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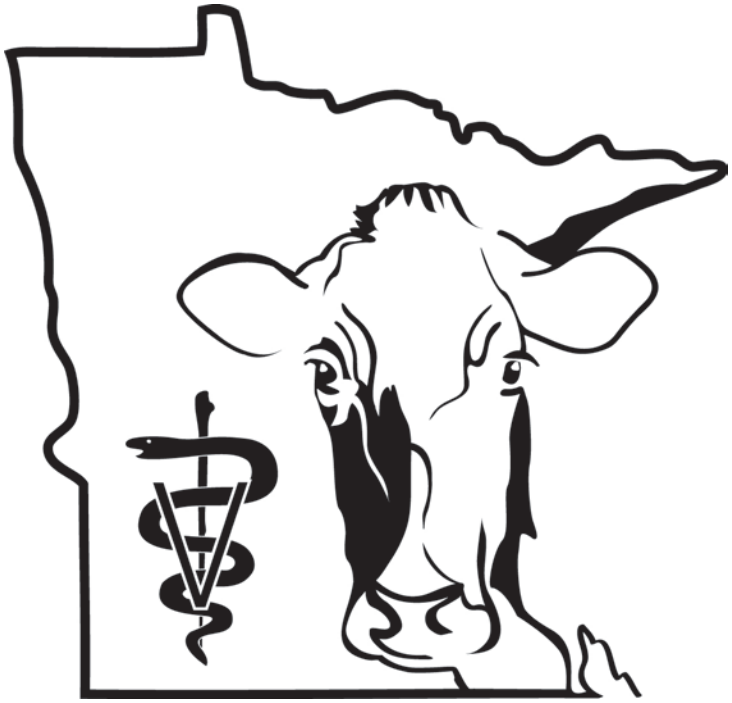

ST. PAUL, MINNESOTA
UNITED STATES OF MINNESOTA

A Practitioner's View on Using Computerized Records in Dairy Practice

or

Computerized Dairy Records for the Complete Idiot

by

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INTRODUCTION:

It is obvious to the entire veterinary community the dairy industry and the practice of dairy veterinary medicine is in transition. Increasingly, profit margins for our dairy clientele have become narrower. Our dairy clients have thought twice before calling out the vet on a sick cow call. Numerous times the client elects to cull the cow or implements therapy on his own. Additionally, the number of dairy producers going out of business have continued to increase. Minnesota has lost 30 % of its dairy farms over the last five or six years. There is little that indicates this trend will change in the immediate future. The result is a decrease in the number of sick cow calls and fewer traditional income producing opportunities for the practicing veterinarian. Shrinking profit margins for our dairy clients is not the only factor affecting the bovine practitioner. Increased competition from pharmaceutical catalogs together with a dramatic decline in the compounding of drugs have decreased profit margins for the dairy veterinarian as well. Despite fewer sick cow calls, if the veterinarians are like me, not only is there a shortage of money in our lives, there is also a shortage of time. Many veterinarians not only do bovine medicine and surgery but are also involved in mixed practice, multiple species, long hours of practice work, and precious few hours of free time for themselves, their spouse, or their children. I am one of these general practitioners. I have great intentions with an enormous desire to do a good job for my client, but like most of us am overworked, underpaid, overextended, unappreciated and at times, just want to quit and go fishing. In the midst of our busy schedules and work, someone reminds us that we or our clients have to become more efficient to stay in business. They must do a better job in managing their dairy to increase their profitability. The ability to manage a business more effectively usually means one has a sense of what he/she is doing and where they are at. This means a record of what is happening and what is occurring on the farm. We must become involved in records or record analysis in the dairy if we are to assist our clients in better managing the business for maximum profitability. We know this to be true, but how and where do you find the time to accomplish the task.

WHY RECORDS? I CAN'T GET PAID:

As private practitioners, most of us readily recognize that we as a profession and as a person have certain strengths and weaknesses. I will speak of myself, however, I am certain that I speak for many of us in the profession. We have strengths and abilities. I know how to examine, diagnose, and treat a DA. I am very good and efficient at it. I am paid well to "cut" a DA. My client recognizes my worth and proficiency in treating DAs, and so is inclined to request my services when he/she finds themselves with a cow off feed. On the other hand, there are things we do poorly and there are things we are poorly paid to do. Record keeping and data entry are two such examples. I have tried for years to become involved in record analysis on the dairy. I have rarely been paid well to analyze DHIA records for the dairy. This is an exercise that I believe is important to the overall health of the dairy but have not been able to consistently convince the dairy producer to compensate me fairly to analyze. Data entry is another weakness of record keeping. The entering of data must happen for records and record analysis to occur. The veterinarian is neither good at, nor can he be paid well for data entry. If one is to analyze days open, days to first breeding, heat detection rates, etc. one must put breeding records into a computer. If the farmer is too busy to hand enter data into the computer or I am too busy, or the dairyman is unwilling to pay me to perform the data entry service, I must choose to pay lay help to perform the task. The bottom line, historically, the job does not get accomplished. The goal then is not to attempt clients pay for something we are not good at, rather, have someone else do the data entry. We can do the analysis or establish the diagnosis, things that we are good at, are well trained for, and can be compensated.

Records and record analysis are critical to the overall management of a dairy. If you don't know where your're going, any road will take you there. All agree on the importance of records, however, the best way to get records analyzed and the parameters necessary to measure is not nearly as certain. We (the dairyman, the veterinarian, the nutritionists, the consultants) all agree that records are a necessity. "If you can not measure it, you can not manage it." We have all quoted the phrase. What is the best way to get the records and what records are necessary is a matter of debate. Several points must be made in discussing records. 1) My philosophy on records is to do it, and do it well, but do it once, and as little as possible. Asking the dairyman to record events in several different places is a waste of valuable time. The goal should be to record necessary events, but only in one place and then to share that information to others as necessary. 2) The collecting of data must be viewed as the first step, not the final goal of keeping records. If one does not use the records, don't bother getting them. The majority of our clients on DHIA pay for and receive pages of cow information that they rarely if every look at. If they are fortunate, an aspiring veterinarian or feed consultant will examine the records occasionally and make some attempt at interpretation. The information accumulated must be analyzed and proper action taken or there is no point in gathering the data. Records must be done. Data must be accumulated. The data needs to be monitored or looked at on a regular basis or there is no point in gathering the data. Save the time and money. 3) Finally, monitoring of the data must result in the

identification of bottlenecks which are hindering production and profitability so that changes can be implemented. The dairyman typically looks at and knows his rolling herd average. The problem with rolling herd average is its historical nature. It is an average of the herd production over the previous twelve months. It does not accurately reflect what is currently occurring on the dairy and makes it difficult to identify bottlenecks or track the profitability of interventions made. 4) Once changes are made, continued monitoring must be done to determine whether the interventions have made a difference and enhanced the profitability of the dairy producer. In summary, the true purpose of monitoring records is the early identification of bottlenecks, or areas of potential losses, in order to make timely, cost justifiable interventions on the dairy. So what monitoring systems are out there? Are there any which are any good? Some monitoring systems are more successful than others in assisting the veterinarian in achieving this goal.

SUCCESSFUL MONITORING SYSTEMS:

Successful monitoring systems have at least four identifiable characteristics. First, and in my opinion one of the most important characteristics, is that they are RAPID. In today's dairies with its emphasis on efficiency, the dairy producer is unwilling to pay large sums of money to monitor his production. This is one of the reasons DHIA (Dairy Herd Improvement Association) is having difficulty holding onto cow numbers. The dairy client is increasingly unwilling to pay dollars for something he/she does not perceive as cost effective and worthy. This is also the reason the veterinarian has difficulty spending a large amount of time examining and analyzing records. The average Minnesota dairy producer is not willing to pay for an hour of my time to look at records. He may, in my opinion be willing to pay you for 10-15 minutes. The successful monitoring system must be quick! Secondly, in order to be successful, monitoring programs must be ROUTINELY PERFORMED. Successful monitoring programs similar to successful reproduction programs are not performed haphazardly, but done on a routine regular basis. Thirdly, successful monitoring programs must deal with CURRENT performance data. Historical information accumulated or averaged over the last several months is slow to change and may not accurately reflect what is occurring on the farm currently. If one changed the crude protein of a high group milk cow ration from 15% to 18%, monitoring the pounds of milk produced per cow per day or the difference in actual minus expected milk would make much more sense than monitoring the rolling herd average. The rolling herd average as a historical average of milk production over the last twelve months changes much too slowly to be a good indicator of what is currently happening in the dairy on a daily basis. The pounds of milk per cow per day or actual minus expected milk, would be a much more sensitive indicator of the response to a nutritional intervention Finally, a successful monitoring program needs to be SIMPLE and EASY yet flexible and expandable for more detail when one identifies a problem area. The practicing veterinarian needs a system that is quick and easy to use with a standard format for monitoring and trouble shooting, however, when he/she identifies a problem it is critical to have the ability to quickly go in and break up population groups in order to adequately diagnose the bottleneck.

WHAT DO I REALLY NEED TO KNOW?

If the practitioner is going to become involved in successful monitoring of dairy records, what does one really need to know about those records? Two points that need to be emphasized are the limitations of monitoring and the problems with averages. Firstly, one needs to understand the limitations that are an innate part of monitoring. Monitoring only identifies problem areas and when they occur. It does not identify the cause of the problem, nor does it prioritize the need for intervention. There will be a continued need for a veterinary consultant to think, assign economic values to a problem, prioritize, and make sensible recommendations for any problems that exist. Secondly, one needs to be aware of the problems innate in any monitoring program that deals with averages. Averages can get you into trouble. Averages can mislead one into thinking one has a severe herd problem when one does not. A few cows can greatly distort the herd average. On the other hand, averages can lead one to believe that all is well, when in fact, there are severe problems on the dairy. A "good average" does not mean there are no problems in the herd. This is why computer monitoring programs that deal with current performance data are highly superior to those that only loqk at averages. Case in point: Table 1 and Table 2 are print-outs of a bulk tank milk analysis of two dairies. They both have a bulk tank SCC (somatic cell count) of about 570,000. We would probably all agree that this is too high. Which client has the more severe problem and a greater need for intervention. Client "A" has one cow that is 33% of the bulk tank SCC. On the other hand, several cows are required at Client "B" farm to account for an equal 33% of the SCC. I would argue that Client "B" has a more pressing need to control his mastitis problem than does Client "A". Second case in point: Table 3 is a bulk tank SCC of a dairy with a SCC of 203,000. Most of us would be fairly content with a SCC of 200,000 and would certainly not perceive the client to have a major mastitis problem occurring on the dairy. An examination of Scatter graph 1 reveals this farm has a major problem with fresh cow mastitis. Approximately 50% of the herd is freshening with mastitis! None of us would believe 50% incidence of mastitis at freshening is an acceptable or profitable parameter. If the veterinarian is to be involved with record analysis, it is critical that one is using monitors that give us accurate and sensitive measuring tools that will be perceived by our clients as inexpensive yet valuable so that the veterinarian is considered a critical part of his management team.

THE TRIANGLE OF PRODUCTION MEDICINE:

When performing herd health checks on our dairies, we like to use the monitoring parameters of what we consider the Triangle of Production Medicine. The Triangle of Production Medicine includes three major areas of management, namely, mastitis control, nutrition/production, and reproduction. Instead of concentrating only on the reproductive health of the dairy herd, we attempt to examine reproduction, nutrition, and mastitis

parameters each month. The interventions may manifest themselves as balancing a ration, pregnancy examinations, rechecking forage moistures, checking a vacuum regulator or evaluating a dry cow environment. They all begin, however, with a quick and dirty monitoring of the production records utilizing scatter graph evaluations avaliable in the Dairy Comp 305 computer record analysis provided by Minnesota DHIA.

I AM BUSY, I AM LAZY, I AM DUMB:

I have personally worked with two dairy computer software programs over the last three years. Dairy CHamp and Dairy Comp 305 are the software programs I have attempted to incorporate into veterinary practice. Dairy Comp 305 has become my program of choice over the last two years for several reasons. First, I am busy. I am lazy. Approximately two years ago, Minnesota DHIA made the decision to utilize Dairy Comp 305 with all its test supervisors as it moved to an electronic recording system for its dairy records. Utilizing the same software program which the test supervisors were using made sense from a compatibility point of view. In addition, a third party entry system with immediate on-farm access is very attractive. Here the test supervisor at the end of testing could simply leave a backup disc file on the farm with the entire farm data that I was attempting to gain access to. There was no need for modems and downloading. There were no hoops to jump through, no extra bills to pay. I could simply walk on to the dairy at herd health call, download my computer with a disc left on the farm, and within seconds-heaven! Analyze farm records to my hearts delight. Secondly, I am dumb. The Dairy Comp 305 program passed what I call the **IQ** test. My IQ test requires high marks. That is to say, Is the system **IDIOT-PROOF**, and is it **QUICK**? As a general practitioner with no desire to be a candidate for the Computer Nerd Hall of Fame, high test scores in the IQ test was critical. The third major factor in deciding on Comp 305 was the addition of scatter graph analysis of current performance data on all the cows in an easily accessible format. Scatter graphs are simply graphs which indicate where every cow in the herd is at for an indicated variable. For example, a scatter graph on the current logSCC is a single graph which plots each cows current mastitis log score against her days in milk (DIM). It gives a quick, yet complete snapshot of the udder herd health status in the herd as of the last test day. These graph capabilities may be present with other software programs, however, the simplicity of Comp 305 with its established pull-down menus makes this an attractive package. It is the availability of immediate on-farm access to all DHIA herds, together with the quick and easy monitoring that have made the Dairy Comp 305 program so desirable.

REAL TIME DEMONSTRATION:

A demonstration of a real time dairy in Comp 305 will assist in illustrating the simple, yet powerful monitoring capabilities that this computer software program has to offer. One must remember that the program with its established pull-down menus makes this computer monitoring program attractive for the computer neophyte, like myself. On the other hand, Dairy Comp 305's real power lies in the COMMAND MODE, whereby a consultant who has some understanding of the program and dairy production medicine has the flexibility to create his own lists or graphs to further analyze any potential bottlenecks one identifies.

In monitoring the computerized production records on any dairy we examine the production medicine triangle of mastitis, production, and reproduction. Dairy Comp 305 has automated pull-down menus that are easily accessed and selected with the push of a button. We start out looking at mastitis scatter graphs, move to production scatter graphs, and finish with an examination of the reproduction scatter graphs. The entire process takes 10-15 minutes. If no new problems are identified, one continues on with the farm work or is on to the next vet call. If the monitoring identifies a new problem, one can recognize the problem, further define the problem utilizing the flexibility of the COMMAND mode, or plot intervention strategy.

Under the MASTITIS column on the pull-down menus, one can access mastitis scatter graphs. There are seven mastitis scatter graphs one can flash through which examines if mastitis is occurring in the herd, when it is occurring in the herd, when and if the infection is resolving, and which animals are contracting the disease. Scatter graph M-1 is a graph of the current level of mastitis in the herd. The logSCC is plotted against the days in milk on test day (DIMTD). The number represents a cow according to her lactation number. Number 1 refers to a cow in her first lactation, the number 2 refers to a cow in her second lactation, and the number 3 refers to cows in their third or later lactation. One can see that this herd has a significant number of cows with infection, i.e. greater than 4.0 lgSCC. There are animals of all lactation numbers represented with infection. Scatter graph M-2 examines what has occurred in this herd over the last month. Are there new infections? Are they all chronic established infections? How many cows recovered over the last month? Numbers in the upper left quadrant represent cows that did not have a high SCC last month but do have a high SCC this month. These animals are newly infected animals. Numbers in the upper right quadrant represent cows which had a high SCC last month and are also high this month. They are chronic infections and not new this month. Animals in the lower right quadrant are animals which were infected in the previous month but have recovered and are low in SCC this month. Finally, animals in the lower left quadrant are animals which did not have mastitis either last month or this month and are clean. Herds that manifest this pattern typically have a high incidence of

environmental bacteria or Strep ag. Scatter graph M-3 examines the logSCC of each cow at freshening over the last year. It is the first logSCC on record for the cow at the point of freshening, thus, log1. One can quickly see in this herd that nearly 50% of the herd is freshening with mastitis. Numbers indicate the mastitis is occurring in all lactation numbers including heifers. This most commonly is an environmental disease with poor housing and bedding management in the dry cow or close-up group. We have looked at what is happening to cows at freshening, but how do cows do in the parlor or lactation string after they freshen? Scatter graphs M-4 and M-5 examine this parameter. M-4 scatter graph examines how many cows freshened with no mastitis but subsequently became infected sometime during the lactation. These animals are represented as numbers in the upper left quadrant of the graph. M-5 scatter graph compares what the cow's mastitis logSCC was at freshening vs. the cow's current logSCC. Animals in the upper left quadrant are cows that freshened with no mastitis that currently, this month, have an infection. Cows in the upper right quadrant, had an infection at freshening and remain high currently. Cows in the lower right quadrant, freshened with an infection but recovered during the milking or lactation period. This client clearly has a large number of animals that become infected during milking. He appears to treat a large number of animals which recover as well as having a large number of animals that appear chronic and may be Staph aureus. Next question: How do the cows do over the dry cow period? Do cows become infected during the dry period? Do cows that are dry cow treated recover? Scatter graph M-6 examines the dry cow over the dry cow period. It graphs what the cow's logSCC was at dry off versus what the cow was at freshening. We see in this graph this farm has a major problem with cows that dried off with no mastitis that subsequently became infected and freshened with mastitis. Animals in the upper right and lower right quadrants dried off with mastitis, were dry cow treated, and about 50% freshened with a low logSCC, i.e. were cured (recovered). The other 50% that dried off with a high SCC freshened with a high SCC. These cows are represented in the upper right quadrant, and are chronics. The final mastitis scatter graph (Scatter graph M-7) looks at the entire lactation and examines how many cows over the last 450 days experienced a mastitis event and what was the maximum logSCC the cow experienced. This graph clearly demonstrates two thirds of the entire herd are becoming infected with mastitis. It does not tell one the causative agent, point out the precise economic loss, or suggest the wisdom of a particular solution. It does demonstrate whether mastitis incidence is a problem in this herd.

We next examine the PRODUCTION scatter graphs which examine how the herd production is progressing. Scatter graph P-1 is graph which simply plots the current ME305 of each cow against her days in milk on test day. We can draw a line, for example, at 20,000 and visualize the herd over 20,000 versus below. One can visualize which lactation group is performing well in the herd versus milking at a less than optimum level. Are all the heifers or sophomore cows milking at what one expects or is one experiencing sophomore slump, etc. Scatter graph P-2 looks at fresh cow milk performance on cows at freshening over the last year. How are the fresh cows performing on their first test over the last year. If one intervened in the transition or close-up dry cow group, one should be able to monitor progress in this graph. ME305 projection prior to

the intervention should be lower than after the intervention. Scatter graph P-3 is a plot of the difference the cows milked on the last test versus what the computer expected the cow to milk. One should draw a line at "Zero" and examine how many cows are up versus how many cows are down on milk this month. This graph reveals several cows up in milk in early lactation together with a large number of cows that have dropped dramatically in production when compared with the previous month. Interestingly, this herd had stopped the use of BST injections in the last month due to a mastitis problem and at the urging of consultants. It does not appear to have been the proper decision. Nearly 100% of the cows after 60-70 days in milk are down severely in milk. A closer examination of the herd in the command mode revealed an 11.1 lbs. decline in milk production after the cows went off rBST. Scatter graph P-4 examines the present level of production and compares it with the cow's projected production when fresh. This herd is clearly above the diagonal line. One would normally expect most cows to fall on the diagonal line. The graph does not explain the reasons for this increase, however, it clearly demonstrates current ME305 to be above the first projected ME305. Possible reasons are left to the wisdom of the consultant. BST, improved nutrition in late lactation cows, and poor management in the transition groups may all be factors in herds with poor projected ME when fresh.

Scatter graph P-5 examines the herd for major crashes to individual cows during the lactation. One must allow for a certain amount of "noise" and then start to determine whether animals in the herd are crashing. If one identifies a problem, the goal would be to identify the cows which are crashing, establish probable cause and attempt intervention which will prevent the cause from occurring in the future. Scatter graphs P-6 and P-7 examine the percent butterfat in the herd on individual animals on test day and at freshening, respectively. The percentage of butterfat in the milk is a sensitive indicator of potential acidosis or ketosis in the herd. I draw a line at a butterfat percent of 5.0 and 3.0. I do not believe many Holsteins should exhibit a butterfat percent above or below 5.0 and 3.0%. If one see numerous animals outside the parameters, it strongly suggests a nutritional disease occurring. Whether one is specifically involved in the nutrition formulation or not, one can make the client aware and propose early intervention to enhance the client's profitability. One can see numerous cases of probable rumen acidosis in this herd. It is consistent with the lack of a transition ration on the dairy and lack of effective fiber in the milk cow ration.

We finally jump over to the REPRODUCTION scatter graphs and evaluate the breeding program in the dairy. Scatter graph R-1 examines the days in milk for open and unconfirmed cows. It does not make sense to waste time looking at long calving intervals of pregnant cows. There is nothing to do about a cow milking 500 days that is confirmed pregnant 60 days ago. If we are to intervene in a positive way on the dairy, we want to examine cows that are open or not confirmed pregnant. We can see that this dairy has some significant problems with cows open and extended days in milk. The cows, with one exception, are at least bred. The exception shows up as a "F" for fresh cow. This one cow is 318 DIM, and is still not bred. One can use the mouse to click on this "F" fresh cow and identify the cow. If the client does not start breeding for 120 days it is immediately obvious. Scatter graph R-2 is an ongoing Q-sum graph of breeding efficiency.

Q-sum graphs record the conception rate by moving one space to the right when a cow is confirmed pregnant on that breeding, and move one space to the left when the cow is confirmed open or is rebred. One can quickly identify when breeding is going poorly and can identify the date when it started to occur. Scatter graph R-3 is a Q-sum graph for measuring heat detection as opposed to conception rate. It works in a similar fashion as the conception rate Q-sum graph. Scatter graph R-4 examines the entire herd as to the days in milk when the cow or heifer was first bred over the last year. One can quickly determine the clients apparent voluntary waiting period by drawing a line at the level when most numbers start appearing on the graph. In this case, the client's apparent voluntary waiting period is 40-45 days, with an occasional cow bred earlier. A second line drawn exactly 21 days or 1 cycle later will reveal an apparent heat detection rate. In this case, one can see a large number of animals that do not get bred over the initial cycle. If all the animals not getting bred were heifers or sophomores it suggests a management problem in that group which one can intervene and solve. Finally, Scatter graph R-5 examines the age of heifers at first breeding over the last year. One can see at what age the client will breed heifers, when the majority of heifers are bred, and any old heifers that have not yet been bred. One can see in this graph: 1) This client will breed animals at 13 months of age. 2) This client breeds the majority of animals from 15-18 months. 3) This client has a number of heifers that are not bred and over 18 months. This client may not have all heifers identified well. It is doubtful this client has a heifer two years and eight months old and still not bred. One can click on these animals for identification or list the heifers out so that DHIA can clean up the clients records.

SUMMARY:

This ends the scatter graph demonstration of how we use dairy computer records in our practice with our dairy clients. We believe that a cooperative effort between the dairyman, DHIA, and the consulting veterinarian whereby data entry is done once and then shared electronically, where access to the information is on farm and immediate, where accessing and monitoring the information is quick and idiot proof, where the information provided is current and real time data, and where when needed, the information can be massaged in a flexible and meaningful manner will make our dairyman the better, the efficient one, and increase the probability that in today's competitive market, we will be the ones to profit and survive.

Command : TANK
Expanded : ECON BNAME PSCC\SC
[redacted] ——— MINNESOTA DHIA ——— 4/12/95

Analyzing 36 cows on Test Date: 3/21/95

Bulk Tank Today		Current Settings			
Total Milk	2413	Milk price	12.00		
Average Milk	67	Fat Base	3.5	Diff	0.07
Bulk PctF	3.93	Ptn Base	3.2	Diff	0.12
Bulk PctP	3.24	SCC Premiums enabled			

Without any cows removed :
Bulk Tank SCC 571
Pay Price 12.10
Daily Income 291.95

						Bulk Tank after removing only this cow from tank			Bulk Tank after removing cow and all cows above it		
BNAME	PSCC	MILK	Value	SCC	%Tank	Price	@SCC	Income	Price	@SCC	Income
CANNY	890	92	11.13	4990	33.3	12.58	396	291.98	12.58	396	291.98
BETSY	4740	85	10.27	1570	9.7	12.13	535	282.43	12.63	351	282.30
VALRIE	230	100	12.13	1330	9.6	12.07	538	279.09	12.60	306	269.11
JEAN	290	39	4.72	2130	6.0	12.08	546	286.78	12.83	272	269.05
ROSE	2660	55	6.64	1240	4.9	12.08	556	284.85	12.82	246	261.70
TOPPER	2240	43	5.19	1440	4.5	12.09	555	286.46	12.82	220	256.19
DEBBIE	310	43	5.19	1290	4.0	12.08	558	286.30	13.03	196	254.96
WENDY	8620	81	9.75	660	3.9	12.09	568	282.03	13.05	176	244.67
RENA	570	81	9.96	490	2.9	12.07	574	281.38	13.01	162	233.38
GINA	140	101	12.63	360	2.6	12.12	580	280.21	13.04	150	220.72
TILLIE	0	74	9.09	490	2.6	12.12	574	283.44	13.07	135	211.68
CLARA	340	61	7.52	470	2.1	12.07	574	283.79	13.03	122	203.09
ROSEY	600	56	6.74	500	2.0	12.08	573	284.84	13.01	108	195.37
REBA	350	65	8.13	310	1.5	12.09	578	283.92	13.27	99	190.68
SANDY	380	57	7.28	270	1.1	12.08	578	284.72	13.27	92	183.15

Value - Dollar value of milk produced, adjusted for SCC Premiums
SCC - Test day raw somatic cell count, in thousands.
%Tank - Percent of bulk tank SCC contributed by this cow.

TABLE 1

Dairy Comp 305 ——— Valley Agricultural Software ——— Page 1
Command : TANK
Expanded : ECON BNAME PSCC\SC
[redacted] ——— MINNESOTA DHIA ——— 3/ 2/95

Analyzing 77 cows on Test Date 2/16/95

Bulk Tank Today		Current Settings		
Total Milk	5873	Milk price	12.00	
Average Milk	76	Fat Base	3.5	Diff 0.07
Bulk PctF	3.46	Ptn Base	3.2	Diff 0.12
Bulk PctP	3.17	SCC Premiums enabled		

Without any cows removed : Bulk Tank SCC 578
Pay Price 11.69
Daily Income 686.32

BNAME	PSCC	MILK	Value	SCC	%Tank	Bulk Tank after removing only this cow from tank: Price	@SCC	Income	Bulk Tank after removing cow and all cows above it: Price	@SCC	Income
266	0	34	3.97	7970	8.0	11.68	535	681.94	11.68	535	681.94
44	1360	96	11.21	2370	6.7	11.69	549	675.50	11.67	505	670.44
851	2060	83	9.69	1960	4.8	11.69	559	677.02	11.94	483	675.97
104	1430	61	7.13	2650	4.8	11.67	557	678.38	11.92	460	667.23
860	2340	70	8.17	2300	4.7	11.69	558	678.54	11.92	436	658.89
990	2990	103	12.02	1560	4.7	11.69	561	674.28	11.91	415	645.97
244	2580	74	8.62	1920	4.2	11.69	561	677.67	12.16	394	650.54
249	3480	76	8.86	1800	4.0	11.69	562	677.84	12.16	374	641.30
888	710	85	9.91	1490	3.7	11.69	565	676.39	12.17	356	631.59
36	70	63	7.35	1810	3.4	11.67	565	678.26	12.15	338	622.95
127	110	63	7.34	1790	3.3	11.69	565	679.36	12.16	320	615.65
119	40	110	12.82	870	2.8	11.71	573	674.56	12.17	308	603.22
14	740	105	12.26	810	2.5	11.71	574	675.14	12.44	297	603.15
26	530	103	12.04	810	2.5	11.71	574	675.38	12.44	286	590.67
116	20	43	5.03	1860	2.4	11.69	569	681.29	12.44	271	584.99

Value - Dollar value of milk produced, adjusted for SCC Premiums
SCC - Test day raw somatic cell count, in thousands.
%Tank - Percent of bulk tank SCC contributed by this cow.

TABLE 2

Analyzing 249 cows on Test Date 1/20/95

Bulk Tank Today		Current Settings		
Total Milk	15833	Milk price	12.00	
Average Milk	63	Fat Base	3.5	Diff 0.07
Bulk PctF	3.59	Ptn Base	3.2	Diff 0.12
Bulk PctP	3.12	SCC Premiums enabled		

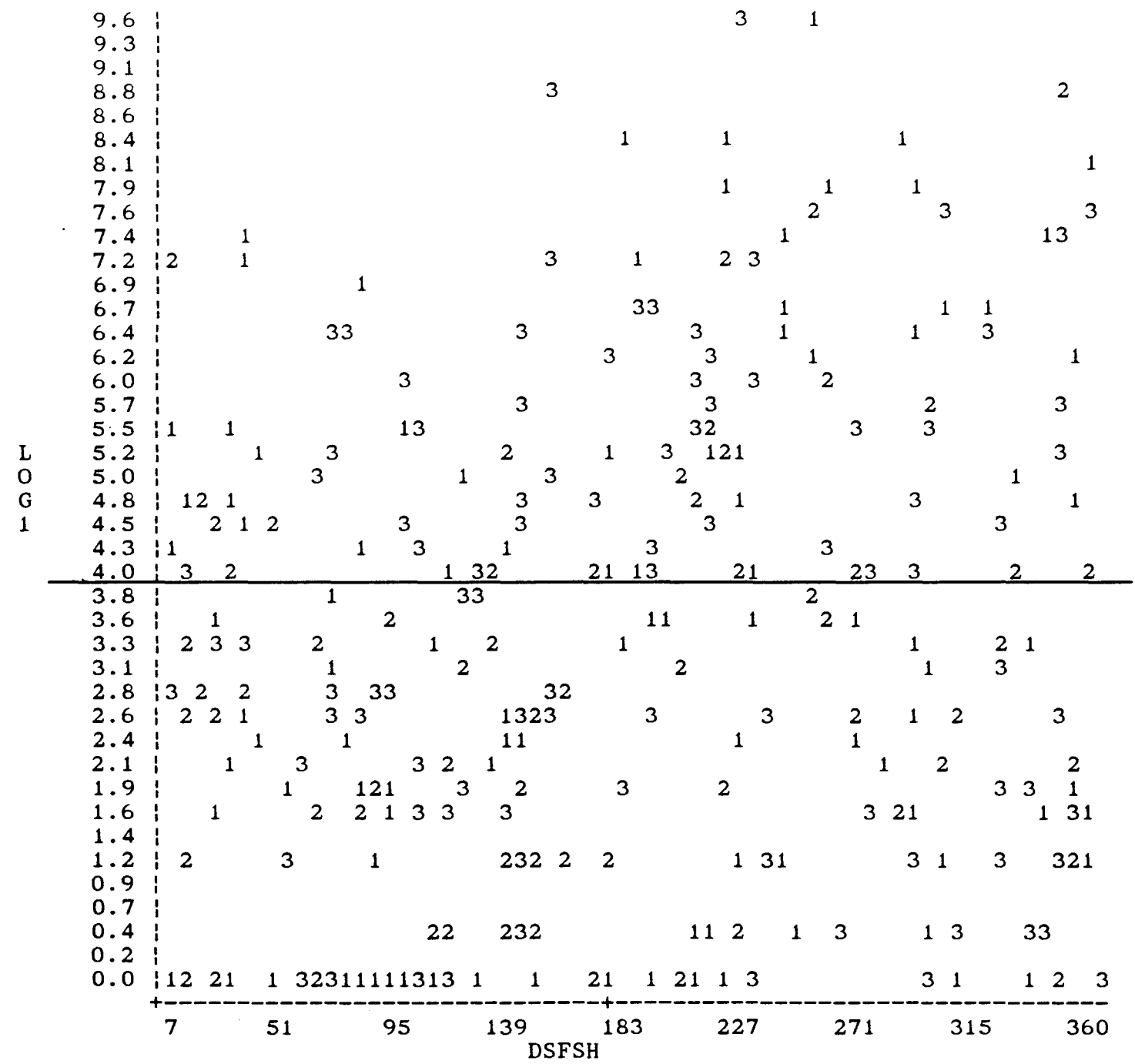
Without any cows removed : Bulk Tank SCC 203
Pay Price 12.47
Daily Income 1973.90

BNAME	PSCC	MILK	Value	SCC	%Tank	Bulk Tank after removing only this cow from tank: Price	@SCC	Income	Bulk Tank after removing cow and all cows above it: Price	@SCC	Income
302-0	50	76	8.90	5220	12.3	12.71	178	2001.93	12.71	178	2001.93
228-0	590	71	8.31	2270	5.0	12.71	193	2002.56	12.71	169	1992.91
252-0	280	66	7.73	2320	4.8	12.71	194	2003.20	12.71	160	1984.52
343-0	1270	80	9.36	1080	2.7	12.72	198	2003.31	12.71	155	1974.36
395-0	840	70	8.19	1190	2.6	12.71	198	2002.69	12.71	151	1965.46
425-0	710	73	8.54	990	2.2	12.72	199	2004.20	12.71	147	1956.19
153-G	3190	49	5.74	1420	2.2	12.71	199	2005.36	12.71	142	1949.96
208-G	500	46	5.38	1430	2.0	12.71	199	2005.74	12.71	139	1944.12
243-G	20	61	7.14	990	1.9	12.47	200	1966.30	12.71	135	1936.37
377-0	1170	75	8.78	800	1.9	12.46	200	1962.66	12.71	132	1927.90
215-G	1810	51	5.97	1140	1.8	12.45	200	1964.54	12.71	129	1920.36
197-0	820	31	3.63	1830	1.8	12.72	199	2009.54	12.71	125	1916.42
247-G	0	87	10.18	650	1.8	12.47	200	1963.05	12.71	122	1905.37
98-G	20	72	8.43	720	1.6	12.47	200	1964.92	12.71	119	1896.22
150-G	50	44	5.15	1170	1.6	12.46	200	1966.52	12.71	116	1891.67

Value - Dollar value of milk produced, adjusted for SCC Premiums
SCC - Test day raw somatic cell count, in thousands.
%Tank - Percent of bulk tank SCC contributed by this cow.

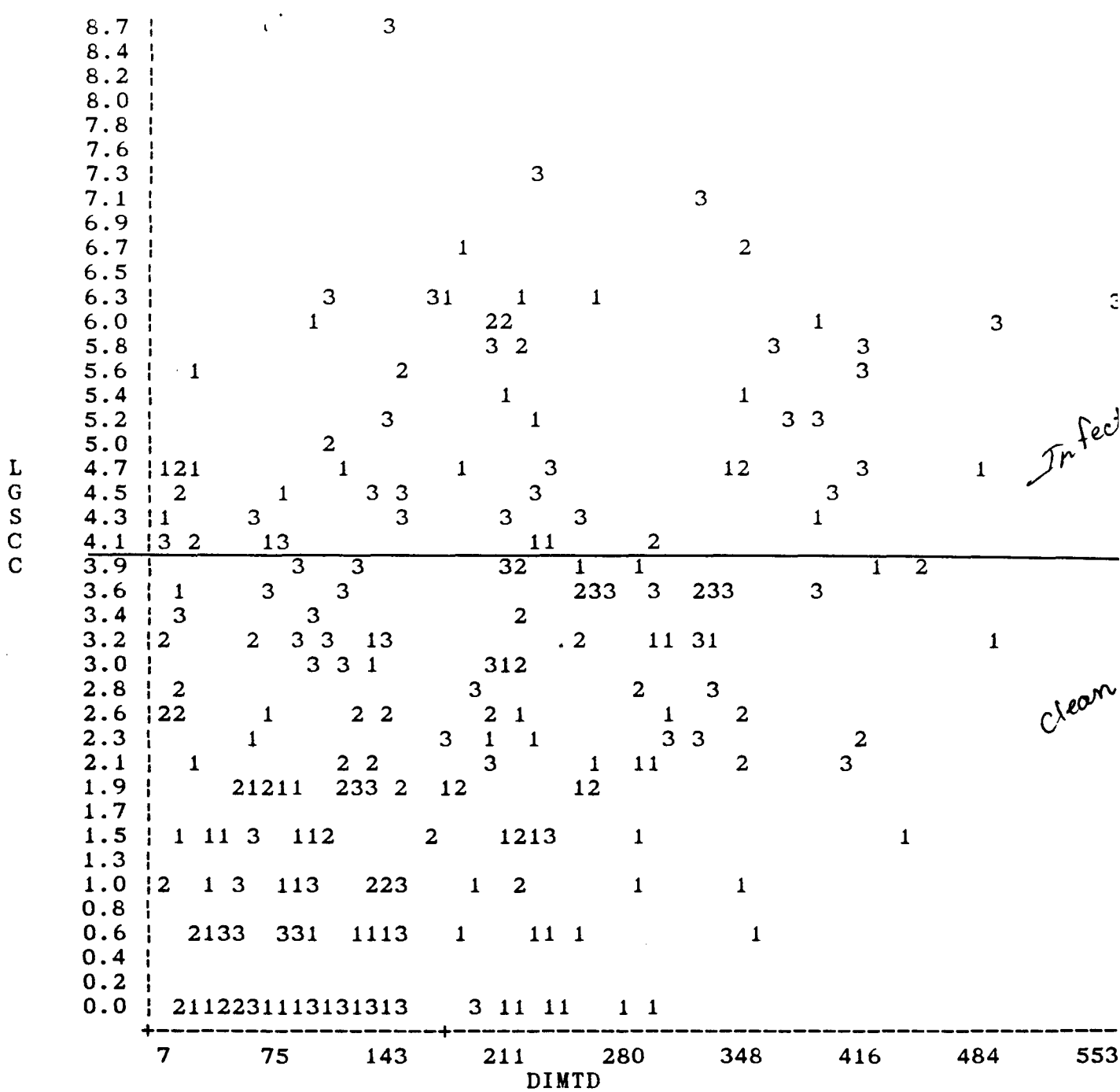
TABLE 3

Linear SCC at First Testday after Fresh



SCATTER GRAPH 1

Current Log SCC (Label=Lact 1,2,,3+)

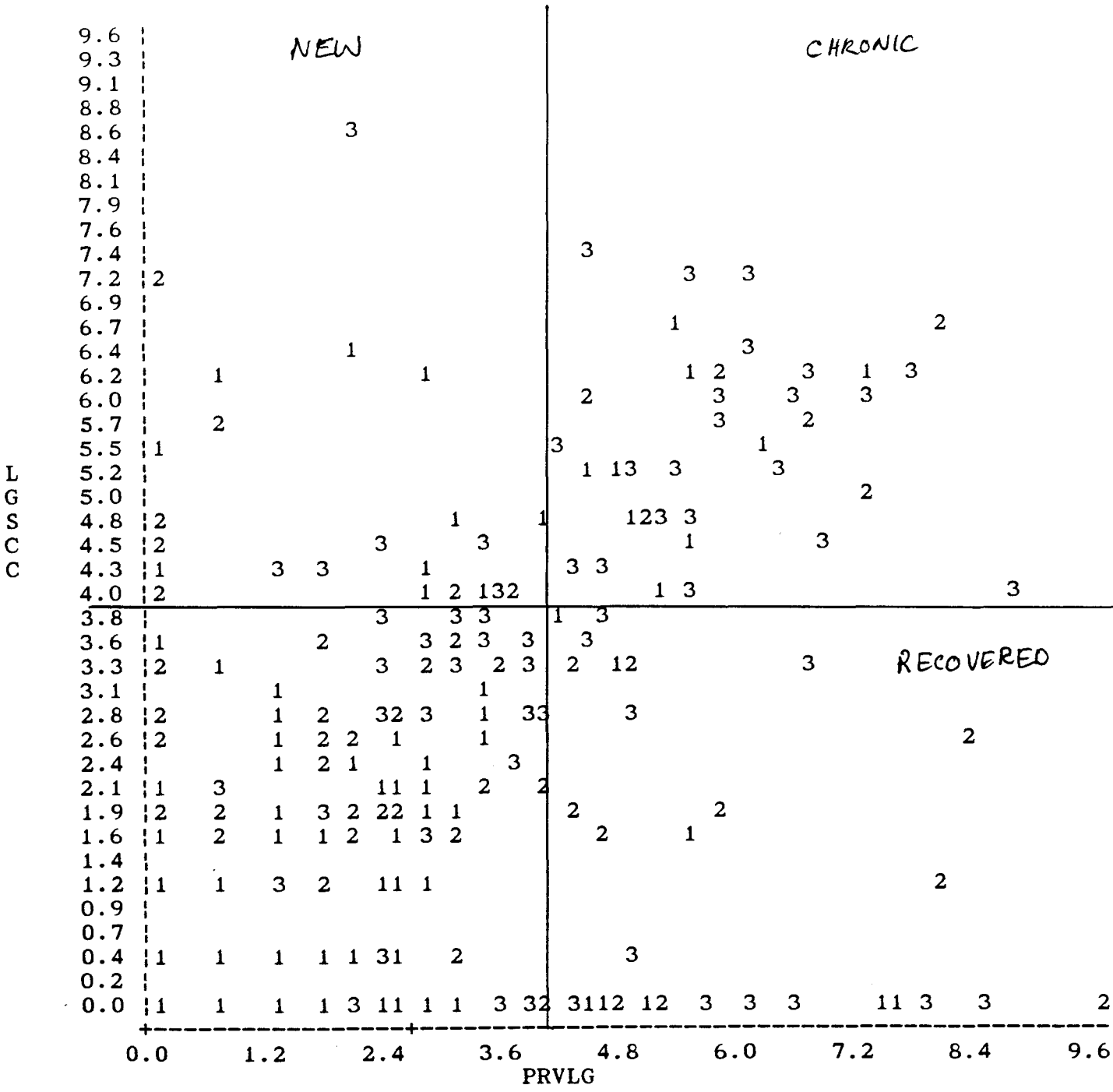


SCATTERGRAPH M-1

Command : MASTG2

Current LogSCC vs Last Month's LogSCC

V Dairy——— MINNESOTA DHIA——— 1/26/95

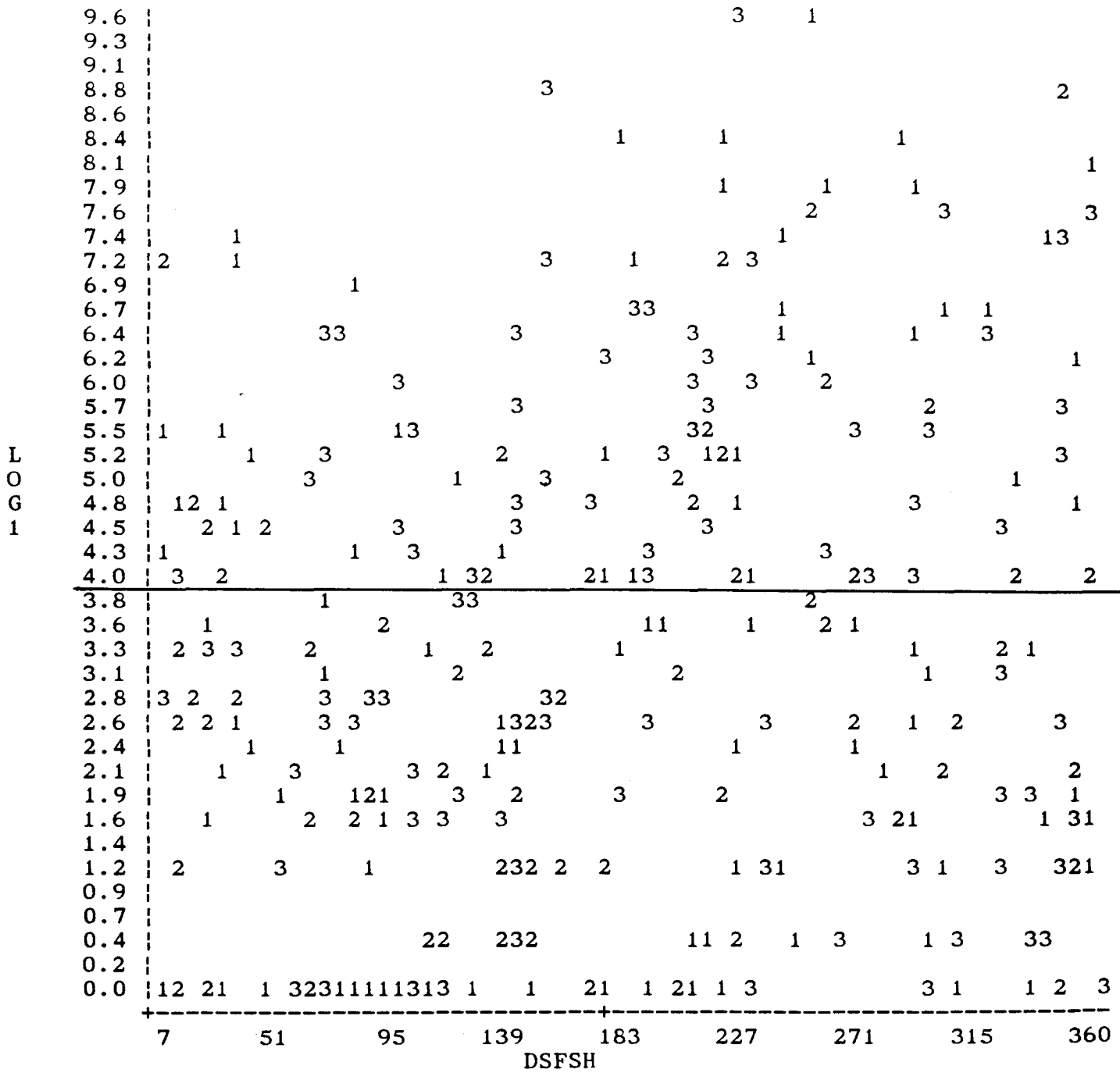


SCATTERGRAPH M-2

Command : MASTG3

Linear SCC at First Testday after Fresh

V Dairy ——— MINNESOTA DHIA ——— 1/26/95

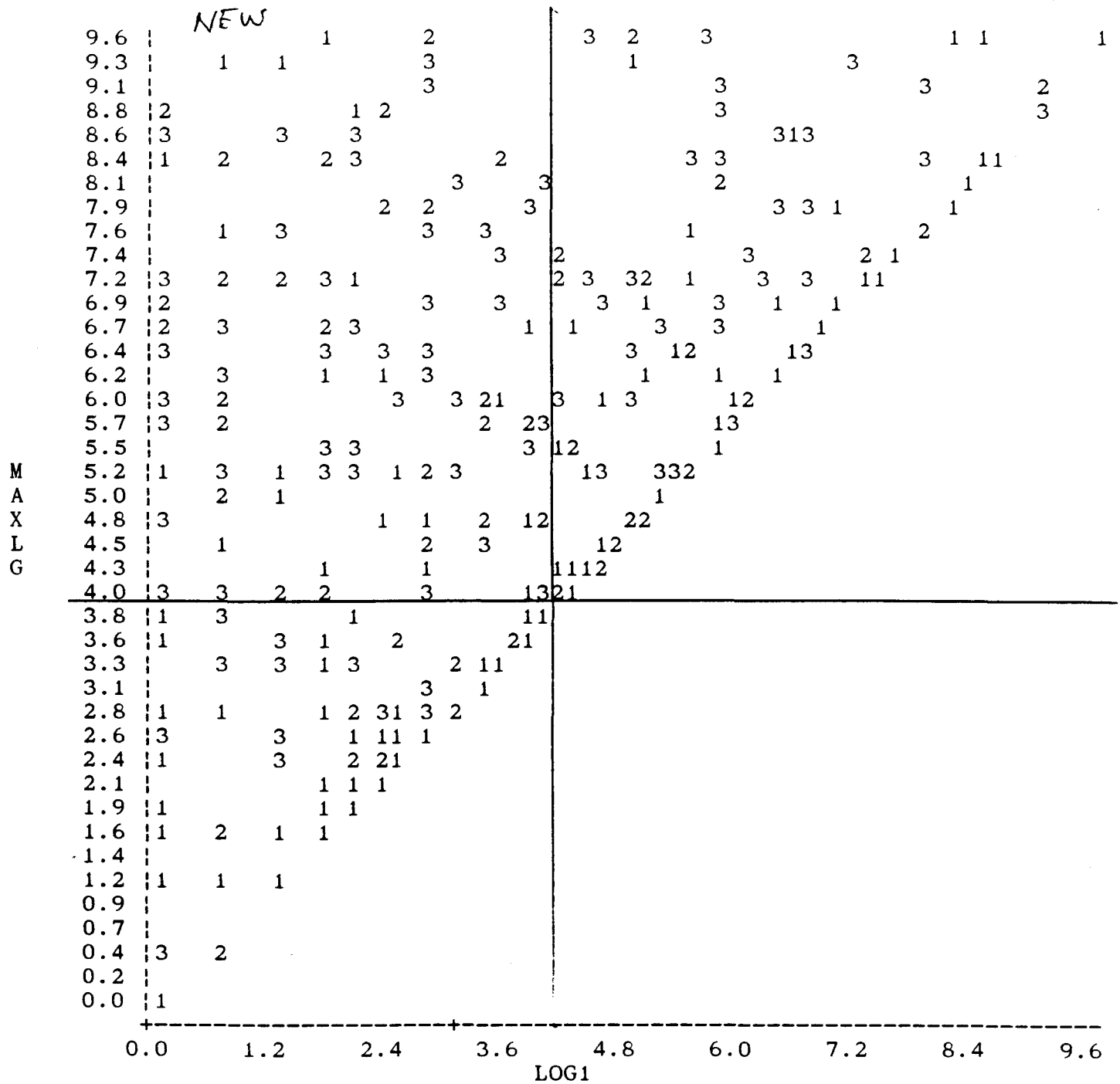


SCATTERGRAPH M-3

Command : MASTG9

Max LogSCC vs LogSCC @Freshening

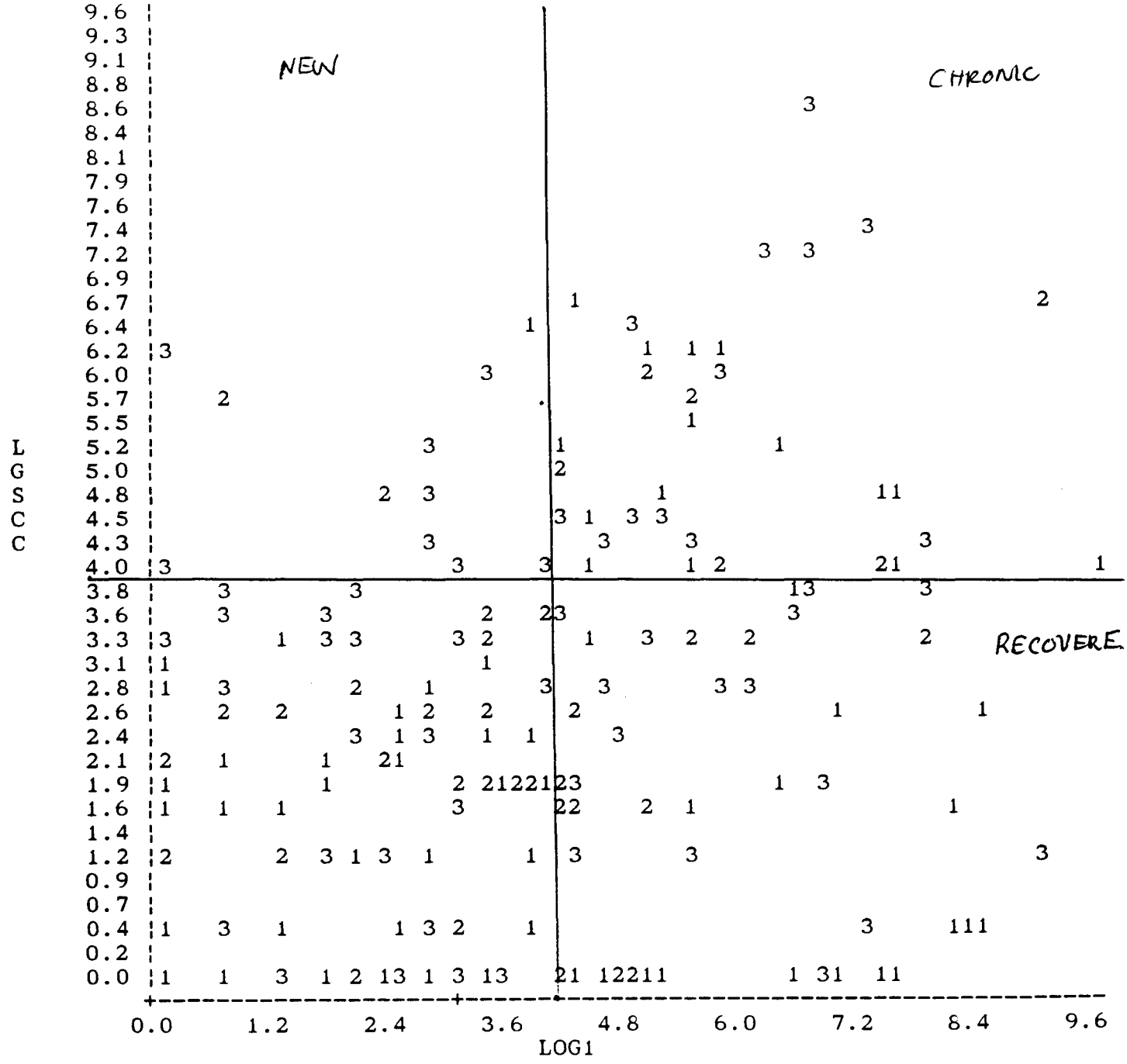
V Dairy ——— MINNESOTA DHIA ——— 1/26/95 -



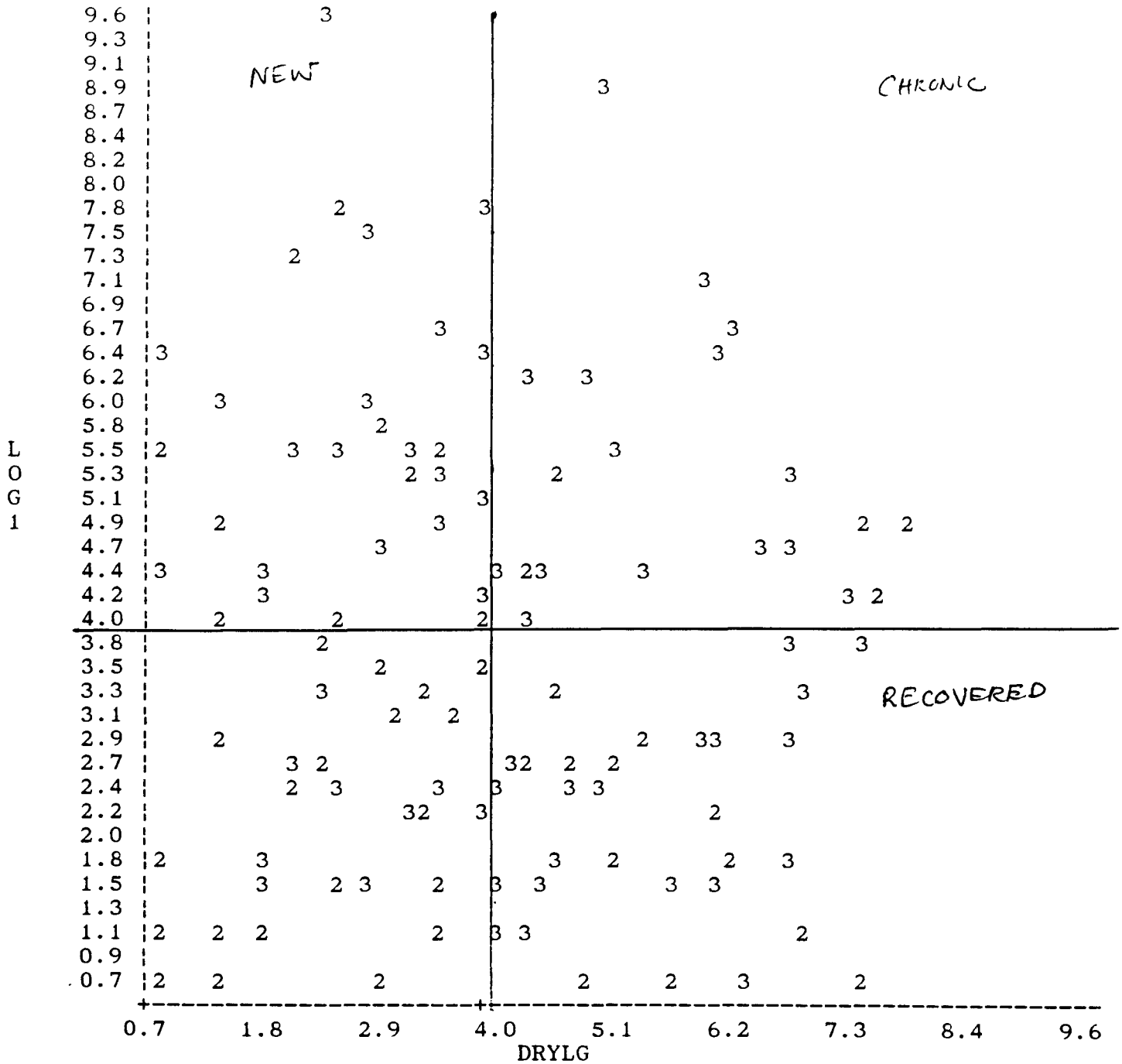
SCATTERGRAPH M-4

Current LogSCC vs LogSCC @Freshening

V Dairy ——— MINNESOTA DHIA ——— 1/26/95

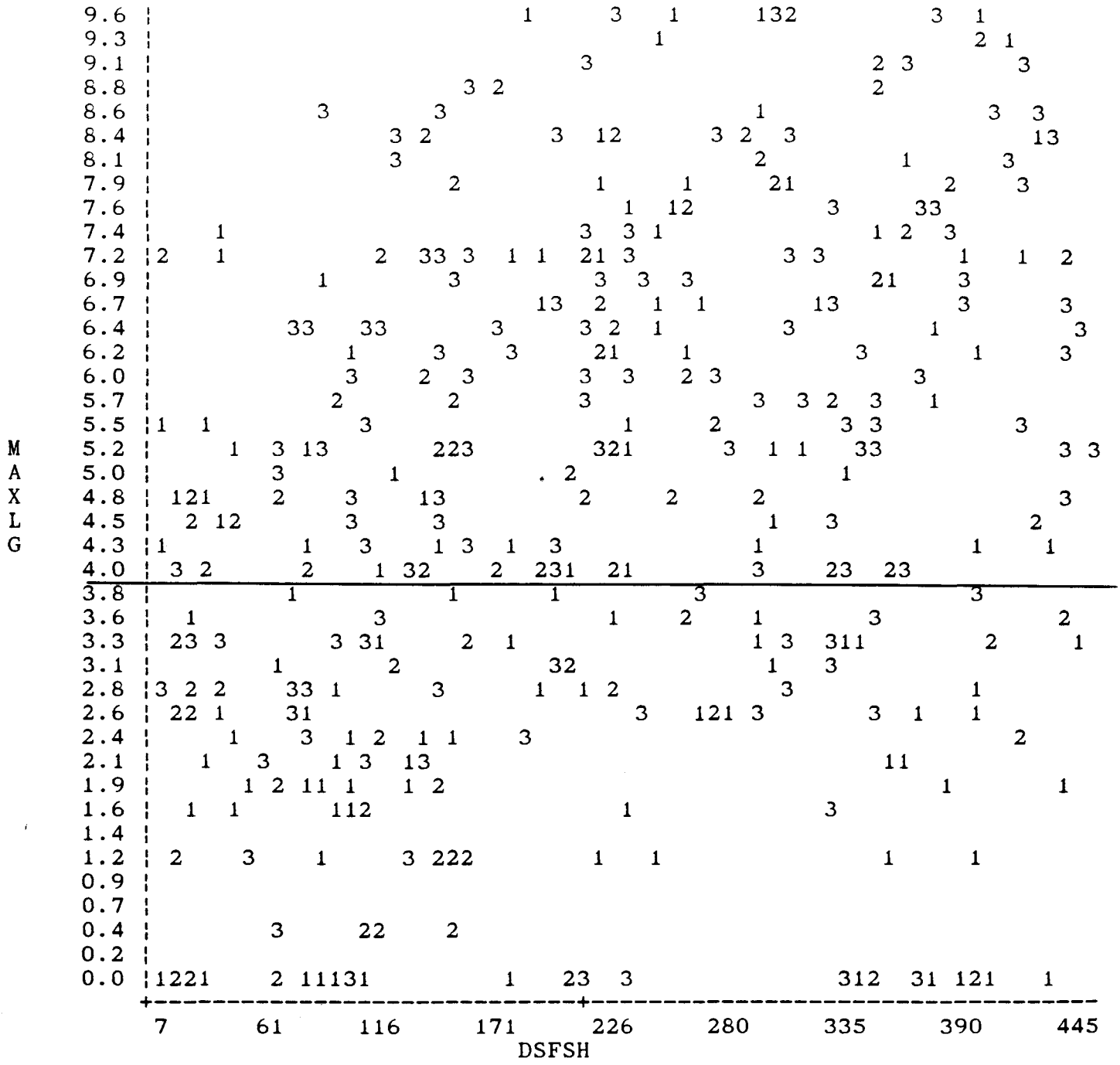


SCATTERGRAPH M-5

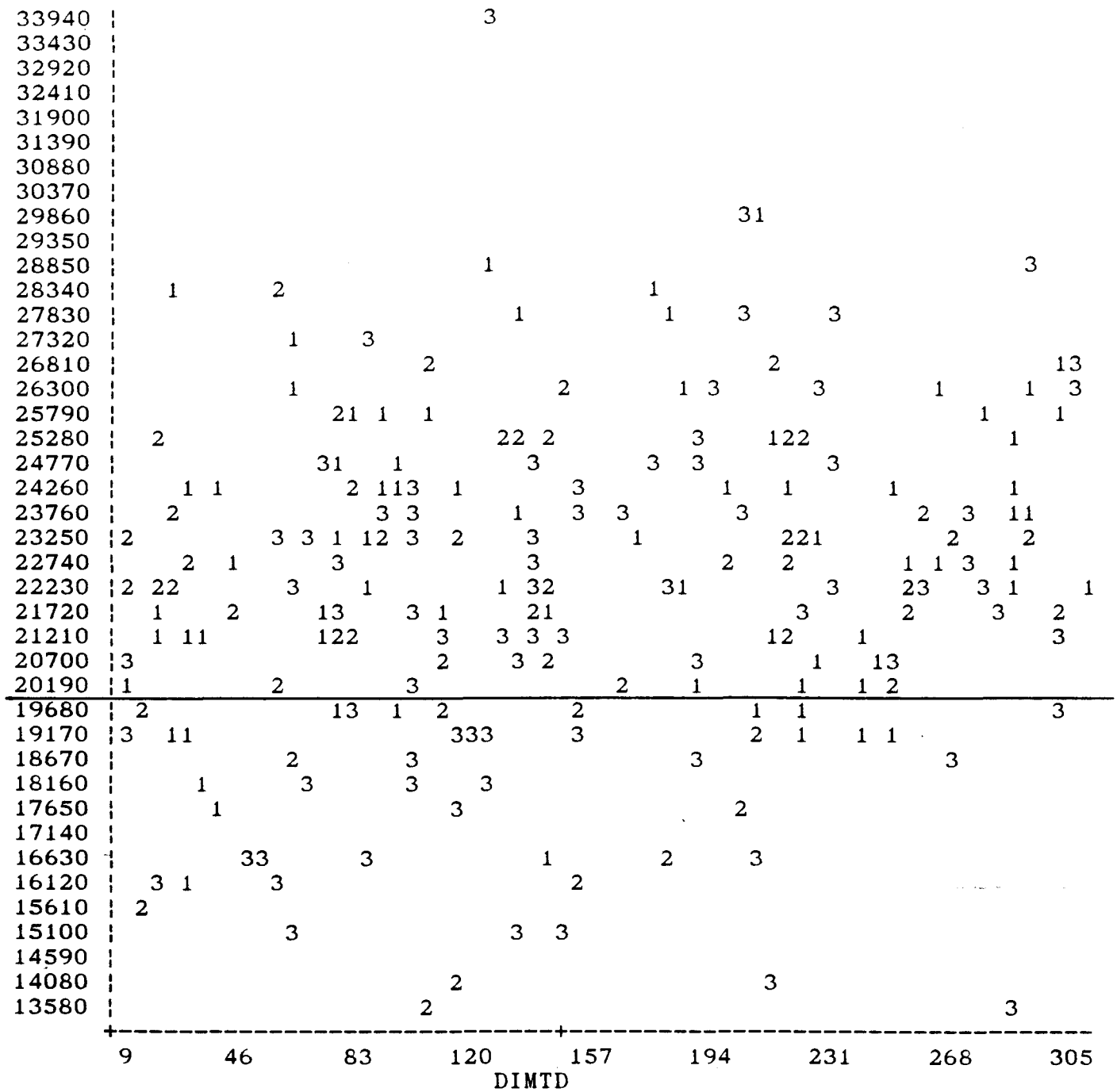


SCATTERGRAPH M-6

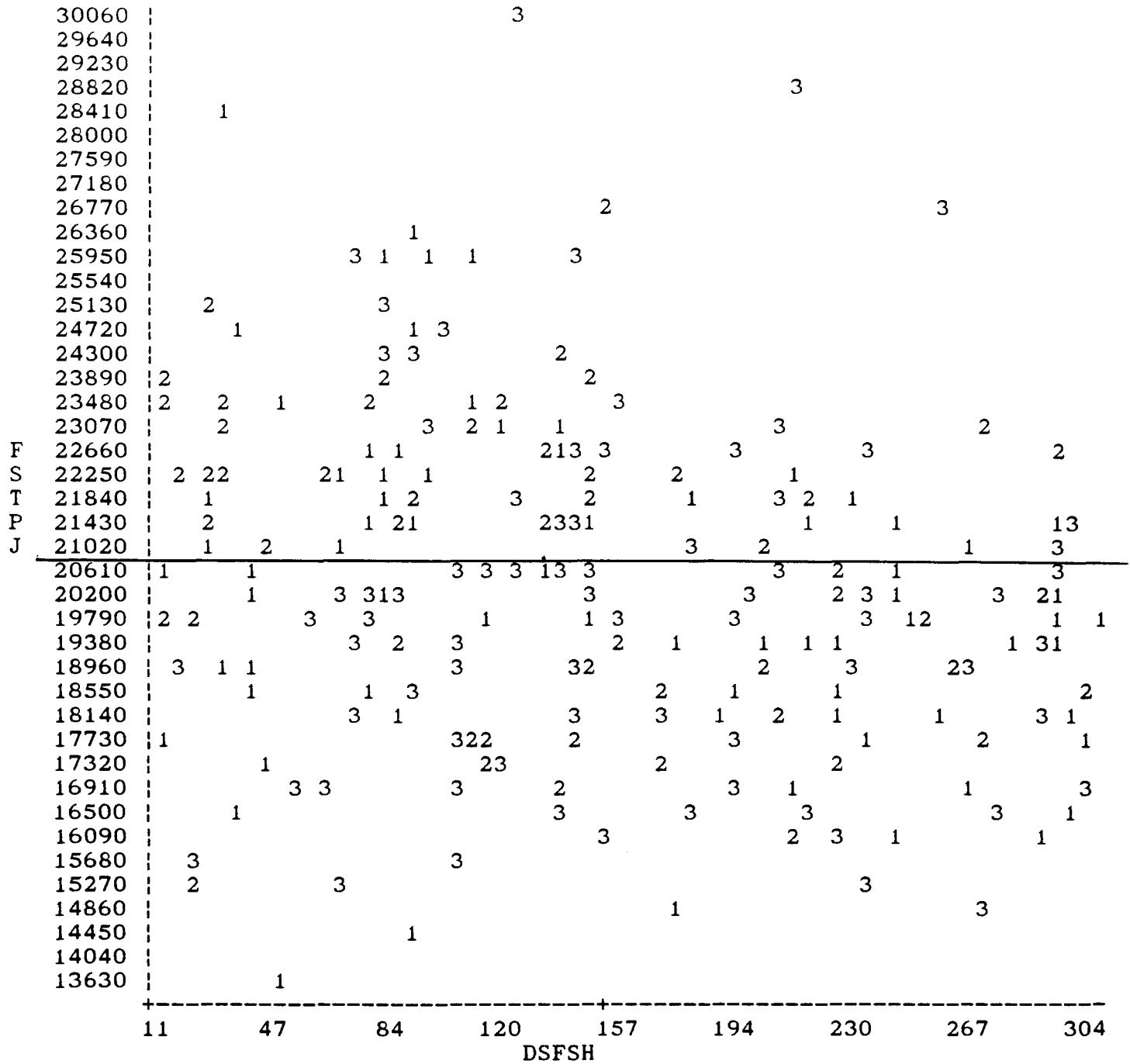
Highest LgSCC-Cows Fresh Last 450 Days



SCATTERGRAPH M-7

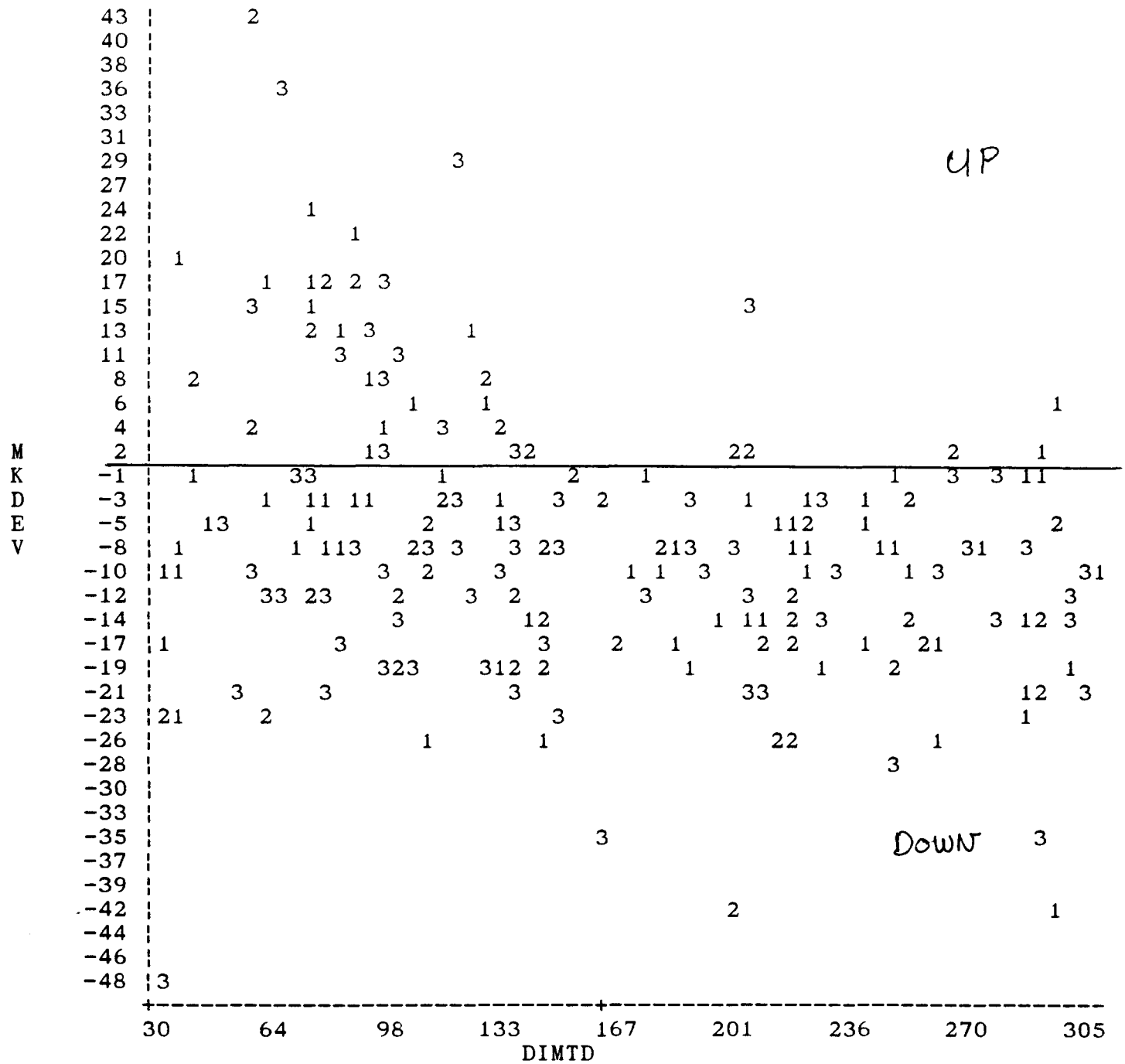


SCATTERGRAPH P-1



SCATTERGRAPH A-2

Command : PRODG3
Diff Actual-Expected Milk Curr TestDate T
V Dairy——— MINNESOTA DHIA——— 1/26/95 -

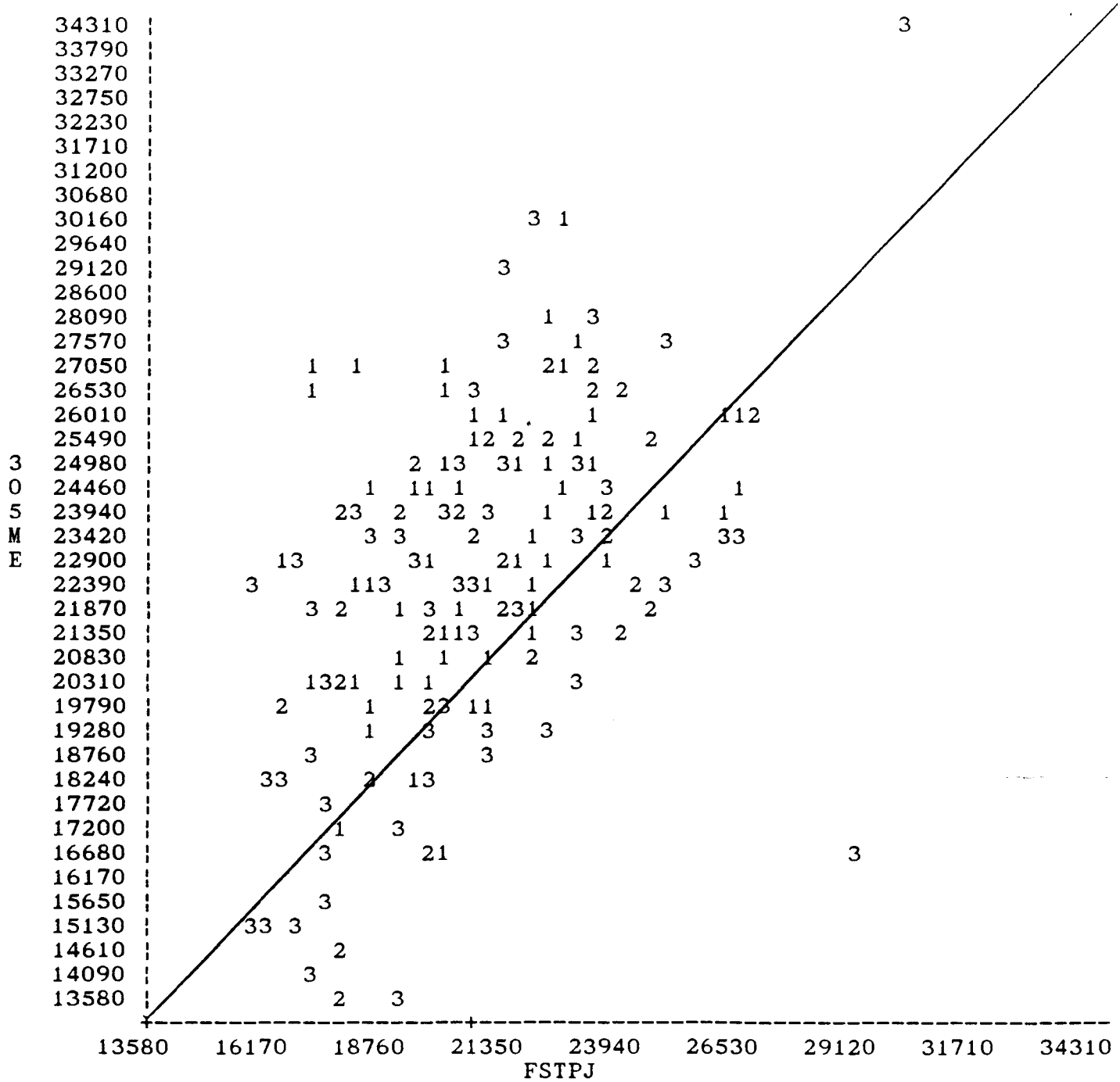


SCATTERGRAPH P-3

Command : PRODG5

Current ME Proj vs Proj when Fresh

V Dairy ——— MINNESOTA DHIA ——— 1/26/95

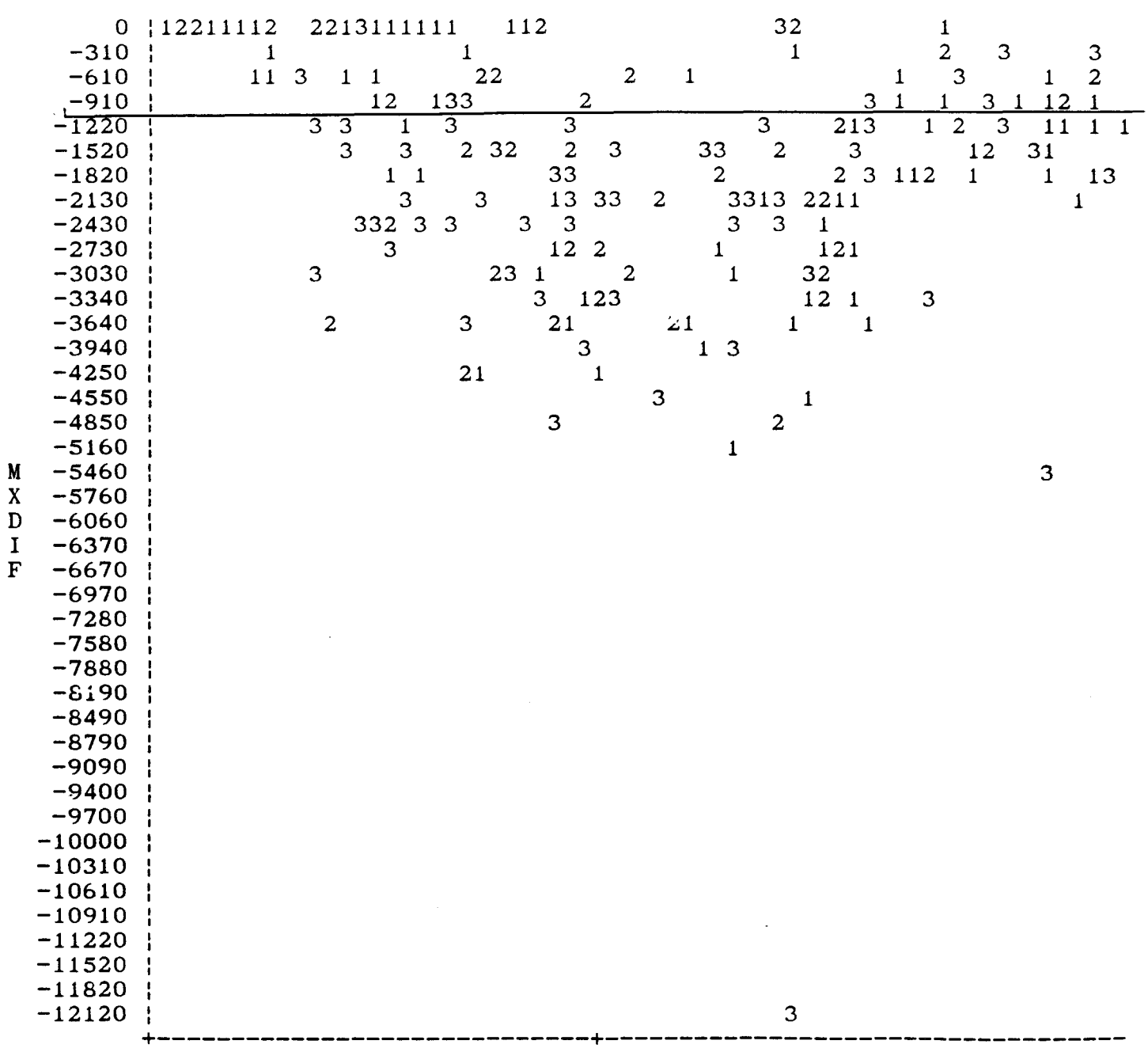


SCATTERGRAPH P-4

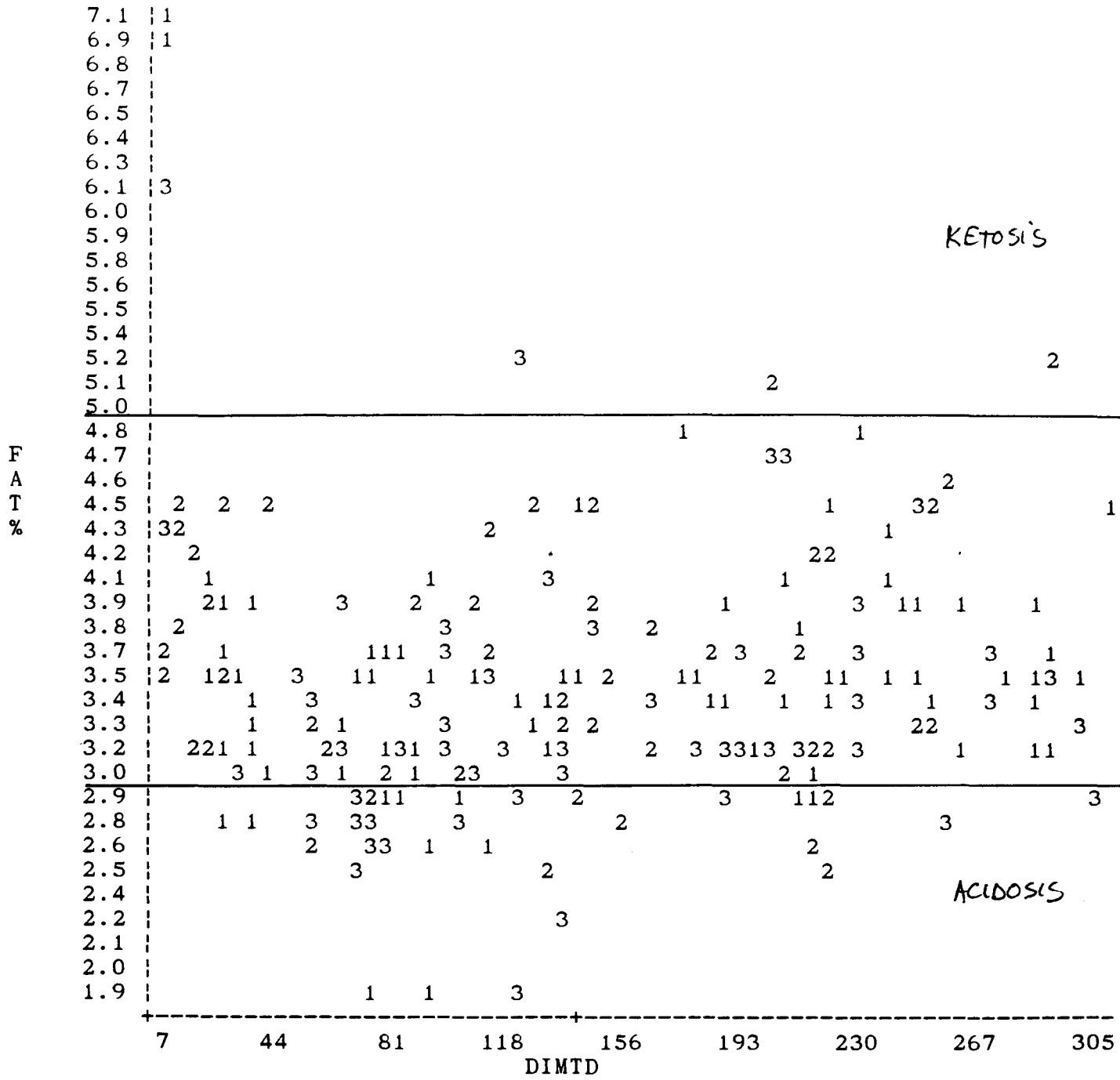
Command : PRODG8

Current ME Proj - Highest of Lactation P

V Dairy ——— MINNESOTA DHIA ——— 1/26/95 -

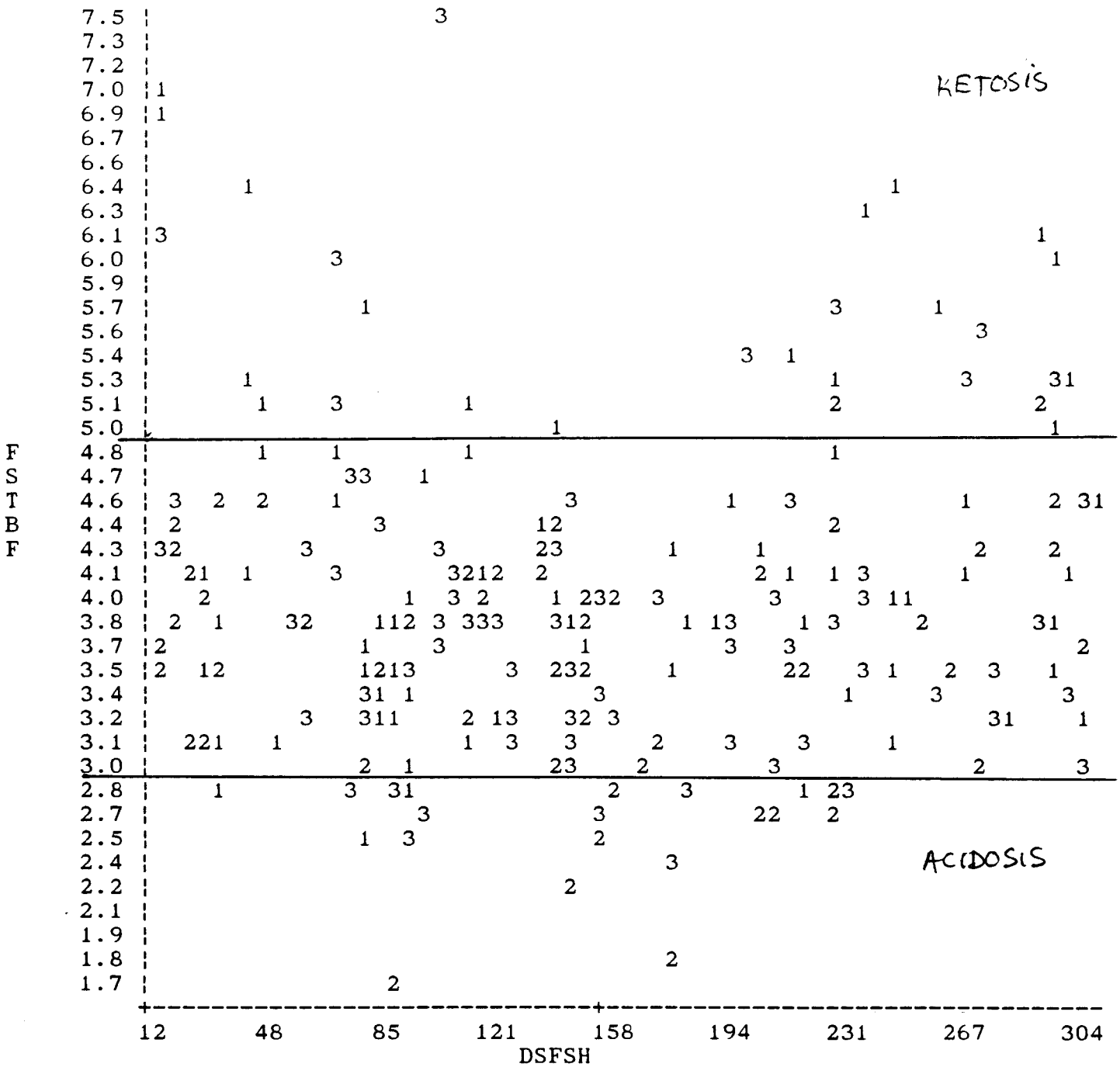


SCATTERGRAPH P-5



SCATTERGRAPH P-6

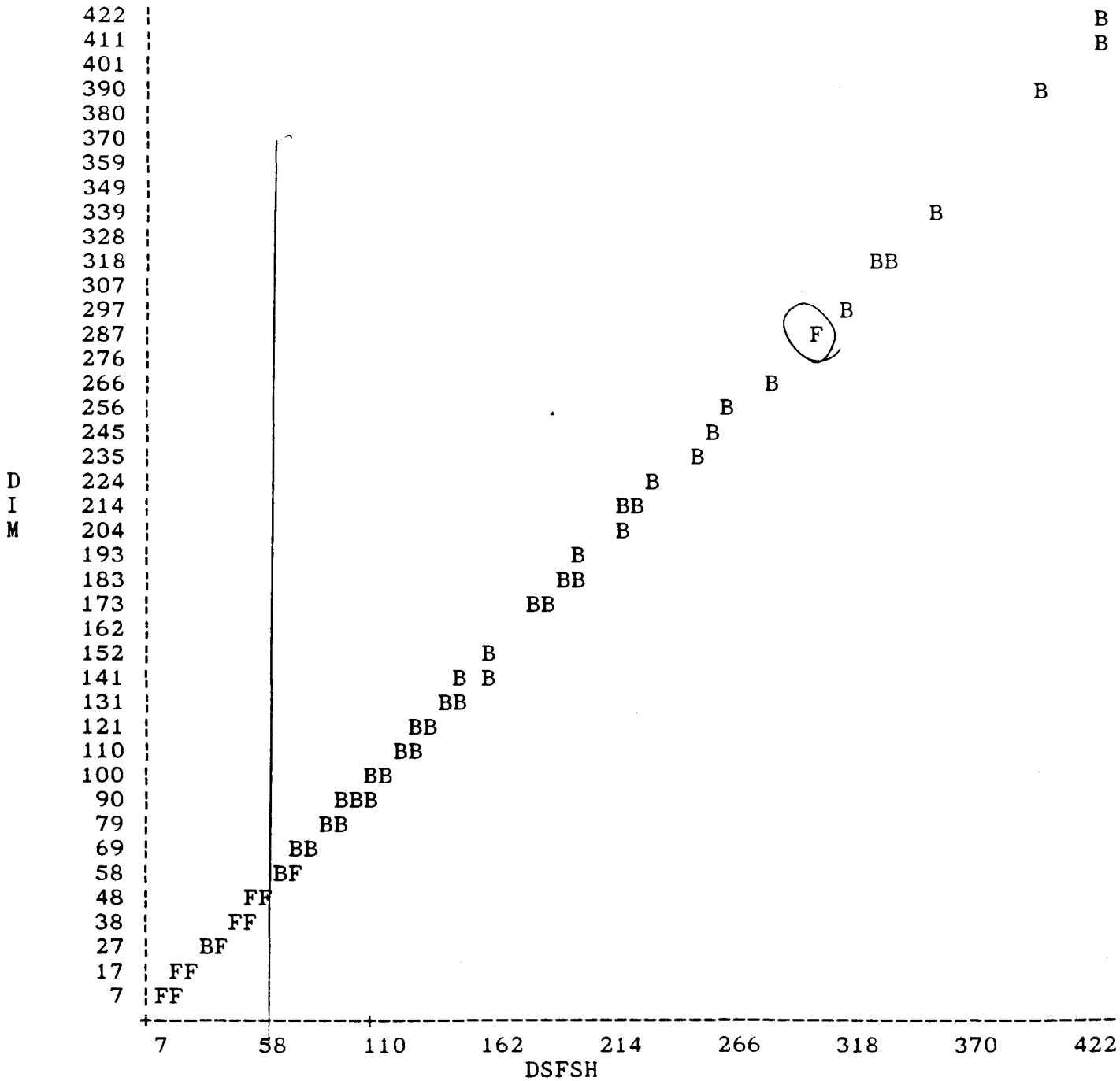
Fat% at First Testday After Fresh



SCATTERGRAPH P-7

Open and UnConfrmed Cows

V Dairy ——— MINNESOTA DHIA ——— 1/26/95



SCATTERGRAPH R-1

Command : BRDQ ADULT
Expanded : BREDSUM\Q FOR LACT>0
FEXP — MINNESOTA DHIA — 2/14/95

Q-Sum Graph from 1/10/94 through 1/24/95
Breeding Efficiency : Abort, Preg, Open, Repeat, Estim, Conc, Undet

Cow	Date	Sire	#	T	Graph
BESS	8/30	71H931	1	0	O
CHERRY	9/ 6	140H218	1	0	O
KITKAT	9/ 7	7H3878	4	0	U
BESS	9/20	11H3073	2	0	U
412	9/25	11H3073	5	0	U
CHERRY	9/26	11H3073	2	0	U
264	10/29	11H3073	1	0	O
EDDIE	10/30	7H3392	1	0	O
NOEL	10/31	7H3920	1	0	P
277	11/ 2	11H3073	1	0	P
317	11/ 3	7H3392	1	0	O
360	11/ 5	9H1833	1	0	O
425	11/ 6	21H4036	1	0	P
344	11/ 8	71H931	1	0	P
RUBY	11/ 9	122H2903	1	0	P
420	11/ 9	21H1969	1	0	P
365	11/10	71H843	1	0	P
374	11/11	11H3073	1	0	P
DARCIE	11/12	23H453	1	0	P
408	11/14	122H2903	1	0	P
404	11/14	11H3073	1	0	P
SADIES	11/21	21H4036	1	0	P
394	11/21	14H1471	1	0	O
FLORA	11/24	122H2903	1	0	P
373	11/25	14H2373	1	0	U
360	11/25	9H1833	2	0	P
387	11/26	11H3073	1	0	O
317	11/26	14H1610	2	0	P
401	11/27	11H3243	1	0	U
328	11/27	23H453	1	0	P
403	12/ 1	11H3073	1	0	P
337	12/ 1	71H931	1	0	O
427	12/ 2	14H1332	1	0	P
EDDIE	12/ 4	14H1332	2	0	O
ADELE	12/ 6	71H931	1	0	U
257	12/ 8	122H2903	1	0	P
SLOBER	12/17	170H4	1	0	P
RAMBO	12/20	23H453	1	0	O
319	12/20	71H931	1	0	P
375	12/25	122H2903	1	0	P
316	12/27	11H3073	1	0	O
264	1/ 2	11H3073	2	0	U
EDDIE	1/ 8	73H1490	3	0	O
RAMBO	1/ 9	7H4034	2	0	O
316	1/16	14H1332	2	0	U
394	1/17	54H122	2	0	U
JILL	1/19	170H4	1	0	U

Efficiency = 61

SCATTERGRAPH R-2

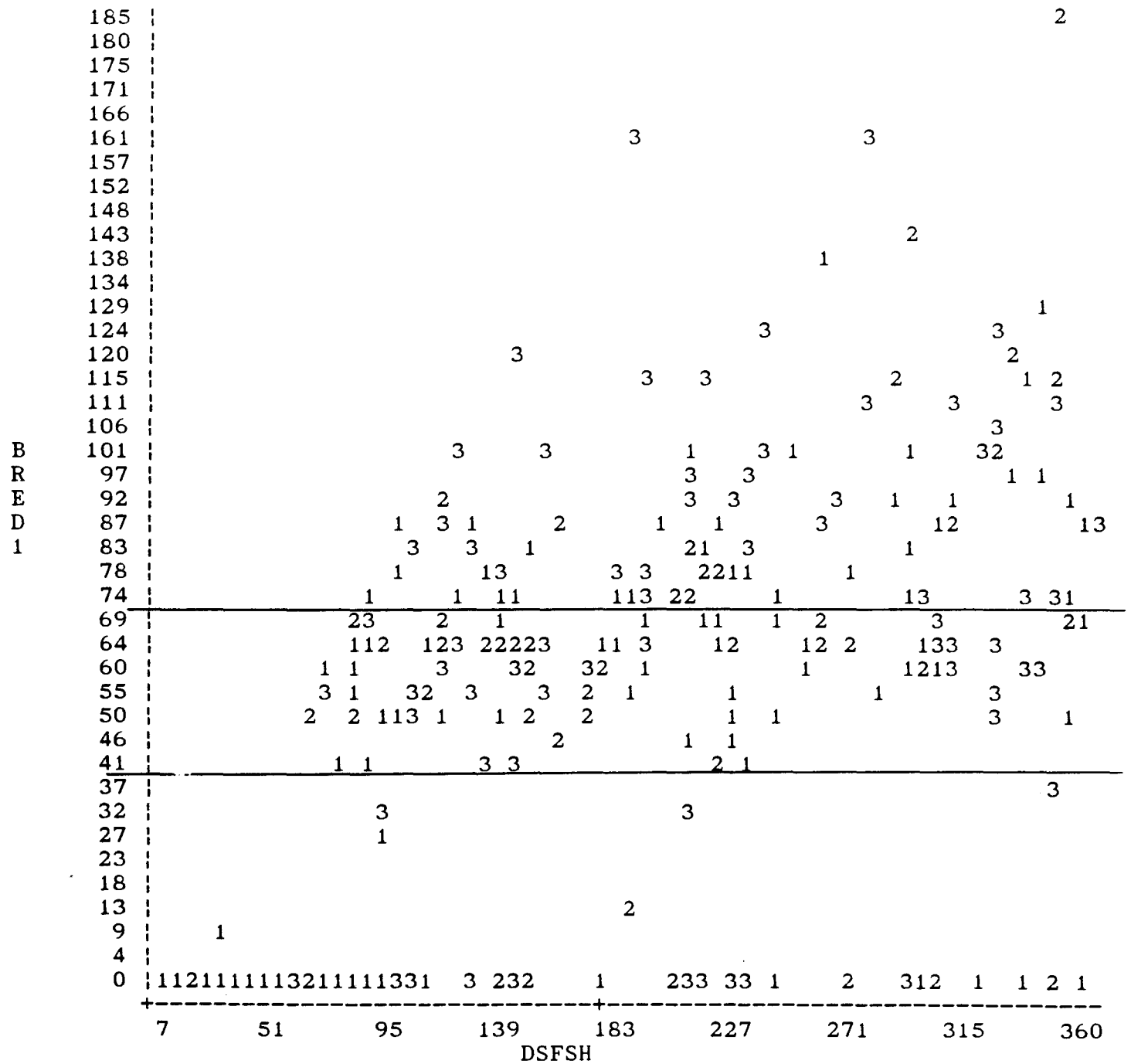
Q-Sum Graph from 12/22/93 through 12/22/94
Heat Detection : Abort,Bred,Conceived,Estimate,Heat,Induce,Missed,Preg,Open

Cow	Date	Lact	Dim	0++++++++++++++++++++++++
184-O	12/10	4	389	M
378-O	12/10	3	56	O
126-O	12/10	5	374	O
62-G	12/11	11	2398	M
123-G	12/11	1	349	M
362-O	12/11	3	260	O
201-O	12/11	5	50	M
195-G	12/12	1	168	M
239-G	12/13	1	54	B
221-G	12/14	1	76	P
212-G	12/14	1	46	B
85-G	12/14	2	65	B
78-G	12/14	2	76	B
382-O	12/14	3	142	M
167-O	12/14	5	183	M
243-G	12/15	1	58	M
223-G	12/15	1	67	B
107-G	12/15	2	89	M
65-G	12/15	2	72	M
371-R	12/15	4	60	B
234-O	12/15	4	91	O
219-O	12/16	5	103	B
252-G	12/16	1	52	M
216-G	12/16	1	53	B
153-G	12/16	2	305	M
92-G	12/16	2	71	P
68-G	12/16	2	44	O
22-R	12/16	4	153	M
235-O	12/16	5	65	M
101-O	12/16	6	100	M
436-R	12/17	2	92	B
235-G	12/17	1	58	M
152-G	12/17	1	318	P
31-G	12/17	2	117	P
419-O	12/17	3	46	B
342-O	12/17	4	82	M
266-O	12/17	4	85	B
251-O	12/17	3	98	B
246-O	12/17	5	50	M
166-O	12/17	5	286	M
425-O	12/18	2	174	C
218-O	12/18	5	50	M
231-G	12/19	1	98	B
83-G	12/19	2	181	O
230-O	12/21	1	77	M
179-G	12/22	1	260	M
90-G	12/22	2	50	M

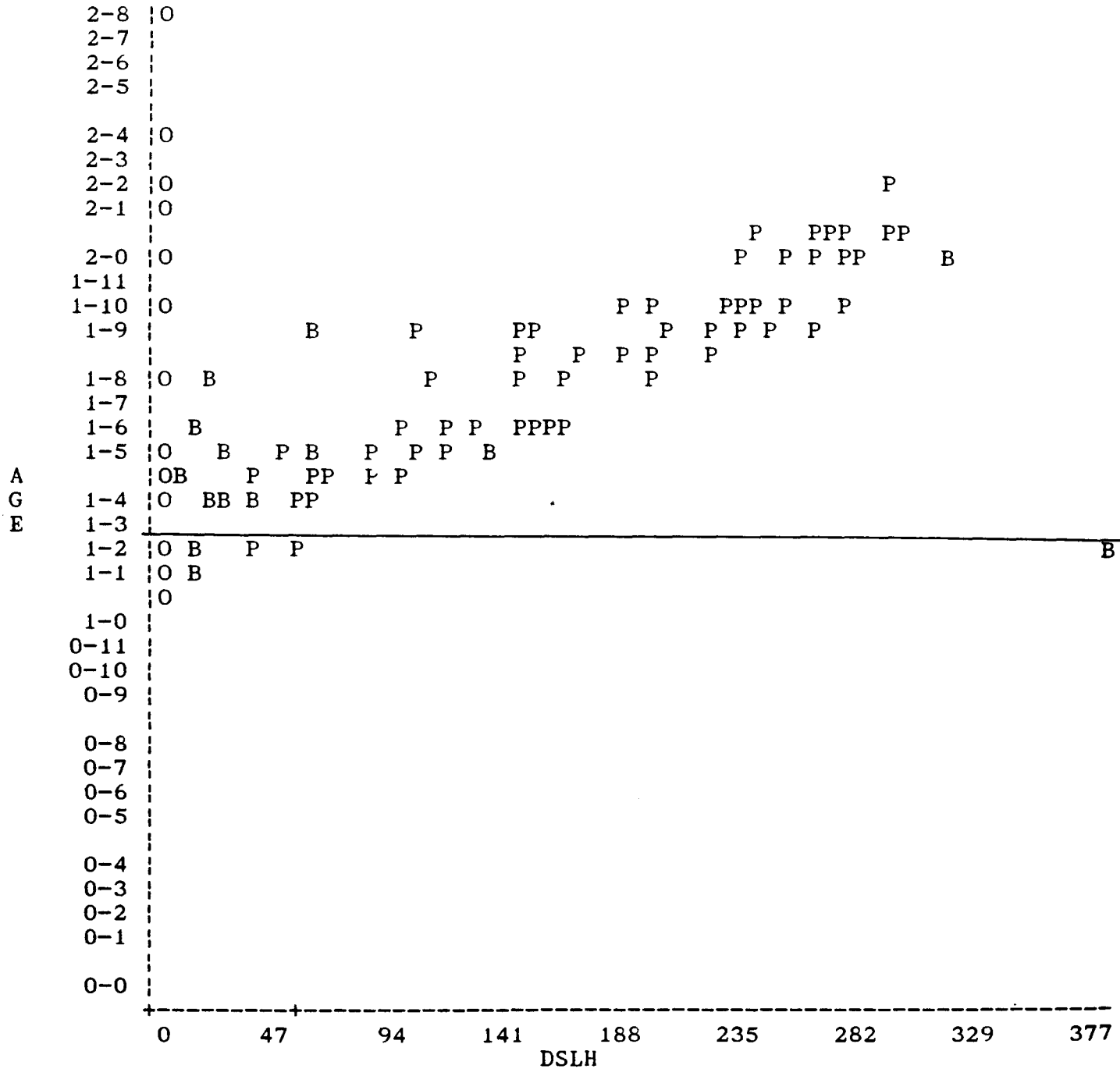
Efficiency = 51

SCATTERGRAPH R-3

Days in Milk at First Breeding



SCATTERGRAPH R-4



SCATTERGRAPH R-5