease Risk



32% of milkers wear gloves

Gloves

I Tried Them And Saw No Results



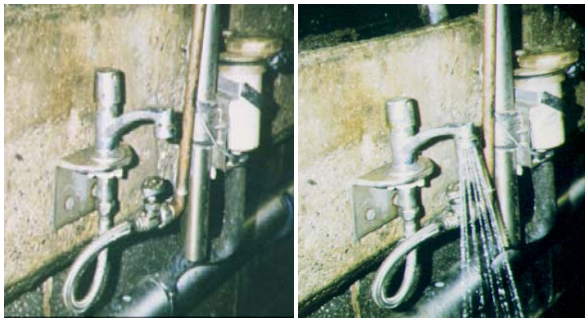
Cleaning Gloves



Cleaning Gloves



Spring Automatic Faucets



Proper Lag Time

The single biggest factor to rapid and complete milk outs.

GOAL = 90+ SECONDS

(Fore Strip to Unit Attachment)

Proper Lag Time

60 seconds was considered the “Old” gold standard!

Latest data shows longer is much better than too short



Benefits Of Proper Lag Time

REMEMBER, REGARDLESS OF YOUR HERD SIZE

PROPER LAG TIME YIELDS AN EXTRA \$90 TO \$150 PER COW PER YEAR OF ACTUAL PROFIT!!



Properly foremilked cows will have consistent milk letdown



- ☞ Teats will “plump up”
- ☞ Good milk flow after machine attachment
- ☞ 90 secs



Fore-Stripping

- * Strongest Signal to Let Down Milk
- * Remove Worst Quality Milk
- * Earlier Mastitis Detection
- * Faster Milking
- * More Milk Production
- * Decrease New Infections



NEW STUDY SHOWS STRIPPING HELPS!

* **Cows not stripped:**

Flow rate average 2.3 kg/min
Average milk time 5.6 minutes

* **Cows stripped:**

Flow rate average 2.6 kg/min
Average milk time 4.6 minutes

FORE STRIPPING

Define the number of
strips on each teat!

Minimum of 2 actual
squirts of milk, NOT just the
motion of stripping!

FORE STRIPPING

Either Strip then predip

OR

Predip then Strip

The Choice Is Yours!

FORE STRIPPING

**If teats are stripped first, more
organic matter is removed.**

**If teats are stripped after predip,
too much predip may be removed
so less bacteria killed.**

Foremilking for detection of abnormal milk

- Enables prompt sampling for culture and treatment
- Reduces standard plate counts & somatic cell counts if abnormal milk is withheld from bulk tank
- Alerts milker of contamination potential necessitating cluster dunk procedure
- Decreases machine on time by 1 minute/cow



Pre-Dipping

- Softens soils
- Reduces bacteria on teats
- Requires contact time
- Must be wiped off



~25% of dairies don't pre-disinfect



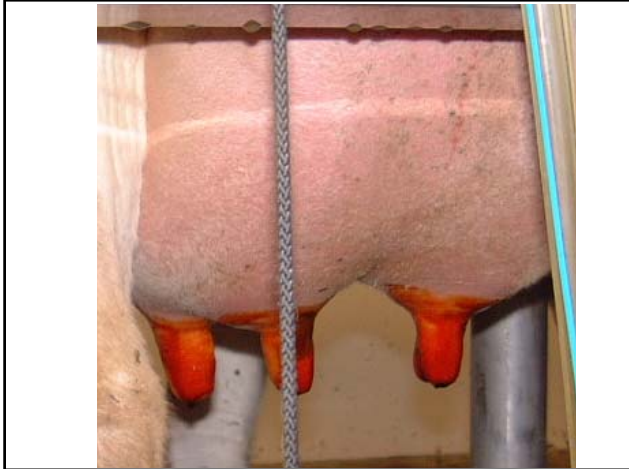
Pre-dip is the best way to remove soil from teats



Milking Procedure Successful Predipping

- * Complete coverage
- * 20 to 30 seconds contact time





Wet Towels



- ⌘ If cows **extremely** clean and **no** **contagious bacteria** in herd, they can work.
- ⌘ Very difficult to dry a teat with a damp cloth
- ⌘ Short cuts in prep leads to more problems
- ⌘ Not economical to use
- ⌘ Been great for my business economics

Alternative Pre-Dipping Teat Foamers

- * **Excellent Cleaning**
- * **Great Stimulation**
- * **See Cleaner Milk Filters immediately**

Alternative Pre-dippers Teat Foamers



Alternative Pre-dipping Teat Foamers



Alternative Pre-dippers Power Scrubbers



Best Ways to Reduce Bacteria on Teats Compared to No Udder Prep

Dry Towel Only	-4%
Wet Towel Only	-40%
Wet Towel + Udder Sanitizer	-40%
Wet Towel and Manual Dry	-77%
Wet Towel, Udder Sanitizer, and Manual Dry	-80%
Predip and Manual Dry	-85%

Source: Cornell University

Udder Prep Best You Can Do Is Reduce Bacteria By 85%

* Big Difference If Start With 1,000,000
Bacteria On The Teat Skin
Versus
100,000 Bacteria On The Teat Skin

Toweling

Proper

- removes water
- removes soil



Improper

- redistributes filth
- can spread pathogens



Proper use of towels + or \approx one towel per cow



Drying Teats

- * Every Drop of Water That Goes on the Udder Must Come Off
- * Bacteria Can't Walk, but They Can Swim
- * Once Teats are Wiped Dry, Keep Your Hands Off!
- * Number One Step for Reducing Bacteria Numbers on Teats

Drying Teats

☞ IT IS EXTREMELY DIFFICULT TO GET A TEAT DRY WITH A DAMP CLOTH

☞ REMEMBER, THE DRYING CLOTH WILL REMOVE THE MOST BACTERIA FROM THE TEAT

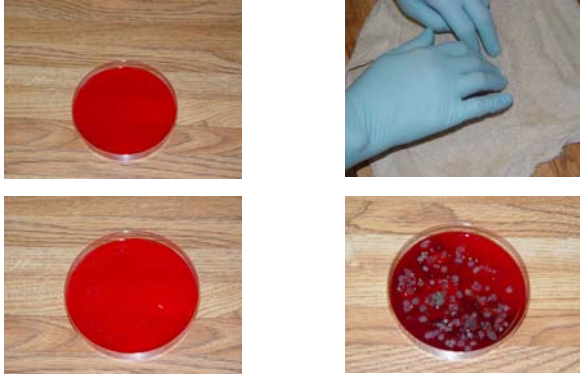


Teats must be this dry!!!

Cloth Towels

- * Should Use More Towels than the number of cows in milking herd
- * Should be one towel per cow
- * Always wipe teat with clean surface of towel (Hard to clean a teat with a dirty towel)
 - * Different area per teat or wipe all four teats, then flip towel and wipe teats again
 - * Wipe two teats, flip towel and wipe other 2 teats
 - * Keep moving towel so each teat is wiped with a clean part of the towel
- * Evaluate Towel "Health" Routinely

Towel Monitoring



Drying Teats

☞ Making the physical pass across the teat ends has the biggest influence on milking speed and quality milk.

The drying removes the most bacteria from the cows teats.

The Secret is the Teat Ends



Clean Teat End





Improper Teat Drying



What About The Teat End??

Proper Teat Drying



Twist Method Gets The Teat End Clean!!

Teat Cleanliness Scoring System

Scoring System

- 1 No visible dirt or dip
- 2 Visible dip stain
- 3 Small amount of dirt or manure
- 4 Large amount of dirt or manure



Milking Routine Makes A BIG Difference

Bacteria	Normal Routine No Teat Ends	Normal Routine Clean Teat Ends
CONTAGIOUS		
Staph Aureus	2,400	1,650
ENVIRONMENTALS		
Strep Species	2,450	25
Coliforms	22,500	5

Utilize your bulk tank cultures because they are a source of information on how good your cow's teats are being cleaned. Bulk tank cultures definitely show inconsistency!

Udder Prep SUMMER SECRET

* DRY WIPE TEATS
BEFORE PREDIPPING

GREATLY REDUCES
ORGANIC LOAD



Organic load reduces predip efficacy

UNIT ATTACHMENT

- ⌘ Minimal air leakage
 - ⌘ Decrease environmental mastitis
 - ⌘ Better let down
- MUCH MORE IMPORTANT THAN MOST PEOPLE REALIZE!**

Adjust Milking Unit Properly



Adjust Unit So It Hangs Squarely
With a Slight Forward Pull



Good Parlor Alignment



Better Approach To Unit Alignment – Vertical and Horizontal



Better Approach To Unit Alignment – Vertical and Horizontal

Poor Tie Stall Alignment



Unacceptable Unit Alignment

PROPER HOSE ALIGNMENT



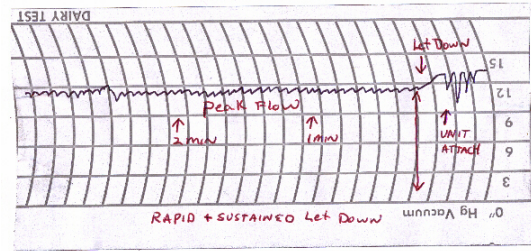
Keeping hoses together allows for better alignment

PROPERLY STIMULATED COWS



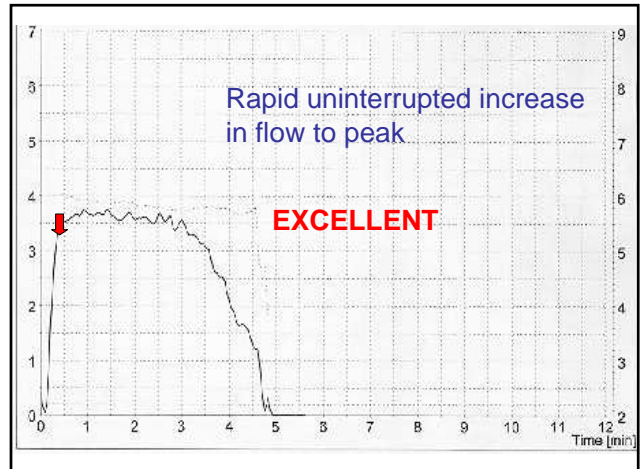
Excellent Let Down

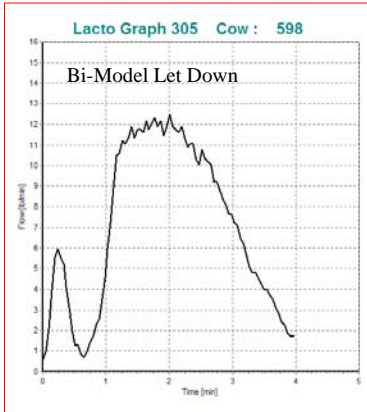
Good Let Downs



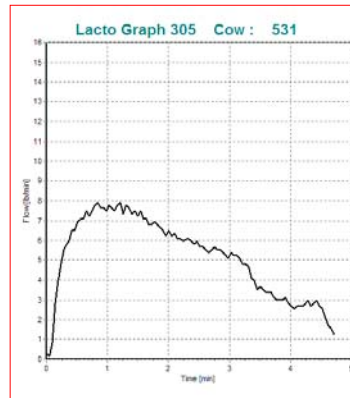
Good Prep Equals Faster
Milking

Lactocorder

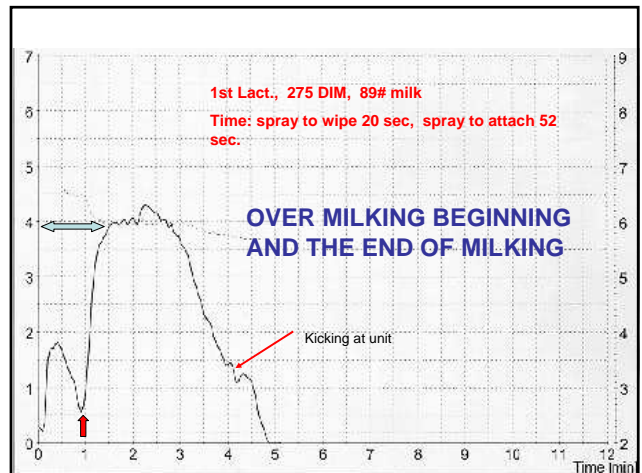
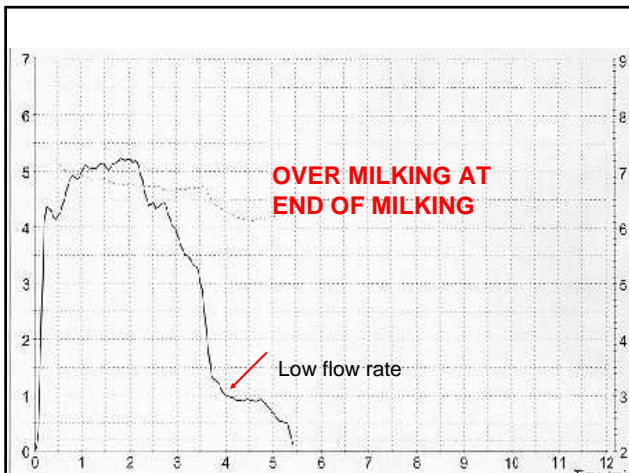




Poor initial letdown with only cisternal dump.



Lower flow rate cow.



Lactocorder

It surprised many people to learn
Than milking routine changes were
Almost immediate to the cow's flow
Rates. There is not a time to
Adjust as we expected.

A great teaching tool.

Three Types of Dipping

- Predipping
- Postdipping
- Shitdipping

Ito/Japan

SHIT DIPPING



Is Not Effective!

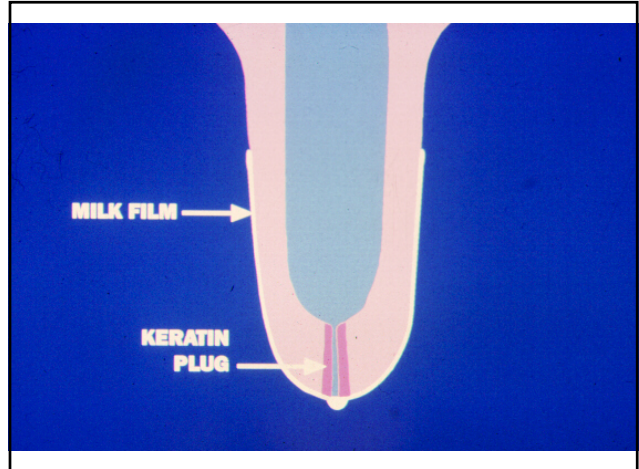
Teat Dipping Rules

- 1 - Dip Teats, Don't Spray
- 2 - Clean Dipper and Fresh Dip
- 3 - Cover 90% of the Entire Teat
- 4 - Use an Approved Teat Dip

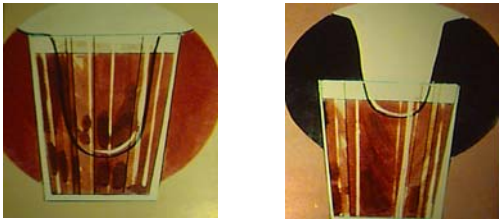


Teat Dipping

Primary Reason to Teat Dip is to Remove the Milk Film Left on the Teat After Milking With a Layer of Germicide



Post Dipping
Which is the proper way to teat dip ?



5.5% of dairies do no post milking disinfection

Teat Dipping
Splash Method



Teat Dipping
Splash and Splash Method



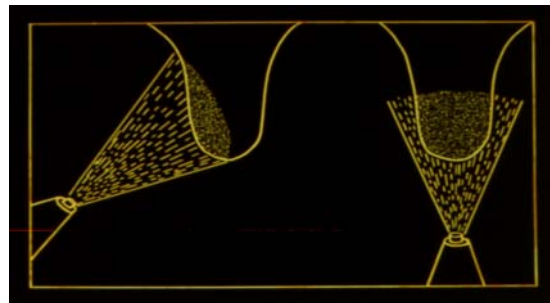
Teat Dipping
Squeeze Method

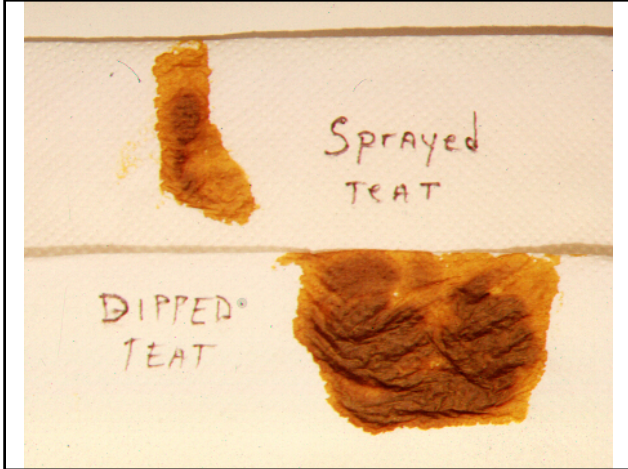


**Teat dipping is superior over
teat spraying**

**Dipping reduces usage &
results in better coverage of
teats.**

**Proper teat dip application
does not include spraying!**



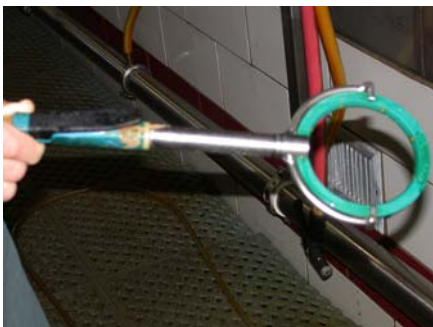


Economics of Dipping vs Spraying



If you dip teats, you can afford to buy a quality teat dip on the savings of dip use over spraying!

New Sprayer System



Monitor the Results of Good Udder Prep



Milk Filter Scoring

Best results when done after each milking by the people actually milking the cows

1. Clean as new
2. Light brown, no garget
3. Medium brown, some garget
4. Medium brown, lot garget
5. Dark brown, lot garget



Might be some issues with teat cleaning??

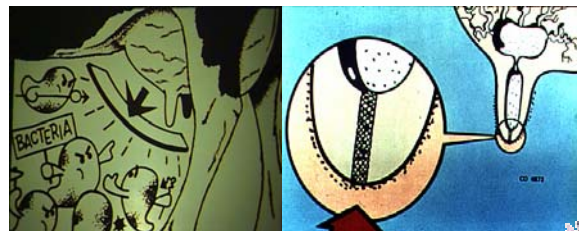
Milk Filter Scoring

Poor milk filter scores tells us:

1. Milkers not properly cleaning the cow's teat/teat ends.
2. Milkers not properly detecting abnormal milk.

The probability of mastitis increases with increasing germ loads on the teat ends

Full hygiene decreases the probability



Keep Exterior Of Units Clean

- ☞ Use drop hose with detergent/sanitizer
- ☞ After each pen of cows MINIMUM
- ☞ Preferably after each side of parlor
- ☞ Reduces risk of new infections
 - Environmentals and Mycoplasma

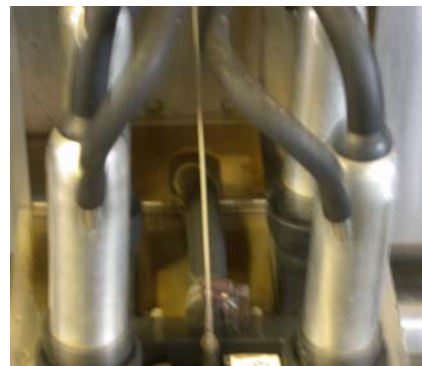
CLEAN STILL MEANS QUALITY

Keep Exterior Of Units Clean



The Machine

System Cleaning does not only apply to the internal surface of a milking system, It also applies to the external surfaces as well. Both surfaces play a major role in bacteria counts and the level of environmental mastitis.



Front View Of Unit on Jettors



Back Side of Units on Jetters



Unit Cleaning



Reduces clean up time and water use by 25%

Teat Seals

External



Internal

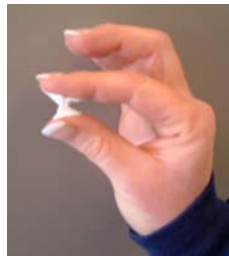


Orbeseal Teat Sealant (Pfizer Animal Health)

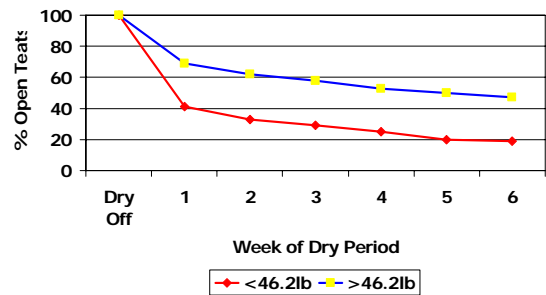
↳ Bismuth subnitrate in a paraffin base:
65% w/w (2.6 g in 4g)

↳ No antimicrobial properties

↳ Inert dense viscous paste is infused into quarter after last milking at dry off



Impact of Production at Dry Off On Keratin Plug Formation



Dingwell Study

1. Open quarters were 1.8x more likely to get infected.
2. Cows with 1 or more open teats were 4x more likely to get infected.
3. Quarter (cows) with cracked teat ends were 1.7x (2x) more likely to get infected

↳



Orbeseal

May be a source of cleaning problems if not milked out completely before using a milking machine

Improving Milking Performance

- o Most dairies have interest here
- o Huge impact on each dairy
- o Improves milk quality too

Milk Out Times Faster the Better!

**25 Pounds (11kg)/Milking
Milk Out 3.5 Minutes or Less
Add 0.5 Minute per additional
10 Pounds (4.5 kg) /milking**

Milking Duration

Goals

- If 2X: Less than 5 minutes
- If 3X: Less than 4.5 minutes

Milking Performance

Three Areas to Concentrate

1. Milking Routine
2. Average Claw Vacuum at Peak Milk Flow
3. ATO Settings

Higher Claw Vacuum
EQUALS
Faster Milking

Within Reason!!

Proper Claw Vacuum

Whatever Line Vacuum it Takes to
Provide 11.5 to 12.5 Inches at the
Claw During Peak Flow

The Closer to 12-12.5 the Better!

REMEMBER

If Higher Vacuums Are to Be Used,
There Are Two Critical Points:

1. Good Milking Routine
2. Proper Take Off Settings

The mastitis new infection rate is directly related to

- ⌚ Teat end and teat skin condition
- ⌚ Teat sanitation prior to unit attachment

Many treated cows have bad teat end health!



The Machine



There Is No Doubt in My Mind That the Two Main Reasons for Teat End Lesions Are Low Claw Vacuums and Long Machine On-Times

Over Milking

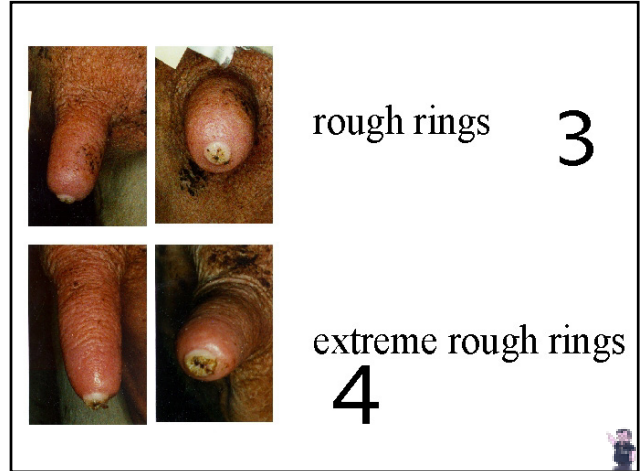
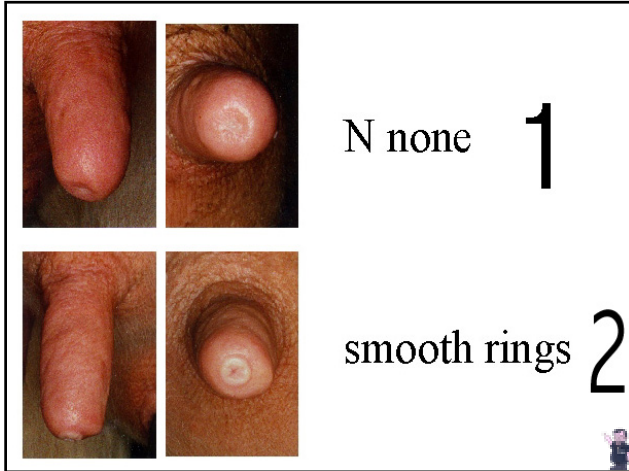


Tender and Red teats when machine comes off is classic sign of over milking!!

Over Milking



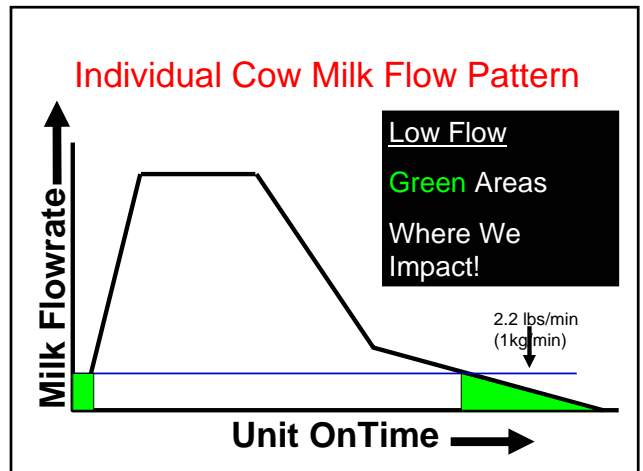
Hyperkeratosis is classic sign of over milking or long duration!!



Teat End Health
 The Secret to Success:
STOP OVER MILKING!!

Minimize the time the
 cow's teat is in high vacuum
 low flow.

At start and at end of milking



Automatic Take Off Settings

- Goal is to shorten machine on time
- Reduce delay setting
- Raise end of milk threshold

** Make all changes slowly and make sure milk routine is acceptable

The Machine

Take Off Settings

1. End of Milk Delay (in seconds)
2. End of Milk Setting (in lbs/gms.)



The Machine

Milk Outs

How do you measure milk outs?
Use a plastic measuring cup from
the kitchen to the barn!

Do 5 to 10 animals

The Machine

Milk Outs

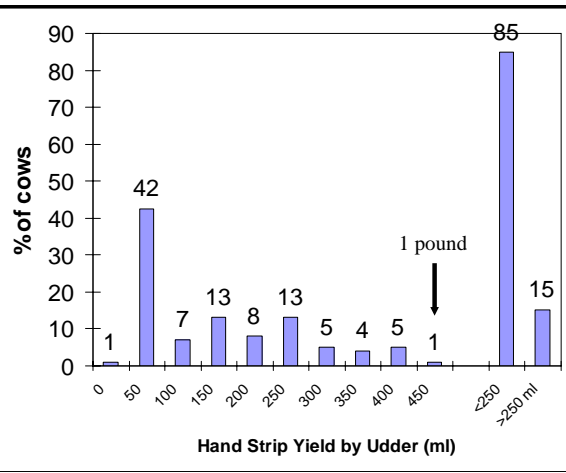
When do you measure milk outs?

Immediately after the machine comes off the cow

The Machine



If You Are Not Sure, Do Strip Yields. If There Is Less Than 250 ml of Milk Evenly Divided in the Udder, the Cow Is Completely Milked



Recommendations

Hand stripping recommendations:

- Quick hand strip immediately after unit removal (<1 min)
- Cleanly milked = <100 ml/quarter
- Less than 20% of quarters with >100mlmilk

The Machine

Milk Outs

Doing strip yields will teach you
and the farmer a lot about the milking
of cows.

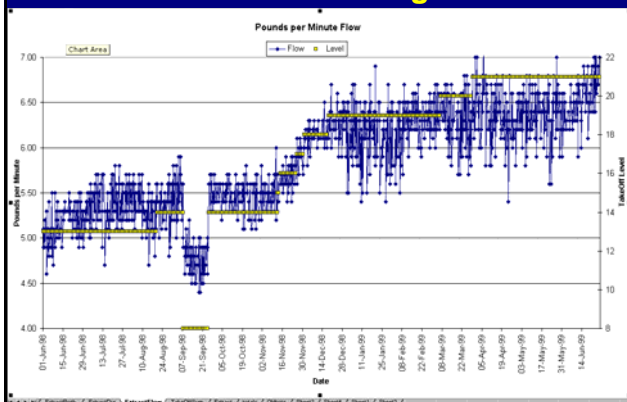
Improper alignment is very obvious.

Recommendations

Hand stripping recommendations:

- Quick hand strip immediately after unit removal (<1 min)
- Cleanly milked = <100 ml/quarter
- Less than 20% of quarters with >100ml milk
- Less than 500 ml evenly divided in whole udder when machine comes off
 - Most use 250 ml as acceptable level

Flow Rate Changes



Faster Milking

Actual 3X Herds
90 Pound (40kg) or Greater
Milk/Day
Goal: Less than 4.5 minutes

Machine On Times:

3.8 to 4.3 minutes per milking

The Results

Four Changes Made

1. Improve milking procedures
2. Raise claw vacuum
3. Shorten end of milk delay time
4. Increase end of milk flow setting

REAL RESULTS 3200 Cow Dairy

	Before	After
Duration	5.5	4.1
Filling Time	5 secs	4 secs
Turns	4.7	6.3
Clinical Cases	15-20	5-6

This dairy can now milk 1000 more cows in 24 hours!

Automatic Take Offs
Are A Great Investment
For Any Farm

IF PROPERLY
ADJUSTED

Automatic Take Offs
Are A Great Investment
For Any Farm
IF TRUSTED!

Bring Consistency and
Calm to Milking

MILKING EQUIPMENT Automatic Detachers



Automatic Take Offs For Tie Stall Barns

Vacuum Drop

Need system vacuum at least
1 inch higher with ATO than
without ATO to have the same
claw vacuum

Automatic Take Offs For Tie Stall Barns

Milk Slower

Because of vacuum drop,
many farms take longer to
milk with ATO's than they did
without!!

Automatic Take Offs

Lot's Of Positive Changes

It may be time to upgrade
your system for faster milking!

Automatic Take Offs Lot's Of Positive Changes

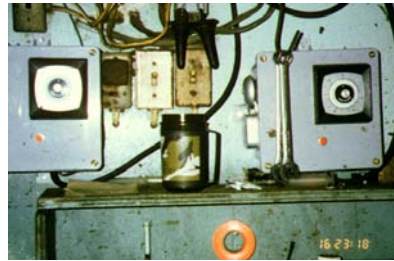


HFC



Float Sensor

Timed Milking



You determine maximum milk times!

Timed Milking



You determine maximum milk times!

Timed Milking



You determine maximum milk times!

The Most Successful Milk Quality and Udder Health Programs

- 1) Keep cows clean, dry, and comfortable
- 2) Utilize full hygiene programs
- 3) Use both somatic cell testing and culturing as monitors
- 4) Know the pathogens they are dealing with
- 5) Know the epidemiologic control methods for the pathogens they find

If you always do what
You have always done

You always get what
you always got!

