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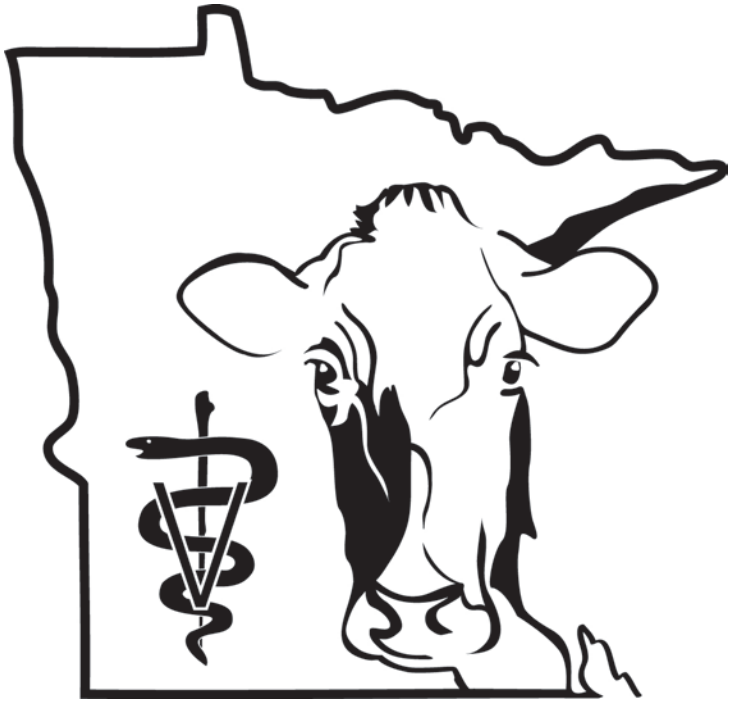

ST. PAUL, MINNESOTA
UNITED STATES OF MINNESOTA

New Tools and Concepts in Production Medicine

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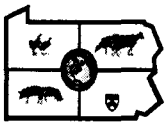
Center for Animal Health and Productivity
University of Pennsylvania
School of Veterinary Medicine
Kennett Square, Pennsylvania

Presentation notes follow -

BaseCOW



A Tool for the Dairy Production Consultant

David T. Galligan
James D. Ferguson
Field Investigations

What is BaseCow

- Basecow is an Excel Add-in that can be used by consultants of animal production systems so help solve problems.

Spreadsheets

- Stethoscope for the production consultant
- Increasing complexity of problems
- Numerical and Epidemiological attributes
- Specific applications spreadsheets
- Tools for general problem solving

BASECOW

Typical Questions/Problems ?

- How many cows have to test negative, to be assured that the prevalence of a disease is below 5% at a 95% confidence interval.
- If the variation (STD) in milk production is 5 lbs, how many cows should be measured, to be certain (95%) that the mean production is within 2 lbs of the "real" value?

Typical Questions/Problems

- A corn silage trench is 12 feet high and 15 feet long, If 20 lbs of dry matter are fed, how many inches/day will be removed from the trench?
- 30 cows for tested negative for Johne's disease, what is the probability that 1 or more are infected?

BaseCOW

- Has "functions" that can answer these questions and 75 others.
- New functions are added on a routine basis.

Functions

- Current Functions (Arithmetic, Statistical… average(), Min(),……..
- BaseCow Functions (Production, Epidemiological, Nutrition, Reproduction)

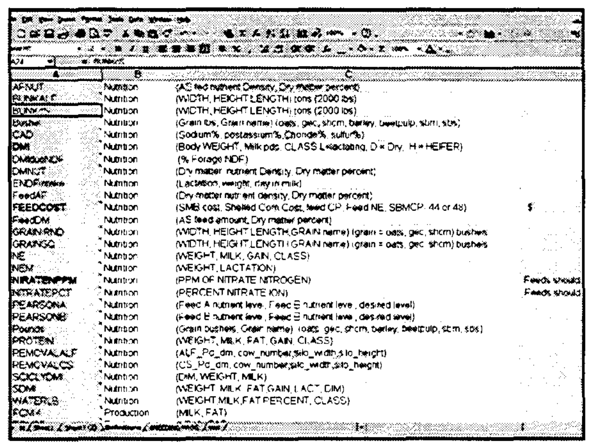
General Function Features

Excel Function — Basecow Functions

- Call name: Average, DMI, Predpos, GRpos …. 75 functions
- Arguments of function
  Average (range of cells)
  DMI (body weight, Milk production, Status)
  PredPOS (Sensitivity, Specificity, prevalence)

Function Categories

- Epidemiological
- Statistical
- Production
- Nutrition
- Reproduction
- Heifer rearing



A	B	C	
AFNUT	Nutrition	(AS feed nutrient Density, Dry matter percent)	
[illegible]	Nutrition	(WIDTH, HEIGHT LENGTH) tons (2000 lbs)	
[illegible]	Nutrition	(WIDTH, HEIGHT LENGTH) tons (2000 lbs)	
Bushel	Nutrition	(Grain lbs, Grain name) (oats, gec, shcm, barley, beetpulp, sbm, sbs)	
CAD	Nutrition	(Sodium%, postassium%, Chonde%, sulfur%)	
DMI	Nutrition	(Body WEIGHT, Milk pds, CLASS L=lactating, D = Dry, H = HEIFER)	
[illegible]	Nutrition	(% Forage NDF)	
DMNUT	Nutrition	(Dry matter nutrient Density, Dry matter percent)	
ENDFintake	Nutrition	(Lactation, weight, day in milk)	
FeedAF	Nutrition	(Dry matter nutrient density, Dry matter percent)	
FEEDCOST	Nutrition	(SMB cost, Shelled Corn Cost, feed CP, Feed NE, SBMCP- 44 or 48)	$
FeedDM	Nutrition	(AS feed amount, Dry matter percent)	
GRAINRND	Nutrition	(WIDTH, HEIGHT LENGTH, GRAIN name) (grain = oats, gec, shcm) bushels	
GRAINSQ	Nutrition	(WIDTH, HEIGHT LENGTH GRAIN name) (grain = oats, gec, shcm) bushels	
NE	Nutrition	(WEIGHT, MILK, GAIN, CLASS)	
NEM	Nutrition	(WEIGHT, LACTATION)	
NIRATENPPM	Nutrition	(PPM OF NITRATE NITROGEN)	Feeds should
NITRATEPCT	Nutrition	(PERCENT NITRATE ION)	Feeds should
PEARSONA	Nutrition	(Feed A nutrient level, Feed B nutrient level, desired level)	
PEARSONB	Nutrition	(Feed B nutrient level, Feed B nutrient level, desired level)	
Pounds	Nutrition	(Grain bushels, Grain name) (oats, gec, shcm, barley, beetpulp, sbm, sbs)	
PROTEIN	Nutrition	(WEIGHT, MILK, FAT, GAIN, CLASS)	
REMOVALALF	Nutrition	(ALF_Pc_dm, cow_number, silo_width, silo_height)	
REMOVALCS	Nutrition	(CS_Pc_dm, cow_number, silo_width, silo_height)	
[illegible]	Nutrition	(DIM, WEIGHT, MILK)	
SDMI	Nutrition	(WEIGHT, MILK, FAT, GAIN, LACT, DIM)	
[illegible]	Nutrition	(WEIGHT, MILK, FAT PERCENT, CLASS)	
FCM4	Production	(MILK, FAT)	

Example Functions

Function: DMI

Function Name — Function Arguments

=DMI (Body weight, Milk)

=DMI (1400, 80) = 47.4 lbs

Function: FeedCost

SBM 48 cost $240/ton, Shelled Corn $130/ton
A feed with 20% CP and NE =.78/lb cost $167/ton
Should I buy it.

=FEEDCost(SBM$, Corn$, CP, NE)
=FEEDCost(240,130,20,.78) = $189

Yes, $167 (the cost of the feed) is less then what a mix of soybean meal and corn would be.

Function: GroupPOS

A group of 30 animals test negative at a sale (Prevalence of Johnes.05) for Johne's (Elisa, Sensitivity 45, Specificity 99).

What is the probability of at least one or more animals being infected?

= GroupPOS (Sensitivity, Specificity, Prevalence, # test neg.)
= GroupPOS (.45,.99,.05,30) = 58%

Function: Pregnant

What is the probability of a cow 80 days in milk being pregnant given that she is exposed to a heat detection rate of 50%, a conception rate f 50% and if the voluntary waiting period was 50 days?

Pregnant(heat detection, conception, volun. Waite, Day in milk)

Pregnant(.5,.5,50,80) = 34%

Power to Detect Disease

Function: PowerDetect

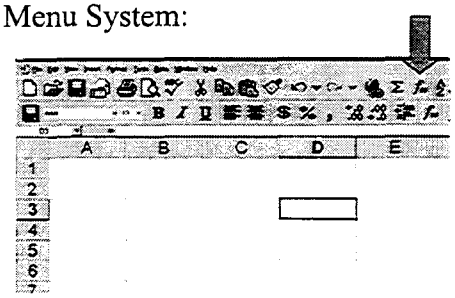
What is the sample size needed to be 95% confident of detecting at least one animal if the prevalence of the disease is 5%?

PowerDetect(Population, Prevalence, Significance)

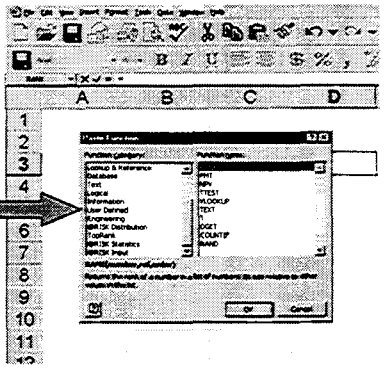
PowerDetect(1000,.05,.95) = 57 animals

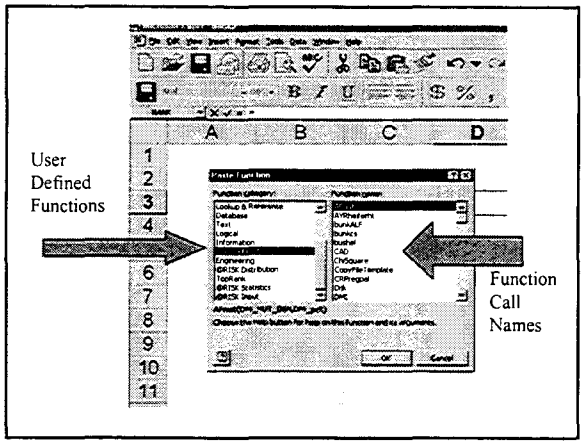
Menu System:

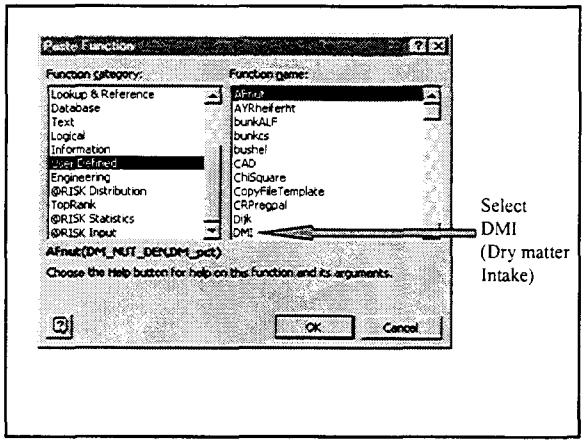
To Access Functions

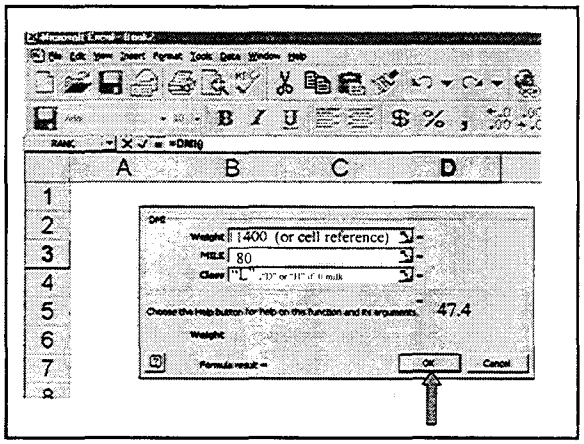


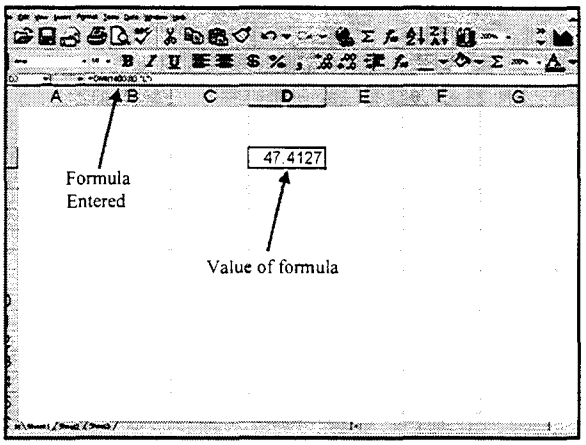
User Defined Functions



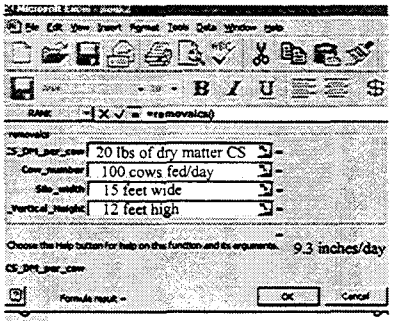








Function: RemovalCS



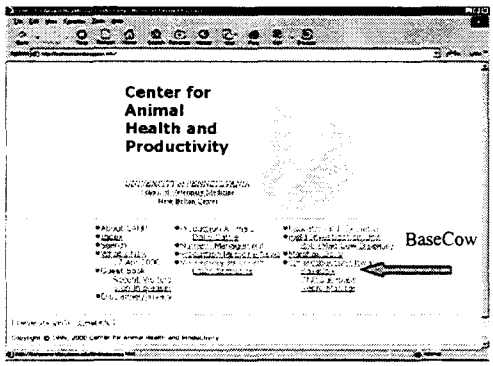
Base Cow

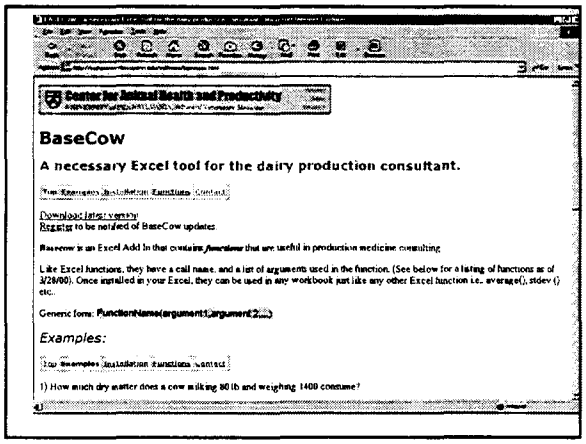
- Nitrate toxicity (pct or ppm)
- Water intake
- Lactation curve
- NE, CP, DMI etc
- Percent pregnant on palpation

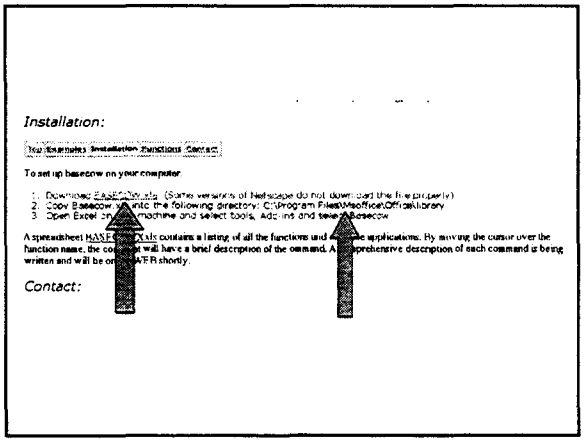
How do I get BASEcow?

Center for Animal Health and Productivity WEB page

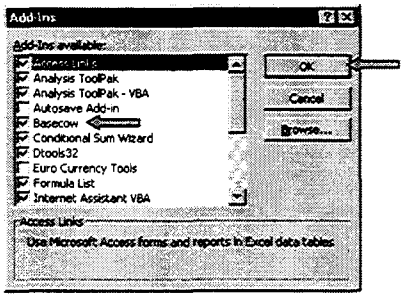
Http://CAHPwww.nbc.upenn.edu







Use the Tool Add-In command



Basecow functions be available whenever you open Excel

Center for Animal Health and Productivity WEB page

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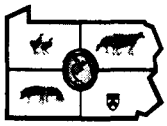
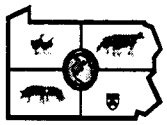


Thanks !

Pivot Analysis of Dairy Data



David Galligan

Data Sets

Reproduction

Cow Freshdate BRED1 BRED... Outcome TBRD DFH ...

Milk Production

Cow Freshdate Milk 1 Milk 2... 305milk ME305...

Event Data

Cow Event Eventdate remark

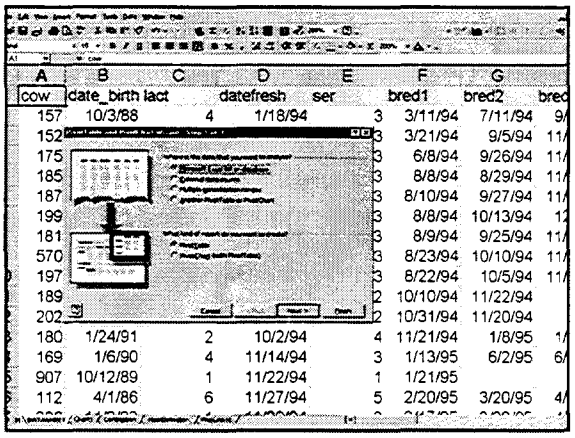
Analysis of Production Variables

- Production Parameter (Milk. Pregnant Cows)
- Manipulation (Average. Count. STD. Min ..)
- By Condition: Row, columns, pages

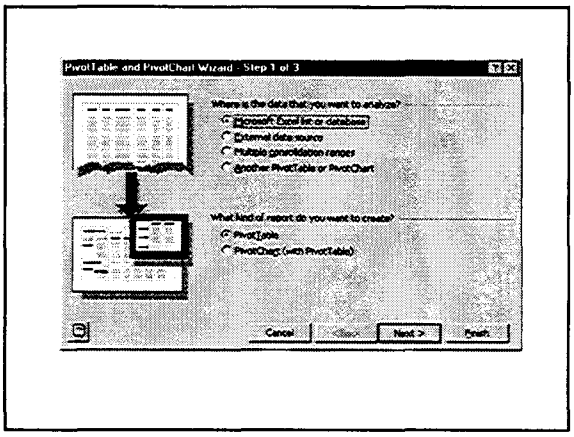
A	B	C	D	E	F	G
cow	date_birth	lact	datefresh	ser	bred1	bred2
157	10/3/88	4	1/18/94	3	3/11/94	7/11/94
152	1/1/88	4	1/22/94	3	3/21/94	9/5/94
175	7/29/90	3	3/24/94	3	6/8/94	9/26/94
185	3/19/91	2	6/3/94	3	8/8/94	8/29/94
187	7/20/91	2	6/6/94	3	8/10/94	9/27/94
199	7/4/92	1	6/9/94	3	8/8/94	10/13/94
181	1/26/91	2	6/22/94	3	8/9/94	9/25/94
570	10/15/88	3	7/2/94	3	8/23/94	10/10/94
197	2/1/92	1	7/6/94	3	8/22/94	10/5/94
189	8/10/91	2	7/30/94	2	10/10/94	11/22/94
202	8/28/92	1	8/24/94	2	10/31/94	11/20/94
180	1/24/91	2	10/2/94	4	11/21/94	1/8/95
169	1/6/90	4	11/14/94	3	1/13/95	6/2/95
907	10/12/89	1	11/22/94	1	1/21/95	
112	4/1/86	6	11/27/94	5	2/20/95	3/20/95

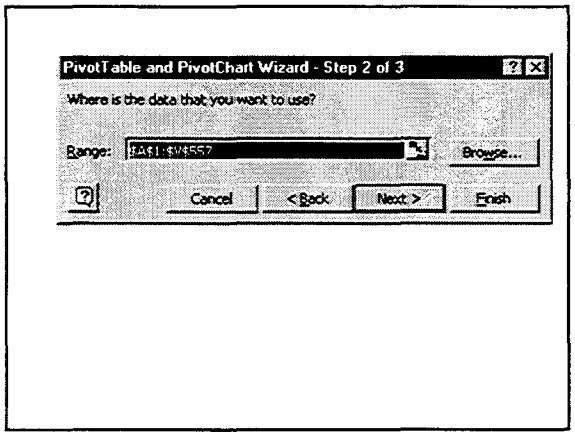
A	L	M	N	O	P	Q
cow	bred7	bred last	preg	m305	MilkLEVEL	DFB
157		9/26/94	FALSE	20400	low	52
152		11/15/94	TRUE	21710	low	58
175		11/14/94	TRUE	28210	High	76
185		11/14/94	TRUE	26370	High	66
187		11/11/94	TRUE	34550	High	65
199		12/5/94	TRUE	23920	low	60
181		11/15/94	TRUE	23630	low	48
570		11/25/94	TRUE	25580	High	52
197		11/13/94	TRUE	24100	low	47
189		11/22/94	TRUE	23190	low	72
202		11/20/94	TRUE	23470	low	68
180		2/24/95	TRUE	32740	High	50
169		6/24/95	FALSE	25700	High	60
907		1/21/95	TRUE	20890	low	60
112		7/22/95	FALSE	27060	High	85

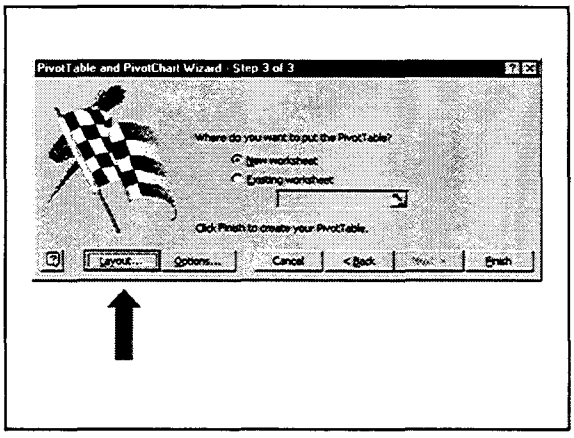
A	Q	R	S	T	U	V	W
cow	DFB	Freshmon	daysopen	inDOPn	bred	intfb	
157	52	1	251	10	1	1	
152	58	1	297	12	1	1	
175	76	3	235	9	1	2	
185	66	6	164	6	1	1	
187	65	6	158	6	1	1	
199	60	6	179	7	1	1	
181	48	6	146	5	1	0	
570	52	7	146	5	1	1	
197	47	7	130	4	1	0	
189	72	7	115	4	1	2	
202	68	8	88	2	1	1	
180	50	10	145	5	1	1	
169	60	11	222	9	1	1	
907	60	11	60	1	1	1	
112	85	11	237	9	1	2	

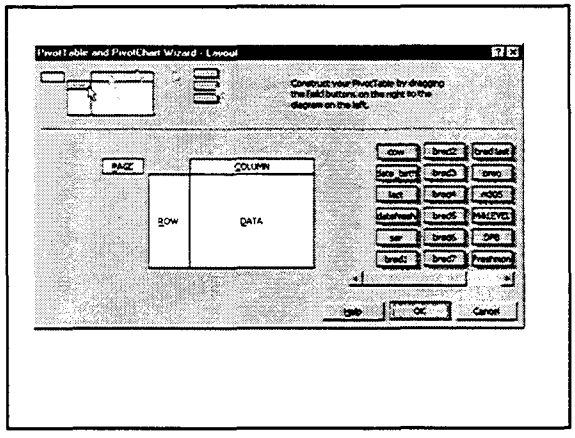


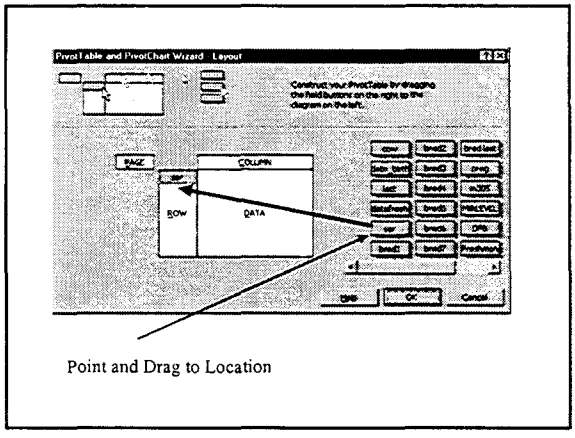
cow	date_birth	lact	datefresh	ser	bred1	bred2	bred
157	10/3/88	4	1/18/94	3	3/11/94	7/11/94	9/
152				3	3/21/94	9/5/94	11/
175				3	6/8/94	9/26/94	11/
185				3	8/8/94	8/29/94	11/
187				3	8/10/94	9/27/94	11/
199				3	8/8/94	10/13/94	12
181				3	8/9/94	9/25/94	11/
570				3	8/23/94	10/10/94	11/
197				3	8/22/94	10/5/94	11/
189				2	10/10/94	11/22/94	
202				2	10/31/94	11/20/94	
180	1/24/91	2	10/2/94	4	11/21/94	1/8/95	1/
169	1/6/90	4	11/14/94	3	1/13/95	6/2/95	6/
907	10/12/89	1	11/22/94	1	1/21/95		
112	4/1/86	6	11/27/94	5	2/20/95	3/20/95	4/



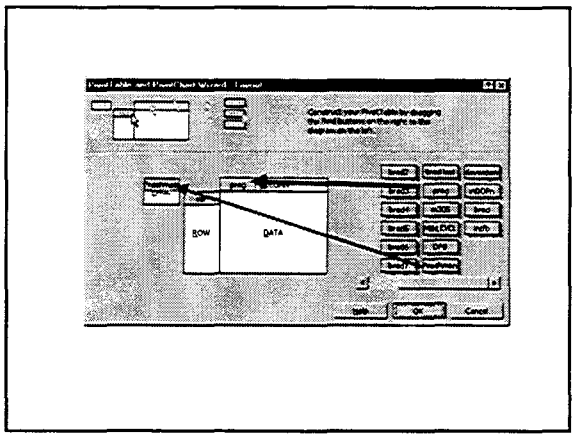


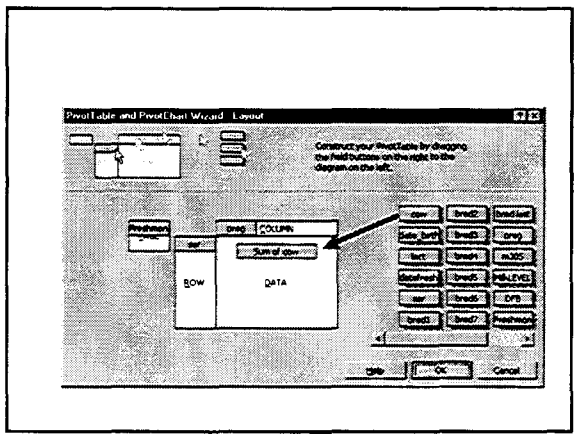


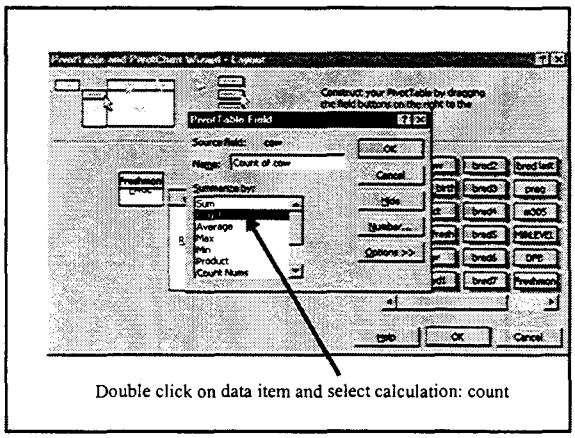




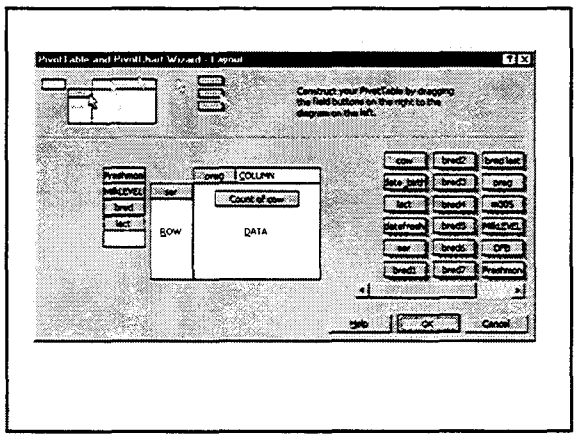
Point and Drag to Location

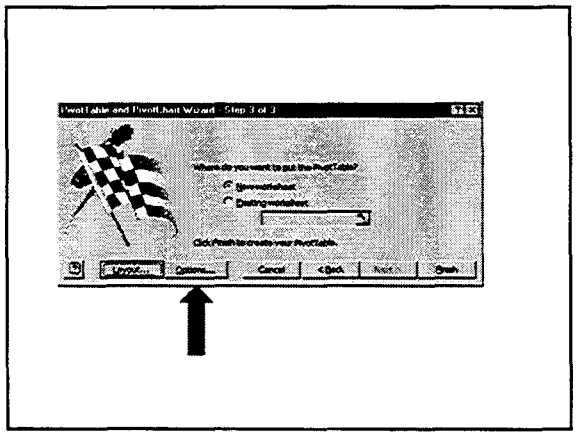


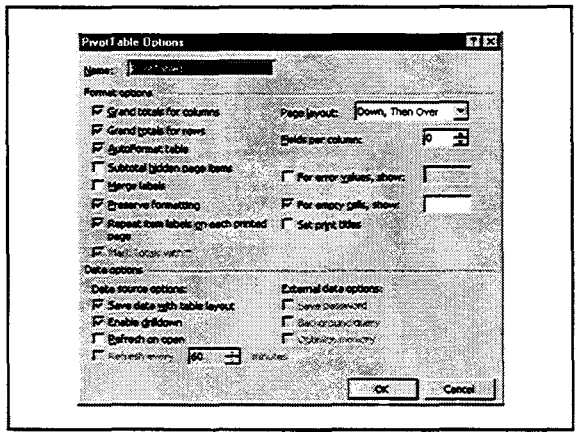


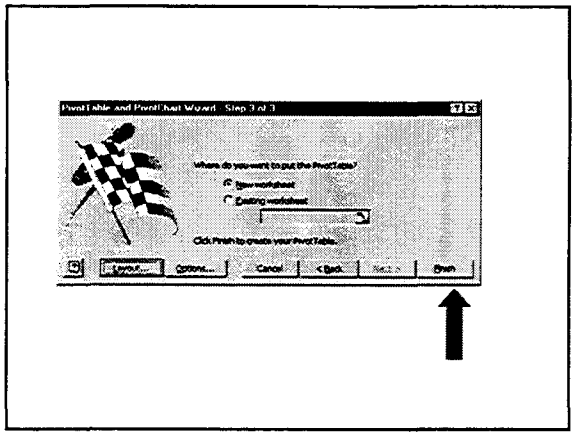


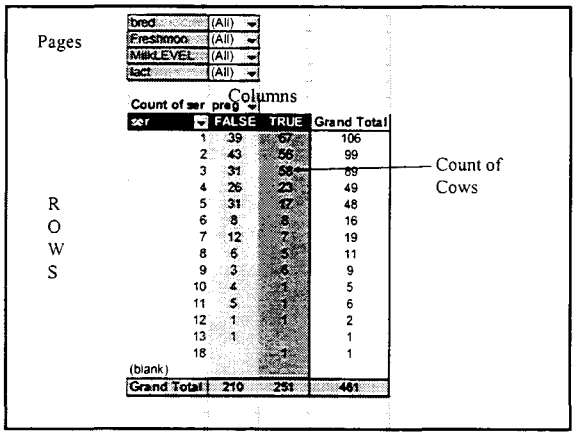
Double click on data item and select calculation: count

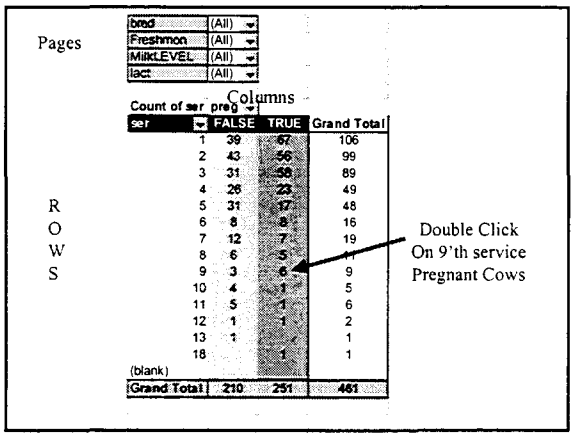






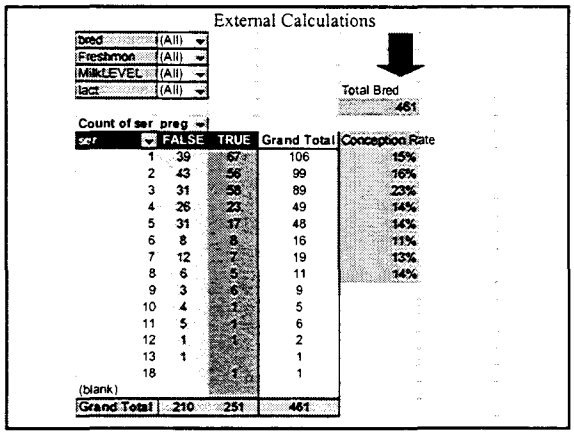


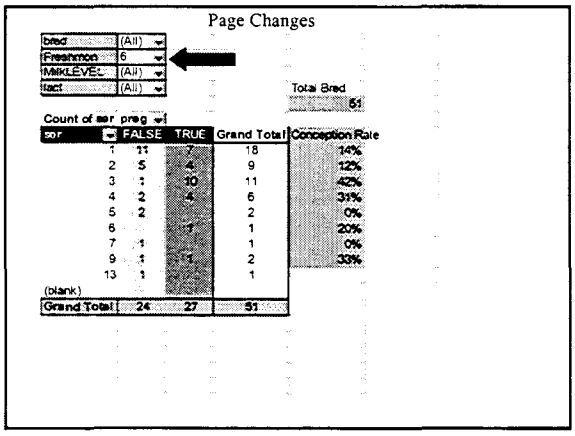


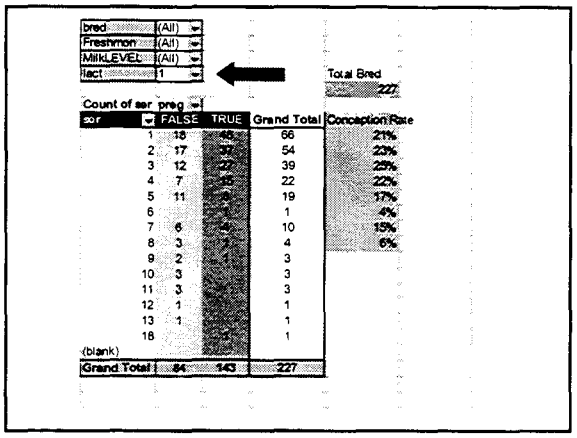


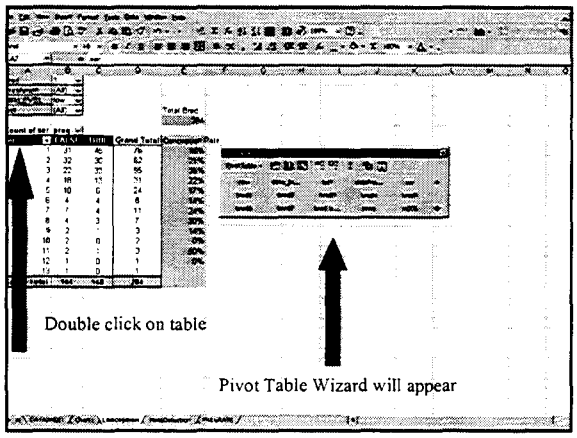
6 Cows that are pregnant on 9'th service

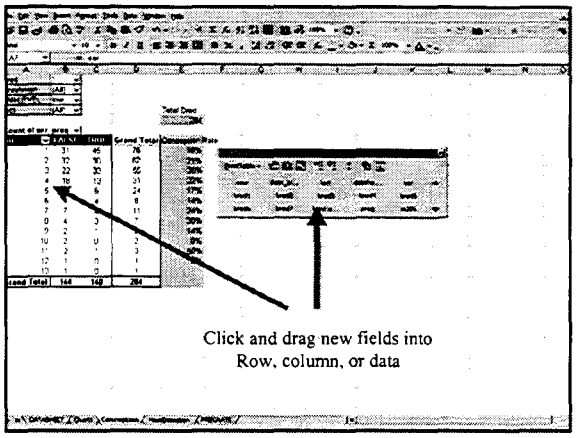
cow	date_birth	lact	datefresh	ser	bred1	bred2	bred3	bred4	bred5	bred6	bred7
459	4/28/95	2	5/16/96	9	7/29/96	8/12/96	9/4/96	9/25/96	9/26/96	10/18/96	10/23/96
475	1/13/95	2	2/18/96	9	4/24/96	5/15/96	6/5/96	6/19/96	8/5/96	8/8/96	8/11/96
418	11/23/93	2	8/9/97	9	10/25/97	12/17/97	12/19/97	1/7/98	1/20/98	2/4/98	5/14/98
465	5/13/95	1	5/21/97	9	7/17/97	9/10/97	9/29/97	12/3/97	12/23/97	1/13/98	1/16/98
172	8/18/89	5	6/8/96	9	8/15/96	8/31/96	9/29/96	11/25/96	1/6/97	1/7/97	2/17/97
167	12/24/89	5	12/5/95	9	2/9/96	3/1/96	3/24/96	5/10/96	5/12/96	5/28/96	6/18/96











lact (All)
Freshmon (All)
bred 1
MilkLEVEL High 177 Total Seen

Count of cow		
intfb	Total	Heat detection
0	17	10%
1	89	56%
2	48	68%
3	13	57%
4	5	50%
5	2	40%
6	1	33%
7	1	50%
15	1	
Grand Total	177	

Average of Peak Milk by Month Fresh

lact (All)

Average of peak	
month	Total
1	106.9
2	100.2
3	108.0
4	91.7
5	95.0
6	85.2
7	97.7
8	105.1
9	111.2
10	99.0
11	107.7
12	109.7
Grand Total	103.6

Data Set: fields of information

Categories

Columns

Rows

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External
Data Manipulation

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