DHI Delivers Leading Edge Technology

J.S. Clay and P.A. Dukas

Dairy Records Management Systems Raleigh, North Carolina, U.S.A.

www.drms.org

Strategic Guidelines

- Keep a nimble infrastructure
- Look outside the dairy industry
- Choose technologies with strong potential
- Maintain confidence in the DHI mission





Cow-based Technology

- Production and components
 - Milk Urea Nitrogen, Casein
- Disease
 - Johne's
- Identities to avoid inbreeding; crossbreeding programs
- Health management systems
- Profitability
 - Assessment and decision-making

Process Management

- Steps in a process
- Success depends on completion
- Which animal? What treatment? When?
- Using software to "get it right"
- Minimizing "Invisible Error"
 - Offset of actual compliance from desired

"Invisible Error"

- Ovsynch (GnRH, PGH, GnRH, Breed)
- .95 x .95 x .95 x .95 = <u>.81</u> ■ Error = <u>.19</u>
- .98 x .98 x .97 x .99 = <u>.92</u> ■ Error = <u>.08</u>
- PreSynch (PGH, PGH, GnRH, PGH, GnRH, Breed)
- .98 x .98 x .97 x .99 x .98 x .98 = <u>.88</u>
 Error = <u>.12</u>
- Apply to vaccination programs, fresh cow, group changes, mastitis treatment, etc.

Process Management Tools First Generation

- Traditional DHI Management Lists
- On-farm herd management software
- Automated Milk Recording Systems
- >> Difficult to reduce "invisible error"

Process Management Tools Second Generation

- Workflow management
 Protocols / Chores
- Timed AI systems
- Mobile devices
- Radio-Frequency ID
- Statistical process control
- >> Help reduce "invisible error"

Workflow Management

Starts with workflow design decisions

- Interace								
Protocols	Chores Technicians In	port DRMS Prede	ined Chores					
Manage Protocols				Chores	Age in Days			
C Flag C Bith	a Protocol Type - Chores After User Chose Date - Chores After Birth - Chores After Bred	n Date		BoSe BoSe	1	If a TimesIf Window	Total # Davs 1 Medication	
C Expe C Dry C Expe	cted Day - Chores Prior to - Chores After Day cted Fresh - Chores Prior to	Dry o Fresh		TSV-2 TSV2	1	(* #Times C Window	Total # Davs Vaccination	
C Calv	ed - Chores Alter Calved			Bovishield FP 5 Bovi5	14	C # Times Window	# Days in Window 3	
Dead	Print Pri	Create New P	rotocol from Copy	Clostridiu 8-way Clostrid	14	C #Times © Window	# Days in Window 3 Vaccination	
Delet	le Unused Protocol	Create New Pro	locol from Scratch	Ocuguard MB Ocuguard 💌	14	C #Times © Window	# Days in Window 3 Vaccination	
Existing Pro	Icols of Type Birth Date	Statue	Bovi5	42	C #Times Window	# Days in Window Vaccination	Н	
NewCalf 10/Veeks	New Call Procedure 10 Weeks Procedure	09/09/2005	ActUnused ActUnused	Clostridiu 8-way Clostrid	42	C #Times @ Window	# Days in Window 3	
				Ocuguard MB	42	C #Times C Window	# Days in Window 3 Vaccination	
				Measure height/we	sigh	C. II Times	Days in Window	-
Help	Examples					Close		

Workflow Management

- Starts with workflow design decisions
- Protocol assigned to animal
- Manufacturing orientation
- Standardizes daily process
 - ToDo lists
 - Input completed chores

Y (a) (a) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	Reports
Sets and Reports - Be sure Reference Date is correct	Report 902 in >Standard Reports
002 Herd Summay - Stage of Latation and Lisber Hadth 803 Herd Summay - Stage of Latation and Production 812 Making Report - Cover Mill Controls 812 Making Report - Cover Mill Controls 813 Making Report - Proceeding the Verop Group 814 Making Report - Proceeding Lisberg 815 Making Report - Kroup Average by Making 815 Making Report - Kroup Average by Making 815 Making Report - Kroup Average by Making 815 Making Report - Kroup Average by Making 816 Making Report - Kroup Summary (50 days) 816 Making Report - Kroup Summary (50 days) 818 Making Report - Kroup Summary (50 days) 818 Harder Morking Summary 900 Protocols - Espains To Control 900 Protocols - Espains To Control 900 Protocols - Days 'To Cont 900 Protocols - Days '	Operation Page Stat Dimension P instation Price Dimension Constat Price Dimension Constation Price Dimension Densit Price Dimension Densition Dimension Dimension
s Genetics and Helfers + Methal and Event Management + Merd Activity and Status Mik Production and Udder Health + Monday - Reproductive Management	1" Inset a Bask Los Bebeen Each Annai

4 6 A 6	Atte	ek Emy 7	WITH	HOLD N	leat	Ref Date: 06/09/	06	
Cw 7292	e Day CaF3	Date Home Cw St	<mark>ГЕ • Q</mark> (1)F4-8-Chi (F5-1	 Lact F5-U	EnitA 10: 60046139 Farm ID: 60046139 0F/BCS F7-Pixt Ct#7-0 Pixt F1	Group: 1 Active Cow 2-Chans		ard Reports
Name Rest Tel Disa Isma Loge 1s dis Add Sciencizos -6 Sciencizos -8 Sciencizos -9 Contractor -9 Contractor	06/25/2006 06/25/2006 137 Spi 221 Spi 238 J4 249 J5 249 J5	Pretocial Pregraco Pr	Protects		4: Abad (Der Hahmelte BOAPS, Speck, StoDec, JA, Cohen, Specka, Protocal Name (Int analysis) Protocal Name (Int analysis)	Freich dass 70 2000 (vyrs holds) Dirthead date 300 Rechtech Beachech Pages color Ryges date 50 Diry date 50 Diry date 60 Dire date 60 Mills wit Pressous milk wit	82005 5:252005 5: #ft P # 11/2006 86: 4 66: 7	Paper Sar P Control P Control

Workflow Management

- Starts with workflow design decisions
- Protocol assigned to animal
- Manufacturing orientation
- Standardizes daily process
 - ToDo lists
 - Input completed chores
- Provides for auditing and analysis
- Affects all herd sizes







Radio-Frequency ID - RFID

- Focus on management during regulatory evolution in U.S.
- Certain and Quick ID
 Management and test day
- Tags
- Stable; site of attachment ?
- Readers
 - Competition underway
 - Stationary Parlors, heifer weighing



Mobile and RFID

- WiFi and Bluetooth
- Quick hot syncs coffee breaks
- Multiple units on same dairy
- "Call the roll"
- Earbuds voice alerts
- BadMilk, Whoa (don't beef), OK (to milk), Uh-oh (wrong group), Open, Preg, etc.

Statistical Process Control

- When to act?
- Now info, experience, intuition, advice
- Patterns of events in producer's own herd
- Apply statistical rules
- Clear signals for action
- Examples
 - Subtle increase in bulk tank SCC
 - Spike in number of cases of lameness

Pen Management – Large Herds

- Real-time Monitoring of "Non-DHI" Data
 - Feed consumption / Heat index
 - Time moving or standing
 - Counts for sick pens and health conditions
 - Number days in close-up pen
 - Body Condition Scores
 - External lab data / flow meters
 - Number cows diagnosed pregnant, calved
 - Facilities load and forecasting



Focus on Technology with High Upside Potential

- Affects herds of all sizes
- Network connectivity including Wireless
- Rural Broadband alternatives



Focus on Technology with High Upside Potential

- Affects herds of all sizes
- Network connectivity including Wireless
- Rural Broadband alternatives
- Internet Appliances
- Multi-Site partnerships
- Real-time consultant access
- Return to centralized data systems

Operational Challenges for DHI

- Increased diversity of Test Interval
- On-farm analysis of components
- Automating mundane technician tasks
- Recognition of value of DHI accuracy



Operational Challenges for DHI

- Increased diversity of Test Interval
- On-farm analysis of components
- Automating mundane technician tasks
- Recognition of value of DHI accuracy
- Diversity in expectations of customers



