Smart Feeder Data Mining

Norm Brown

Objectives

- What's in there
- System setup and optimization
- User Defined Report design
- Running, saving and transferring reports
- Special reports

Data Records

TransAction Plus

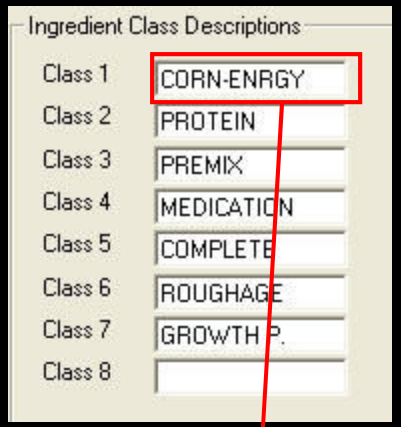
- Purchases
- Sales
- Buy & Dispense Feed
- Feed into inventory
- Buy & Dispense Drugs
- Drugs into inventory
- General ledger

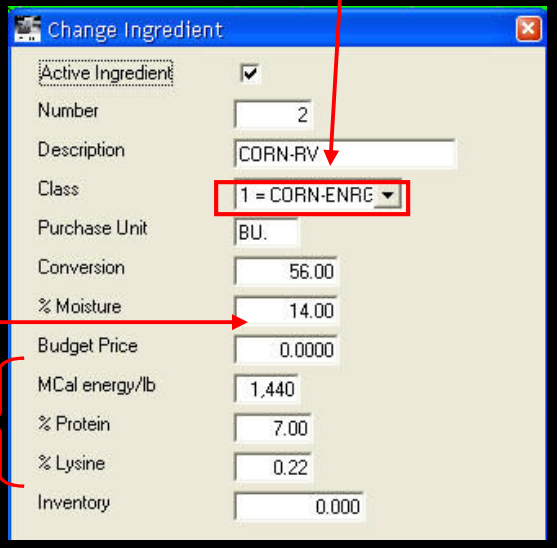
Smart Feeder

- Death loss
- Animal Movements
- Feed Movements
- Feed from inventory
- Weight-value entries
- Feed inventory
- Drug & medication
- Treatments

Feed Ingredient Hierarchy

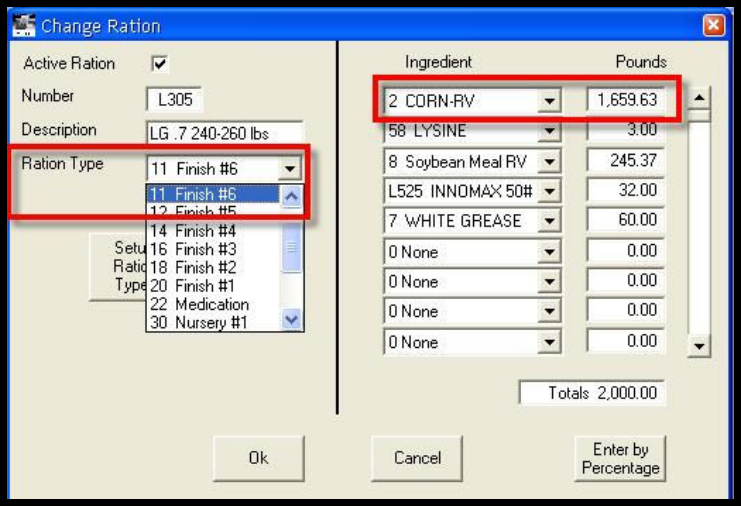
- Class
  - Based on NPPC guidelines
  - “Safest” way to select feed in reports
- Ingredient
  - Pools by feed bank
  - Moisture for D.M. calculation
  - Nutritional values





Feed Ration Hierarchy

- Ration Type
  - Easiest way to roll up feed consumption by stage or phase
- Ration
  - A “tag” only for buy & dispense
  - Required to:
    - Track feed by supplier
    - Feed by ticket or ration from Smart Feeder
    - Move feed by ration
    - Ingredient purchases in SF Planning / LifeCycle Budget



Feed Budget Hierarchy

Ingredient	Pounds
2 CORN-RV	1,659.63
58 LYSINE	3.00
8 Soybean Meal RV	245.37
L525 INNOMAX 50#	32.00
7 WHITE GREASE	60.00
0 None	0.00
0 None	0.00
0 None	0.00
0 None	0.00
Totals	2,000.00

Ration

Phase	Description	Budget Amount	Actual Amount	Budget Feed/Hd	Actual Feed/Hd
11	LG .7 240-260 lbs	196,721	447,848	125.30	217.54
	GROUP TOTALS	1,531,053	1,405,792	699.58	589.93

Feed Budget-Actual

(BFH07) Projection for Center: 520 John DeBlock

	25	26	27
	6/17	6/24	7/01
LBS of LG .85 160-200 lbs	0	0	0
LBS of LG .75 200-240 lbs	26609	0	0
LBS of LG .7 240-260 lbs	0	199979	85705

SF Planning by ration/phase

(BFH07) Change Rate of Gain Table

Number: 51

Description: RV W-F 10-270 NEW

Phase	Starting Weight	ADG	Days in Period	Gain/ Animal	Feed Eff.	Pounds of Feed	Ration
1	10	0.10	1	0.10	7.10	0.71	L111 UC #1 11< lbs
2		1.67	3	5.00	1.10	5.5	L112 UC #2 11-15 lbs
3		0.50	10	5.00	1.36	6.8	L113 UC #3 15-20 lbs
4		1.43	7	10.00	1.56	15.64	L114 UC #4 20-30 lbs
5		1.82	11	20.00	1.53	30.51	L115 UC #5 30-50 lbs
6		2.14	14	30.00	1.88	56.35	L300 LG 1.15 50-80 lbs
7		2.35	17	40.00	2.21	88.27	L301 LG 1.05 80-120 lbs
8		1.90	21	40.00	2.34	93.42	L302 LG .95 120-160 lbs
9		2.11	19	40.00	2.69	107.73	L303 LG .85 160-200 lbs
10		2.00	20	40.00	3.00	120.14	L304 LG .75 200-240 lbs
11		1.43	21	30.00	3.39	101.65	L305 LG .7 240-260 lbs
12							

Ending weight: 270

Feed Budget

SF Planning ingredient quantity

(BFH07) Smart Feeder Planning Recap

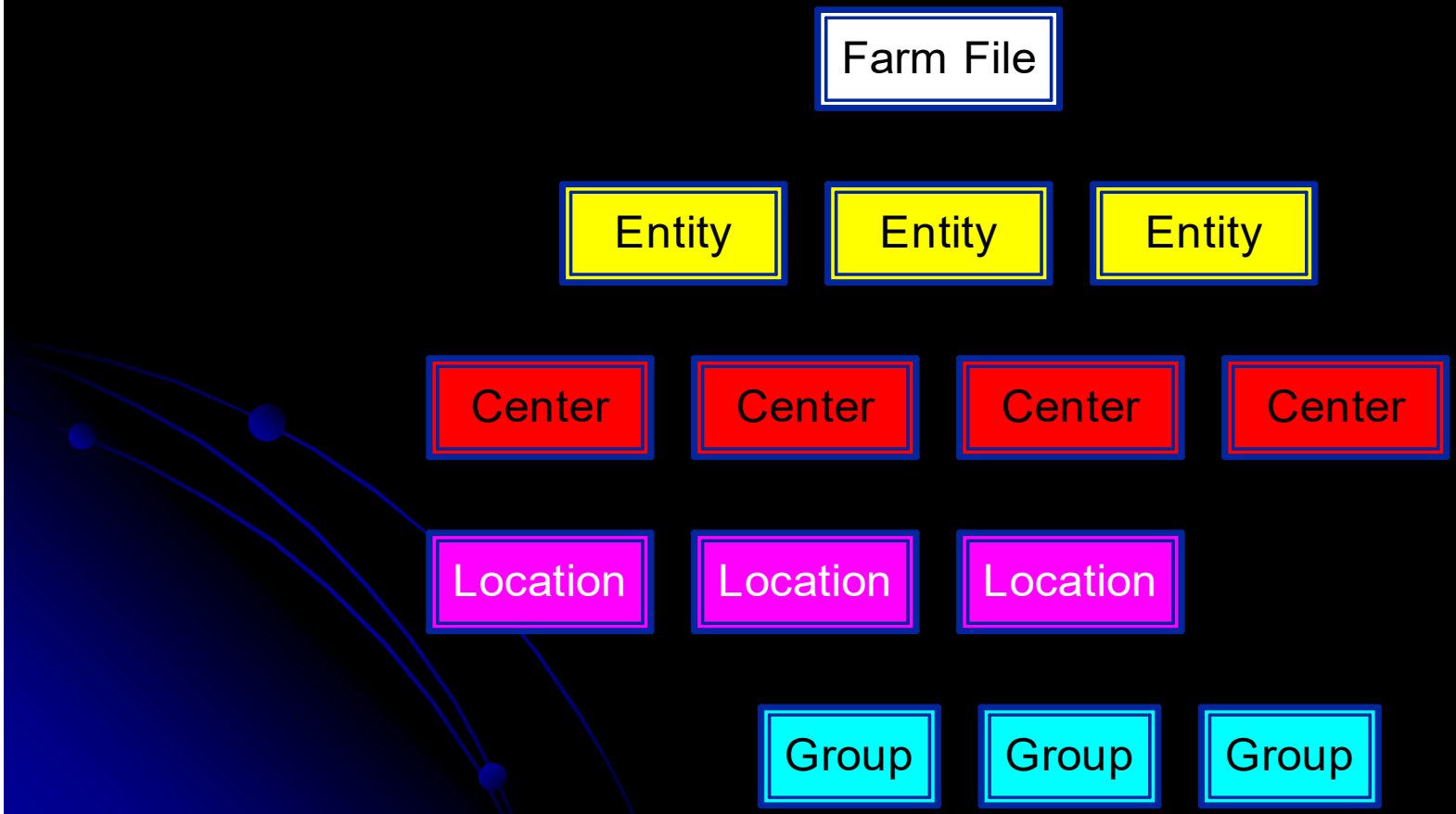
Pounds of Feed	June	July	Aug.
CORN-RV	337,864	83,200	53,665
WHITE GREASE	12,918	3,357	4,311
Soybean Meal RV	54,527	18,637	39,577
LYSINE	619	129	0
Ultracare 100	0	1,916	0
Ultracare 20/50 St P	0	2,703	3,089
Ultracare Start. Pac	0	1,270	1,451
Ultracare 200	0	12,039	0
INNOMAX 50#	6,925	1,371	2,275
Total Pounds	412,854	124,620	104,368

Adjust 0.0000 %

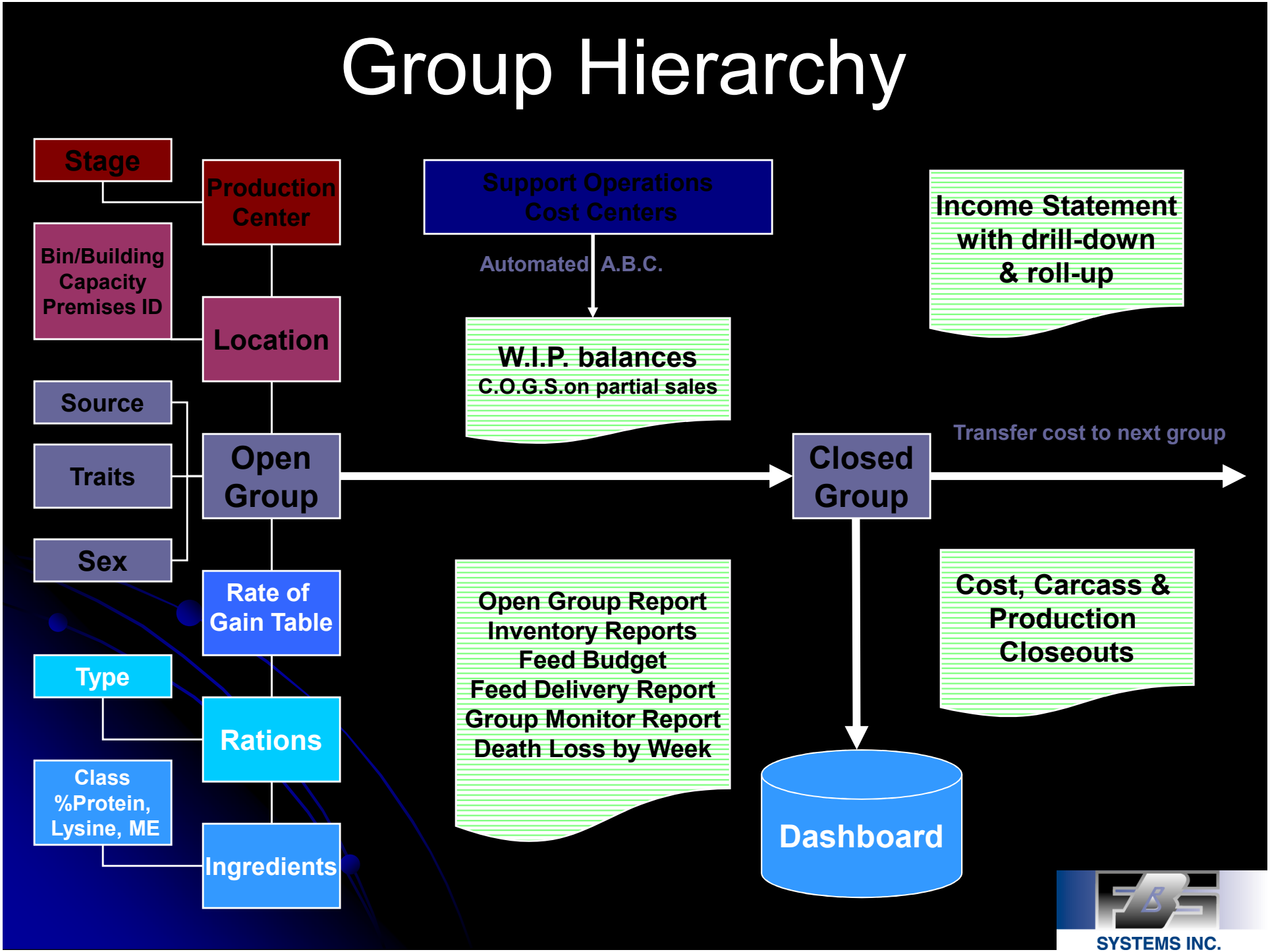
Line	Date	Type	Account	Division	Center	Ingedient	Quantity	Unit Price	Amount
1	07/01/2007	P	541	5	5D	8 Soybean Meal RV		.1000	11,888.62
2	7/1/2007	P	541	5	5D	0 UNDEFINED		.0000	543.93
3	7/1/2007	P	541	5	5D	2 CORN-RV		.1050	4,051.72
4	7/1/2007	P	541	5	5D	3 CORN-FS		.1000	2,394.78
5	7/1/2007	P	541	5	5D	4 CORN-HOME		.0980	3,823.18
6	7/1/2007	P	541	5	5D	5 CORN-ILLINI		.1420	3,018.99
7	7/1/2007	P	541	5	5D	6 44-6 Soymeal + Fat		.1170	4,707.44
8	7/1/2007	P	541	5	5D	7 WHITE GREASE		.1280	1,334.18
9	7/1/2007	P	541	5	5D	8 Soybean Meal RV		$0.4400	2,742.52
10	7/1/2007	P	541	5	5D	FSN2	6,233.00	$0.2150	8,142.06
						FSN3	37,870.03		

LifeCycle Budget ingredient purchase

Coding Hierarchy



Group Hierarchy



SYSTEMS INC.

Animal Hierarchy

- Company
  - Center
    - Location
      - Group
        - User Defined Characteristic 1
        - User Defined Characteristic 2

Center Hierarchy

- Production Centers
  - 4 or 5-digit numeric
  - First on list for direct entries
  - Stage sequence:
    - 1nnnn = Breeding
    - 2nnnn = Nursery
    - 3nnnn = Finishing
    - 4nnnn-5nnnn = Wean-Finish
    - 9nnnn = Replacements

Center Hierarchy

- Consolidating Centers
  - 4-5 digit alpha-numeric codes
  - Follows Production Centers
  - Facilities
    - “F” + Production Center number
    - Imported or allocated entries
  - Other Support Operations
    - (General Pork, G&A, etc.)
    - Shorter codes so between Production and Facilities

Center Hierarchy

- Service Centers
  - 5-6 digit alpha-numeric codes
  - Last on list
  - Wnnnn = WIP Centers
  - Ennnn = Equipment Centers
  - Tnnnn = Truck Centers
  - Cnnnn = Capital Center
  - NPnnnn = Notes Payable Centers
  - NRnnnn = Note Receivable Centers

Ledger Accounts

- Account ranges by packer

(INC07) Edit Ledger Accounts

Class	Number	Description	Active	Type	Inc/Bal	Int. Type
1	30110	Tyson Base	A	C	Y	J-1
1	30115	Cargill Base	A	C	Y	J-1
1	30120	Heinold Base	A	C	Y	J-1
1	30130	Swift Base	A	C	Y	J-1
1	30210	Sub Std Tyson	A	C	Y	J-1
1	30215	Sub Std Cargill	A	C	Y	J-1
1	30220	Sub Std Heinold	A	C	Y	J-1
1	30230	Sub Std Swift	A	C	Y	J-1
1	30310	DOA Tyson	A	C	Y	J-1
1	30315	DOA Cargill	A	C	Y	J-1
1	30320	DOA Heinold	A	C	Y	J-1
1	30330	DOA Swift	A	C	Y	J-1
1	30410	Yield $ Tyson	A	C	Y	
1	30415	Yield $ Cargill	A	C	Y	
1	30420	Yield $ Heinold	A	C	Y	
1	30430	Yield $ Swift	A	C	Y	
1	30510	Lean Tyson	A	C	Y	
1	30515	Lean Cargill	A	C	Y	
1	30520	Lean Heinold	A	C	Y	
1	30530	Lean Swift	A	C	Y	
1	30610	Sort Loss Tyson	A	C	Y	
1	30615	Sort Loss Cargill	A	C	Y	
1	30620	Sort Loss Heinold	A	C	Y	
1	30630	Sort Loss Swift	A	C	Y	

Ledger Accounts

- Handle feed detail in SF Module
  - Class
  - Ingredient
  - Ration
  - Ration Type
- Break Drug/Med. Module by account
  - Vaccines
  - Injectables
  - Water
  - Livestock supplies

Death Loss

- No predefined hierarchy
  - Alpha coding for easiest data entry
  - Reserve “999” (or highest code) for Inventory Adjustment
  - Setting report ranges to the “max” keeps new codes from getting missed

“Ultimate” Group Code

- 12 alpha-numeric
- Year weaned (06)
- Week weaned (42)
- Batch within week (A)
- Stage/Center (427)
- Location (1)
- Sex (B)
- Parity (1)
- Feed Mill (1)

Consistency

- Most existing systems are random
- Use same number of columns for each level
  - Allows wild-carding (21??? for all nurseries on farm 1000)
- Importance reads left->right
  - Allows ranging (07xxxxxxxxx-07yyyyyyyyyy for all 2007 groups)

Correct

- Can re-label:
  - Divisions
  - Ledger Accounts
  - Centers
  - Location
  - Ingredients
  - Rations
  - Drugs
- Can’t re-label groups

Continuous Flow Reports

- Period Summary
- User Defined Period Summary
- Inventory Report
- User Defined Report (by period)
- All clumsy substitutes for group reports
  - No inventory adjustments
  - Must be very careful for date selections
- Practical uses:
  - Continuous flow centers
  - Planning/actual comparisons for feed ingredient quantities/costs

User Defined Report by Group

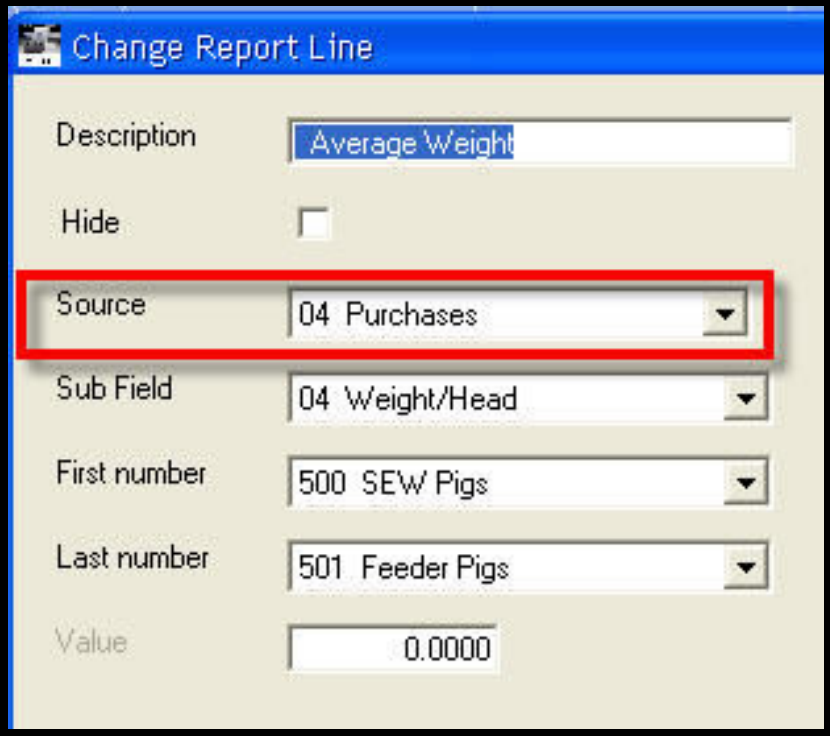
- Objectives:
  - Maximum flexibility
  - Intelligent “canned” report
  - Ease of use
- Result
  - List of options constantly grows based on your input
  - Currently 546 pre-defined and user-defined possibilities

Report Definitions

- Can be “cloned” within companies
- Can be copied between companies
- Current limit is 20 definitions with 210 lines each
- Tempting to continuously modify but exporting to Excel or Dashboard works best with fixed report length
- Therefore, develop a “library” of specialized reports

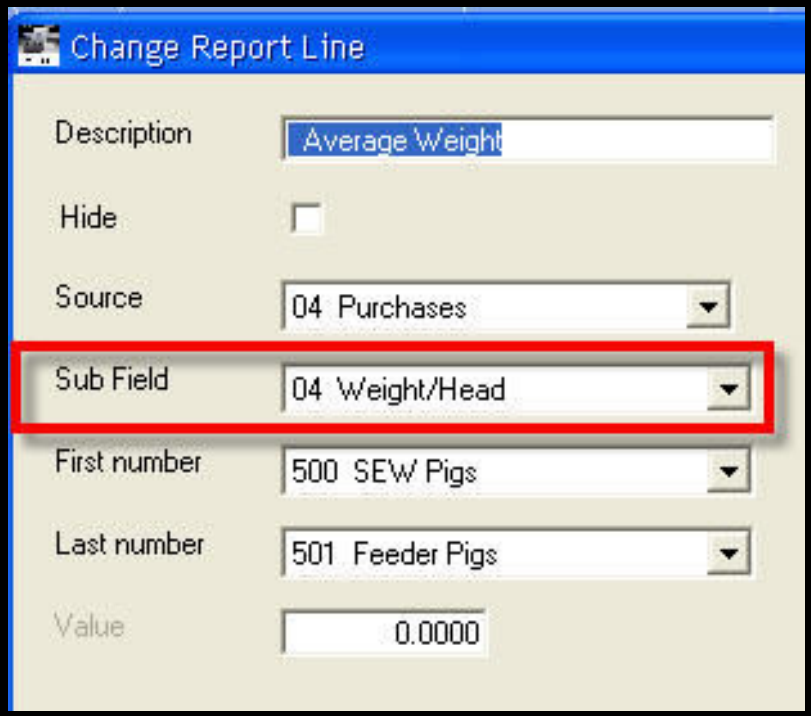
Source

- Choose which database/data element to include on a report line
- Some sources perform mathematical calculations with other report lines



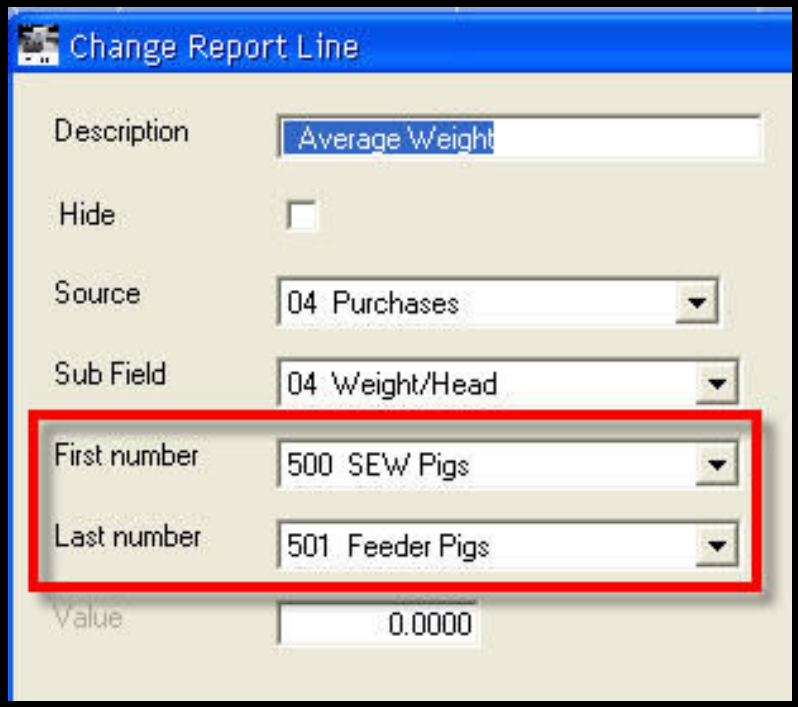
Sub Field

- Determine what calculation, if any, will be performed on the source information
- The selection of sub fields vary based on the source



Range

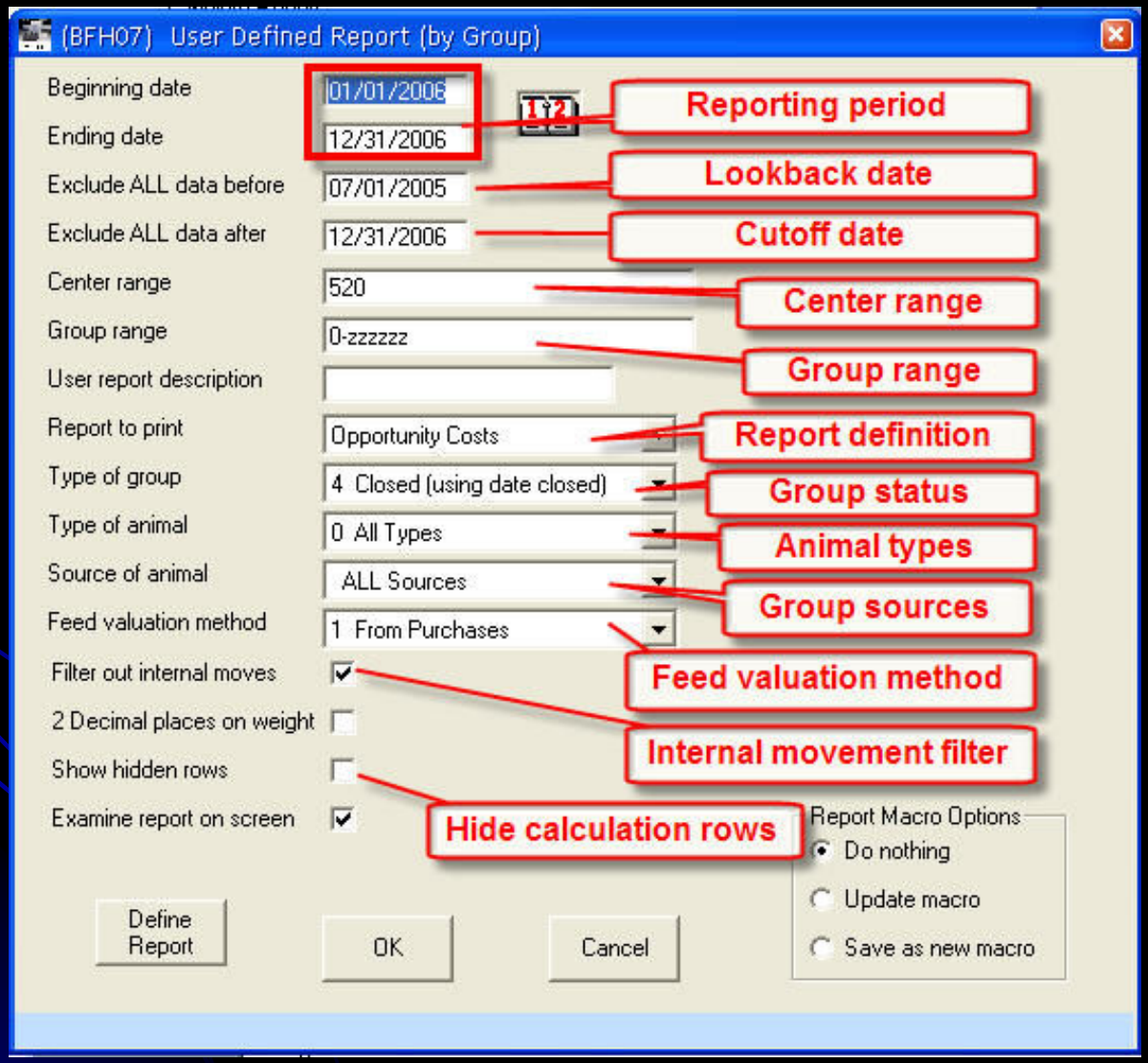
- Used to select first and last items (ledger accounts, ingredients, death loss causes) to be included in the report



Off the NPPC "Reservation"

1) **Dead Pounds Produced =** Sum animal days in as days to ending date x number of head for animals moved in + beginning inventory
2) **Dead Days In** = #1 x percent died
2) **Dead Animal Days** = #1 - #2
3) **Calculated Total Weight** In x percent died
4) **Dead Pounds Produced** = total pounds produced - #4
5) **Live Pounds Produced** = total pounds produced - #5
6) **Live Animal Days** = total animal days - #3

Report Query

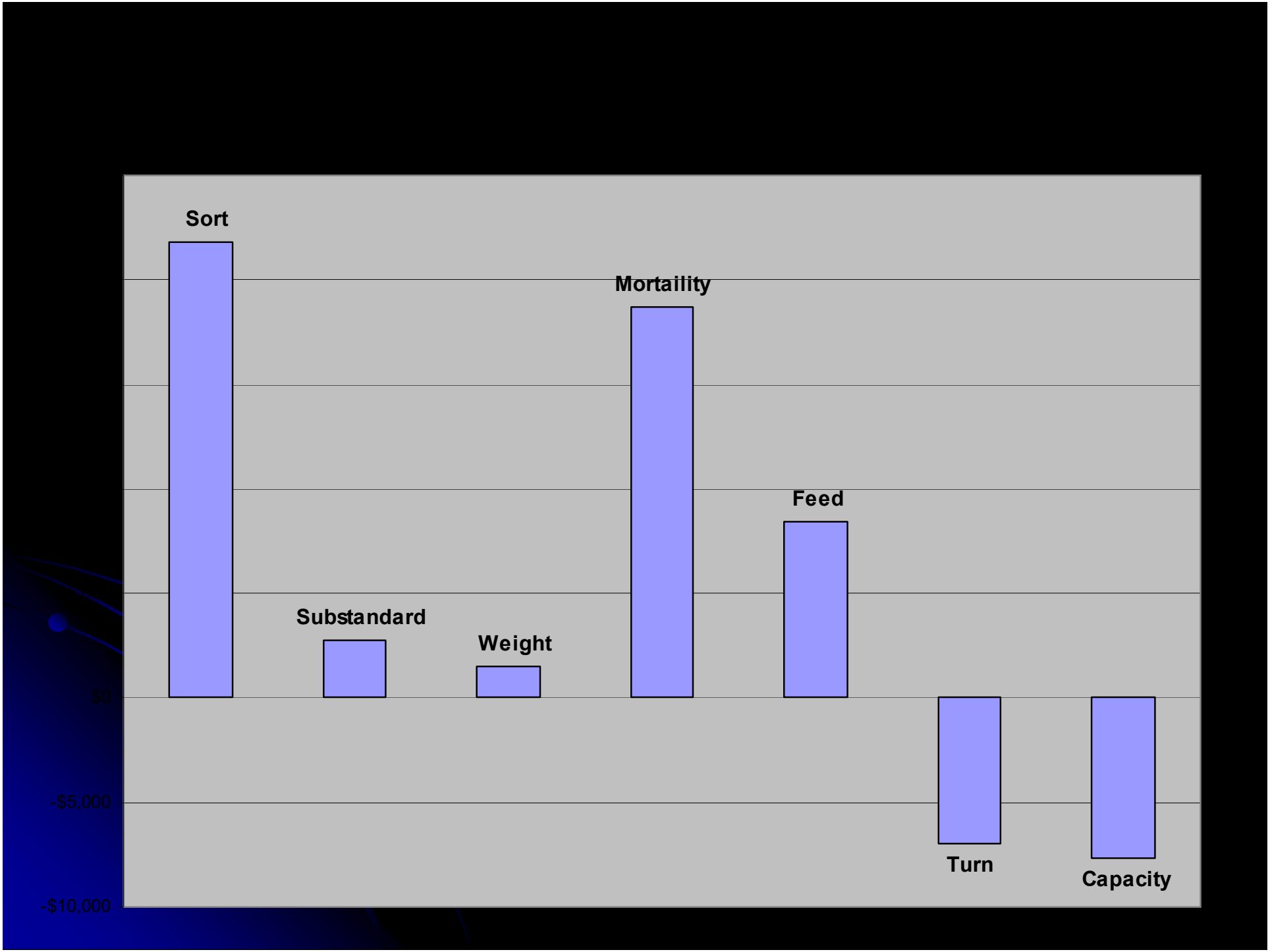


Opportunity Costs

(BFH07) Edit User Defined Report: Opportunity Costs

Description	No.	Source	Sub Field	First	Last
Feed	1	Heading			
Actual FCR	10	Feed by Class	Feed/Lb produced	1	8
*Actual $/Lb of Feed	10	Feed by Class	$/Lb. Feed	1	9
*Actual $ of Feed	10	Feed by Class	Total Cost	1	9
Actual # of Gain	18	Out - In	Lbs. Produced		
*Target Feed @ 2.45	28	Calculate	Multiply lines	31	0
*Target $ of Feed	28	Calculate	Multiply lines	29	32
Feed Op. (2.45)	28	Calculate	Subtract: 1st - 2nd	30	33
Facility Utilization	1	Heading			
Target Capacity	22	Descriptions	Location Capacity		
*Annual Cost	28	Calculate	Multiply lines	36	0
Target $/Turn @ 2.0	28	Calculate	Divide: 1st / 2nd	37	0
Target Cost/Head	28	Calculate	Divide: 1st / 2nd	37	38
Actual Group Size	6	Total In	Number		
Actual Days on Feed	16	Totals	Maximum days fed		
Actual Turns/Year	28	Calculate	Divide: 1st / 2nd	0	41
Actual Cost/Turn	28	Calculate	Divide: 1st / 2nd	37	42
Actual Cost/Head	28	Calculate	Divide: 1st / 2nd	43	40
Capacity Op./Turn	28	Calculate	Subtract: 1st - 2nd	43	38

Feed	
Actual FCR	2.39
*Actual $ of Feed	128,855.18
Actual # of Gain	588,474
*Target Feed @ 2.45	,441,761.30
*Target $ of Feed	129,758.52
Feed Op. (2.45)	-903.34
Facility Utilization	
Target Capacity	2,400
Target $/Turn @ 2.0	45,600.00
Target Cost/Head	2.00
Actual Group Size	2,383
Actual Turns/Year	2.16
Actual Cost/Turn	42,222.22
Actual Cost/Head	17.72
Capacity Op./Turn	-3,377.78

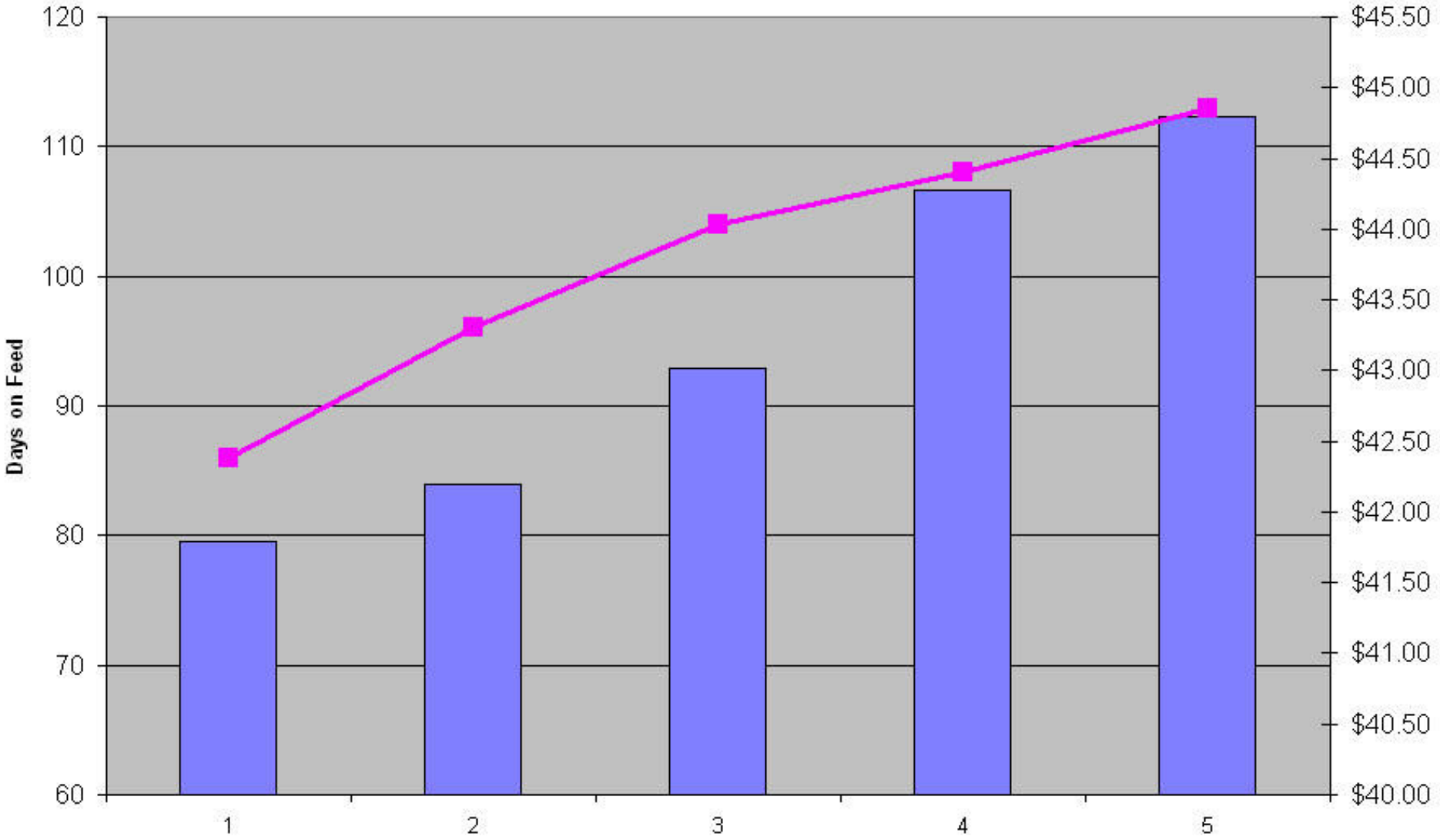

Sort
Substandard
Weight
Mortaility
Feed
Turn
Capacity
$0
-$5,000
-$10,000

Load Analysis

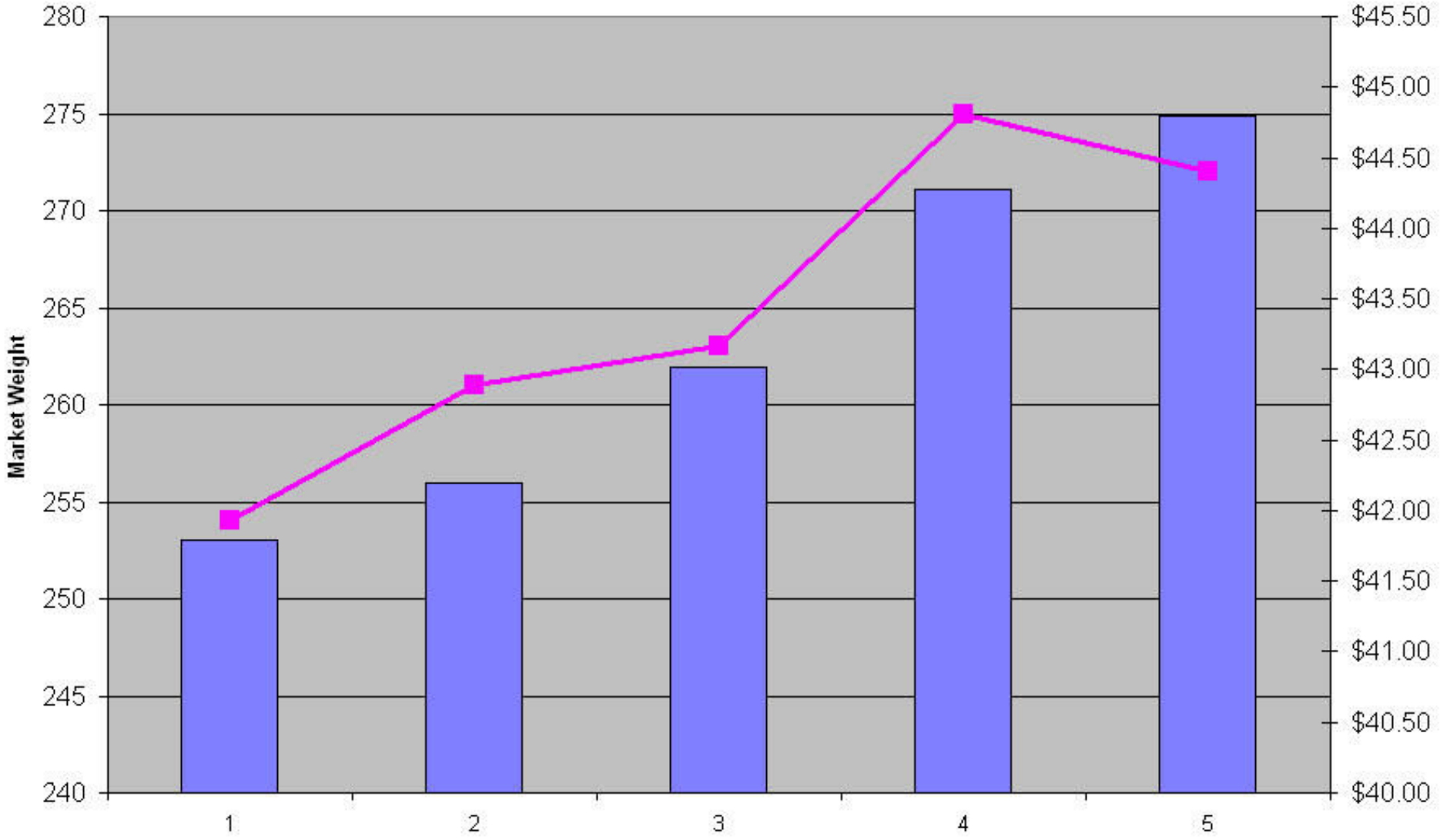
Description	No.	Source	Sub Field	First	Last
LOAD 3	1	Heading			
Quantity	31	Group Sales #3	Number	310	314
Percent of Sales	31	Group Sales #3	% of Pur/sold	310	314
Wt per Head	31	Group Sales #3	Weight/Head	310	314
Days on Feed	31	Group Sales #3	Days on Feed	310	314
*Total Pounds	31	Group Sales #3	Total Weight	310	314
*Total CWT	28	Calculate	Divide: 1st / 2nd	88	0
Base	31	Group Sales #3	Total Value	310	314
Base per Head	31	Group Sales #3	Value/Head	310	314
Base per CWT	31	Group Sales #3	Value/Cwt.	310	314
Premium	31	Group Sales #3	Sale premiums	311	311
Premium per Head	28	Calculate	Divide: 1st / 2nd	93	84
Premium per CWT	28	Calculate	Divide: 1st / 2nd	93	89
Sort	31	Group Sales #3	Sale premiums	318	318
Sort per Head	28	Calculate	Divide: 1st / 2nd	96	84
Sort per CWT	28	Calculate	Divide: 1st / 2nd	96	89
*Sales + Premium	28	Calculate	Add lines	90	93
Revenue	28	Calculate	Add lines	99	96
Revenue per Head	28	Calculate	Divide: 1st / 2nd	100	84
Revenue per CWT	28	Calculate	Divide: 1st / 2nd	100	89
COS	31	Group Sales #3	SFIV Cost of Sale	640	570
COS per Head	28	Calculate	Divide: 1st / 2nd	103	84
COS per CWT	28	Calculate	Divide: 1st / 2nd	103	89
Margin	28	Calculate	Subtract: 1st - 2nd	100	103
Margin per Head	28	Calculate	Divide: 1st / 2nd	106	84
Margin per CWT	28	Calculate	Divide: 1st / 2nd	106	89
Yield	31	Group Sales #3	Carcass traits	315	315
Lean	31	Group Sales #3	Carcass traits	316	316
Backfat	31	Group Sales #3	Carcass traits	317	317
FFLI	31	Group Sales #3	Carcass traits	319	319

LOAD 3	
Quantity	166
Percent of Sales	7.11
Wt per Head	252
Days on Feed	136
Base	18,447.70
Base per Head	111.13
Base per CWT	44.07
Premium	1,829.08
Premium per Head	11.02
Premium per CWT	4.37
Sort	-121.39
Sort per Head	-0.73
Sort per CWT	-0.29
Revenue	20,155.39
Revenue per Head	121.42
Revenue per CWT	48.15
COS	17,882.67
COS per Head	107.73
COS per CWT	42.72
Margin	2,272.72
Margin per Head	13.69
Margin per CWT	5.43
Yield	78.62
Lean	53.53
Backfat	0.92
FFLI	48.40

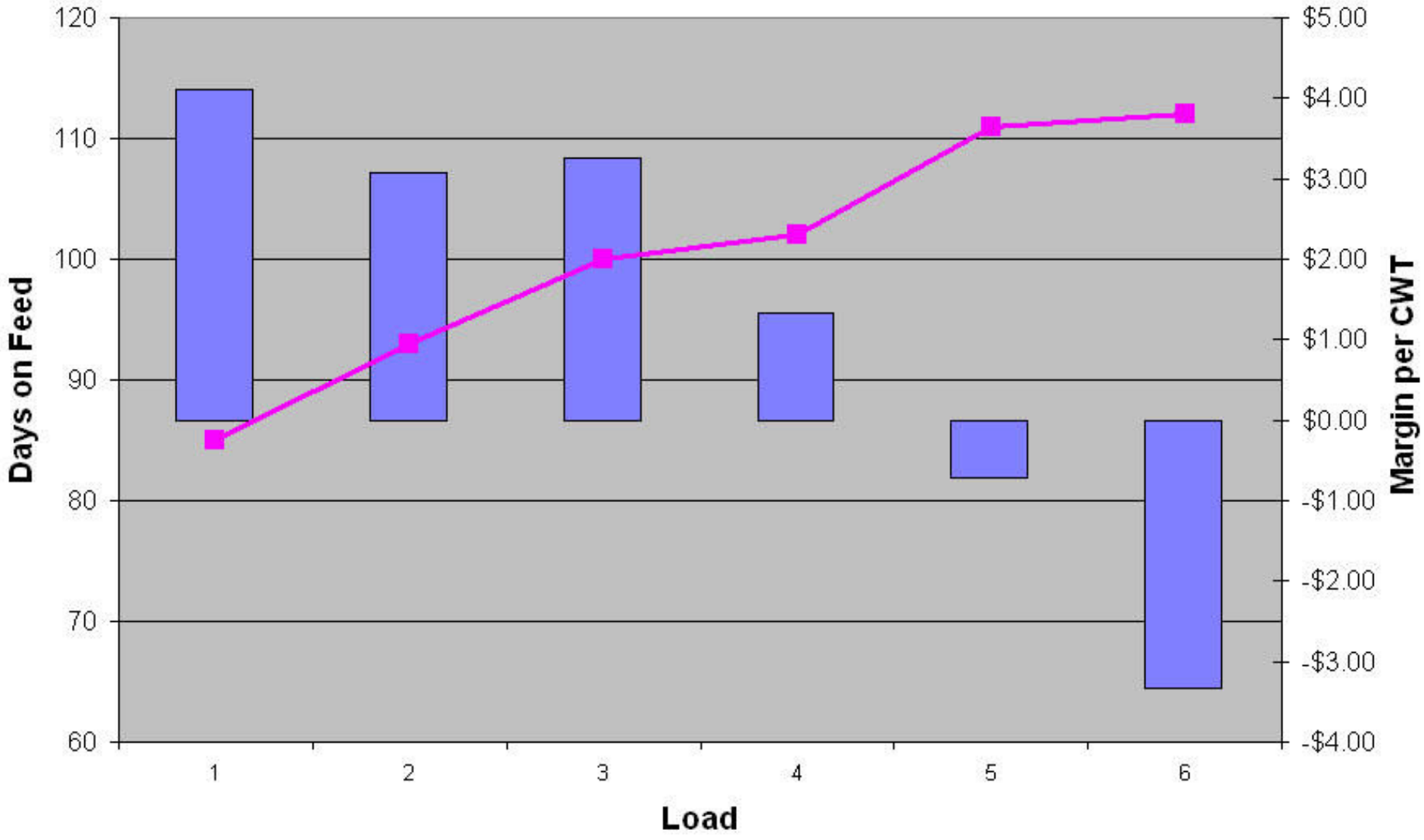
Cost of Sales by Load



Cost of Sales by Load



Margin by Load



Synthetic W-F Report

Center range	36,525
Group range	200652?

Description	No.	Source	Sub Field	Fir
In Date	22	Descriptions	Group Beg Date	
Souce	22	Descriptions	Group Source	
Close Date	22	Descriptions	Group End Date	
Quantity Purchased	4	Purchases	Number	50
Weight per Head	4	Purchases	Weight/Head	50
Mortaility %	8	Death Loss	% of Number In	
ADG	16	Totals	ADG	
Feed Conversion	10	Feed by Class	Feed/Lb produced	
Quantity Sold	5	Sales	Number	31
Avg Weight Sold	5	Sales	Weight/Head	31
Percent Marketed	5	Sales	% of Total In	31
Total Culls	5	Sales	Number	31
Divide Cull by Sales	28	Calculate	Divide: 1st / 2nd	1
Percent Cull Mkt.	28	Calculate	Multiply lines	1

	36	525	525	525	
	200652N	200652B	200652E	200652W	TOTALS
In Date	12/11/06	01/18/07	01/18/07	01/18/07	.....
Souce	Cedarcrest	Cedarcrest	Cedarcrest	Cedarcrest	
Close Date	02/14/07	06/08/07	06/08/07	06/08/07	.....
Quantity Purchased	1,485	0	0	0	1,485
Weight per Head	12				12
Mortaility %	0.34	0.94	2.70	2.16	2.02
ADG	1.08	2.18	2.08	2.06	1.76
Feed Conversion	1.61	2.47	2.92	3.13	2.51
Quantity Sold	0	737	360	358	1,455
Avg Weight Sold		263	267	272	266
Percent Marketed	0.00	99.06	97.30	96.76	97.98
Total Culls	0	1	6	8	15
Percent Cull Mkt.	0.00	0.00	2.00	2.00	1.00

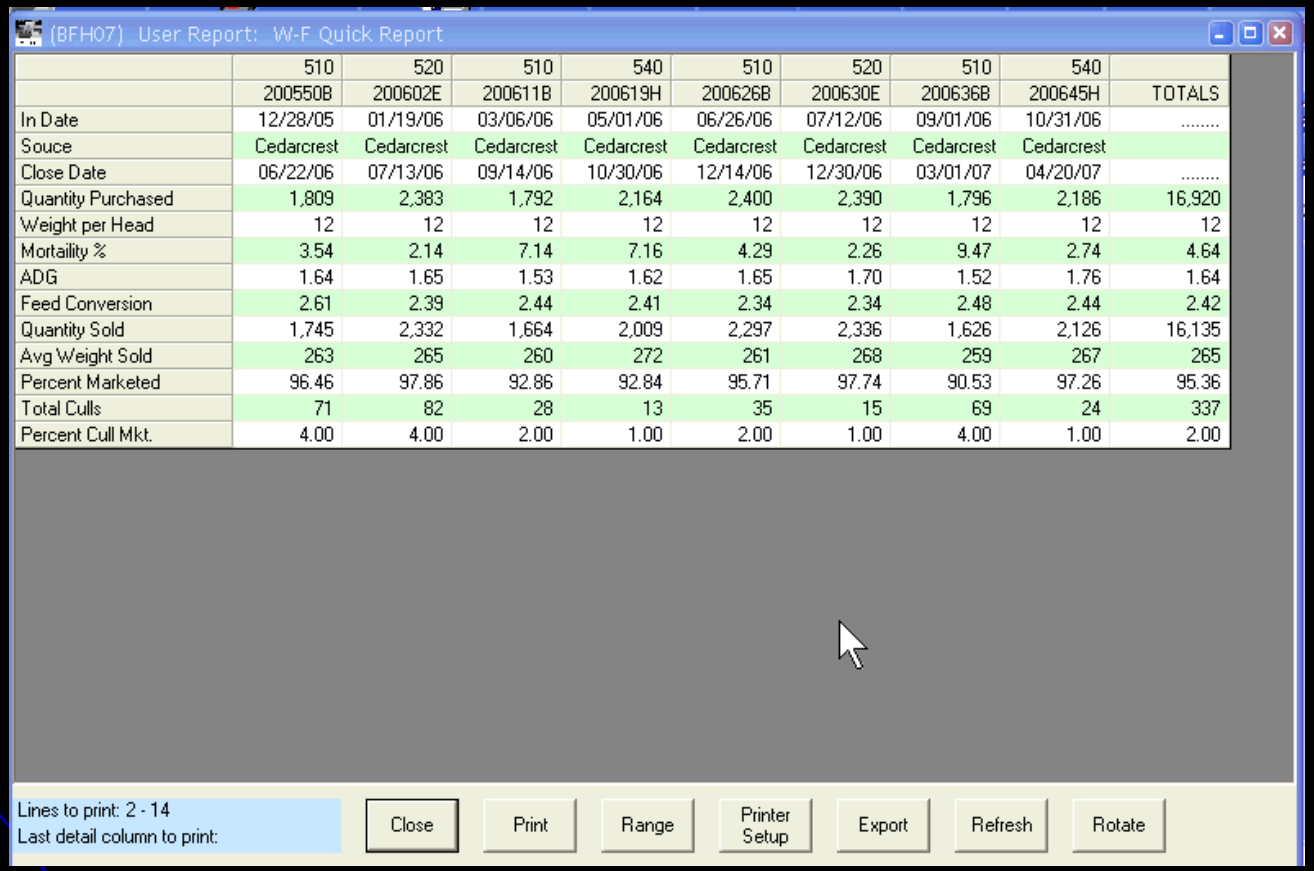
Derived Beginning Weight

Description	No.	Source	Sub Field
Producer Name	22	Descriptions	Center Description
Begining Weight	6	Total In	Weight/Head
Number of Head	6	Total In	Number
Beginning Value	6	Total In	Total Value
Value Per Head	6	Total In	Value/Head
Ending Weight	5	Sales	Weight/Head
Death Loss	8	Death Loss	% of Number In
Feed Conversion	10	Feed by Class	Feed/Lb produced
Average Daily Gain	18	Out - In	ADG
Projected ADG	28	Calculate	Add lines
Days on Feed	18	Out - In	Days on Feed
Projected lb of gain	28	Calculate	Multiply lines
Est begining Wt.	28	Calculate	Subtract: 1st - 2nd

	4104	4104	4104
	4411G21	4412M21	4413M21
Producer Name	[illegible]	[illegible]	[illegible]
Begining Weight	71	71	71
Number of Head	1,060	1,148	1,034
Beginning Value	48,039.20	52,027.36	46,860.88
Value Per Head	45.32	45.32	45.32
Ending Weight	268	278	285
Death Loss	3.68	8.71	3.87
Feed Conversion	2.53	3.08	2.66
Average Daily Gain	1.66	1.68	1.81
Projected ADG	1.70	1.70	1.70
Days on Feed	117	119	117
Projected lb of gain	198.90	202.30	198.90
Est begining Wt.	69.10	75.70	86.10

Once the report is up

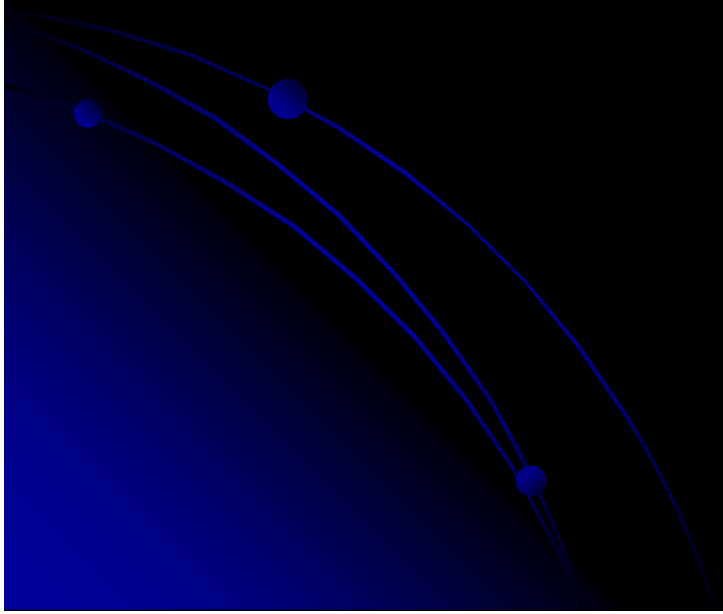
- Drill-down
  - Sort
  - Edit
- Rotate
  - Sort
- Export to Excel



	510	520	510	540	510	520	510	540	
	200550B	200602E	200611B	200619H	200626B	200630E	200636B	200645H	TOTALS
In Date	12/28/05	01/19/06	03/06/06	05/01/06	06/26/06	07/12/06	09/01/06	10/31/06	.....
Souce	Cedarcrest	Cedarcrest	Cedarcrest	Cedarcrest	Cedarcrest	Cedarcrest	Cedarcrest	Cedarcrest	
Close Date	06/22/06	07/13/06	09/14/06	10/30/06	12/14/06	12/30/06	03/01/07	04/20/07	.....
Quantity Purchased	1,809	2,383	1,792	2,164	2,400	2,390	1,796	2,186	16,920
Weight per Head	12	12	12	12	12	12	12	12	12
Mortaility %	3.54	2.14	7.14	7.16	4.29	2.26	9.47	2.74	4.64
ADG	1.64	1.65	1.53	1.62	1.65	1.70	1.52	1.76	1.64
Feed Conversion	2.61	2.39	2.44	2.41	2.34	2.34	2.48	2.44	2.42
Quantity Sold	1,745	2,332	1,664	2,009	2,297	2,336	1,626	2,126	16,135
Avg Weight Sold	263	265	260	272	261	268	259	267	265
Percent Marketed	96.46	97.86	92.86	92.84	95.71	97.74	90.53	97.26	95.36
Total Culls	71	82	28	13	35	15	69	24	337
Percent Cull Mkt.	4.00	4.00	2.00	1.00	2.00	1.00	4.00	1.00	2.00

Once the report is up

- Save as a report macro
  - Macro should = definition

The Next Steps

- Batch Reports
- Report Repository
- Dashboard
- Cross-database analysis