WHERE DO THE TOP FARMS IN THE REGION FIT? REVIEW OF SOUTHERN DAIRY FARM SYSTEMS MAY 2010

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Background

This paper forms part of a series of regional reviews undertaken by DairyNZ which came about in response to comments from dairy farmers who would like to gain greater insight into the drivers of farm profitability. In the light of these comments, and particularly given the challenging economic times, the farm system review has been instigated to compare a range of farm systems in within a region. The intention of the review was that farmers will use the locally based information generated to assist them to set targets and make decisions aimed to achieve the targets.

Successful farm performance will be measured by operating profit/ha

Key points

- Operating expenses per kg MS are the key driver of Operating Profit
- Total feed expenses [heavily influenced by wintering costs :grazing and runoff expenses] are second most influential driver of Operating Profit
- Herd average BW identified as the third strongest driver of Operating Profit

Summary and discussion of key results

It is important to note that this report constitutes the result of a careful observation of a group Southern farms over one season [2008 – 2009]. The conclusions which are drawn relate to the group and the season.

In true Southern fashion the "deep pockets with gorse in the bottom" school of farming has clearly carried the day! Figure 1 shows that the key driver of operating profit was Operating Expenses per kg MS. This chart has an R^2 of 0.7229. Farmers have achieved good levels of profitability, given the $5-50 per kg MS payout in that season, not only by keeping costs under control for big ticket items such as feed but they have succeeded in optimising a number of factors such as stocking rate to make their system work well. The story this review does not tell is the great variety of styles and approach the farmers in the South have taken in running their businesses. But in essence Southern farmers are farming in a conservative range with regard, stocking rate, [which is possibly affecting

pasture eaten] and per cow production: successful farming is happening as a result of good farming practice and business control yielding low operating expenses per kg MS and highest profits. Further analysis is necessary but it would seem likely that because of the long and challenging winter and the expense of preparing dry cows for the next lactation, feeding costs not related to milk production are highly influential on the profit outcome. It is also important to note that many milking platforms in this review have "elastic boundaries" due to the fact that platform area and support land are often contiguous, meaning that although the farm might designate a fixed area to the platform, this area may well grow or shrink through the year in response to the needs of the livestock carried on both areas. In terms of this review, it means that as profit per ha is dependent on setting a fixed effective milking area, there is potential to under or over state profit per ha in proportion to the variation in area caused by "elastic boundaries".

The third most consistent driver of profitability shown in the analysis was that breeding worth [BW] had a positive relationship to profit [R^2= 0.2604]. Given the challenges farm face in the South with high feeding and grazing costs combined with the consequences of higher stocking rates [a double hit on wintering and heifer grazing] and the increased risks to pasture eaten arising from damage to land at higher stocking rates. It would appear that much is too be gained in the South from pursuing genetic gain in herd breeding Worth.

Methodology

Farm selection

25 dairy farms with a reputation as good dairy farmers were identified in Southland and South Otago. These farms operate a range of farm systems, the group included owner operators, managed farms, equity partnerships, Lower order sharemilkers and 50:50 sharemilkers. In the case of sharemilked farms, the costs and incomes of owners and sharemilkers relating to the farm business were combined to produce a "whole business". The criteria for selection for all farms were that they should be businesses with good performance in terms of operating profit/ha and/or return on assets.

The farms needed to have good records and give the Farm Systems Review project the authority to use and report their information on their production system. Personal information regarding business funding, drawings, tax etc. was not to be reported. All information gathered is confidential.

It was necessary, in some cases, to collect some further information from farmers to generate physical KPIs (extra information on sharemilking agreement etc. as appropriate).

The information gathered was in the form of DairyBase reports. These were combined in a spreadsheet to report drivers of profit. In the final analysis, some farms data were not to a stage of

verification which allowed it to be included in the review, it will also be noted that some farms have incomplete data sets.

Standardized milksolids payment

The return from milk sales was standardised to the Fonterra payout received of $5-20 per kg MS for the 2008-2009 season. All farms were Spring calving Fonterra suppliers, there were no organic or minter milk suppliers.

The use of R^2 in this review

R^2 values show the percentage of movement that can be explained by linear regression. For example, if the R^2 value of a particular chart is at 0.7, this means that 70% of the relationship between the 2 sets of numbers [eg. Operating Profit and Cost of feed] is explained by linear regression. The other 30% is unexplained random noise.

It is helpful to consider R^2 in relation to slope. While slope gives you the general direction of the trend (positive or negative), r-squared gives you the strength of the trend. A high r-squared value can be associated with a high positive or negative slope.

Analysis of KPIs and operating profit

In each figure, participating farms each have a unique data marker, to allow the reader to track the performance of individual farms through the report.

Operating expenses and operating profit

Figure 1 shows the strongest driver of profit identified in the review: low operating expenses per kg MS produced had an R^2 of 0.7229.

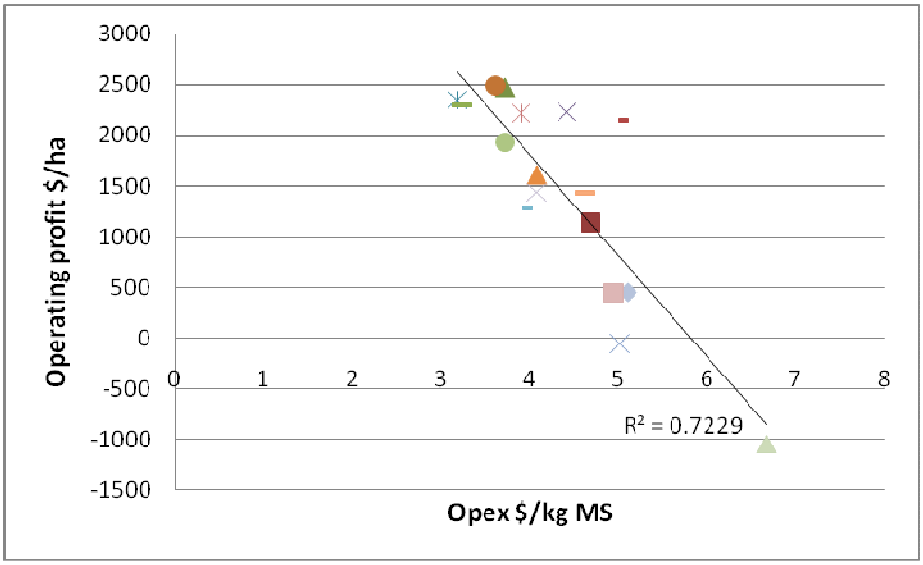


Figure 1. Operating expenses per kg MS and operating profit per ha

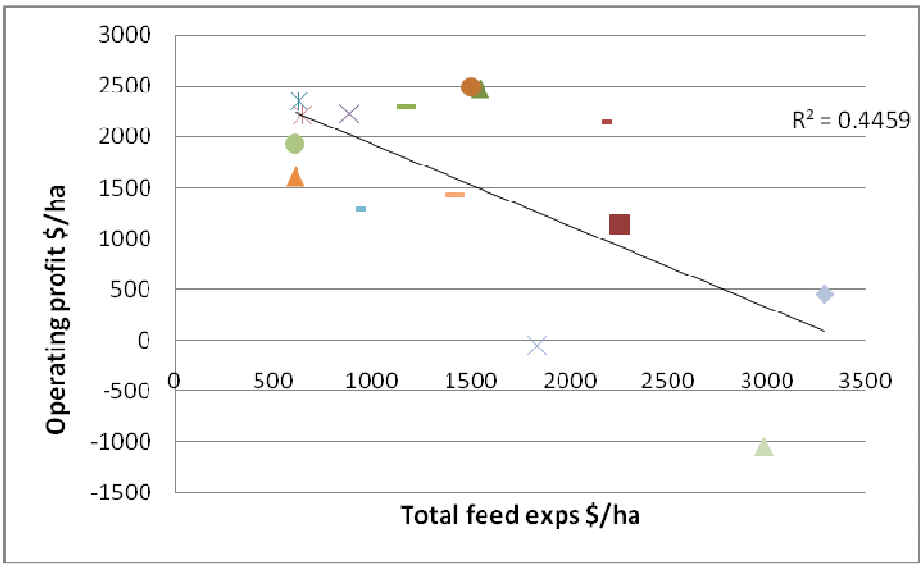


Figure 2. Total feed expenses/ha & Operating profit per ha

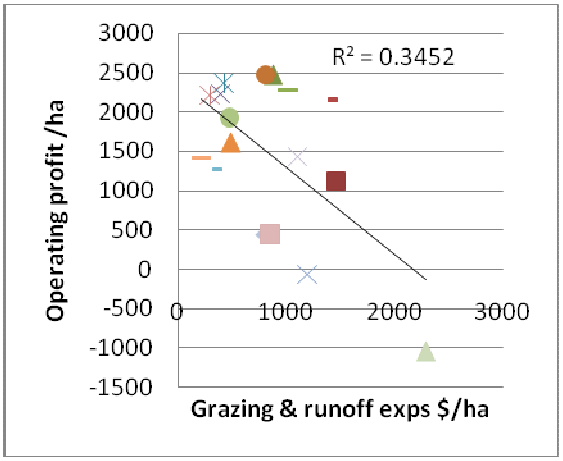


Figure 3. Grazing and runoff expenses and operating profit per ha

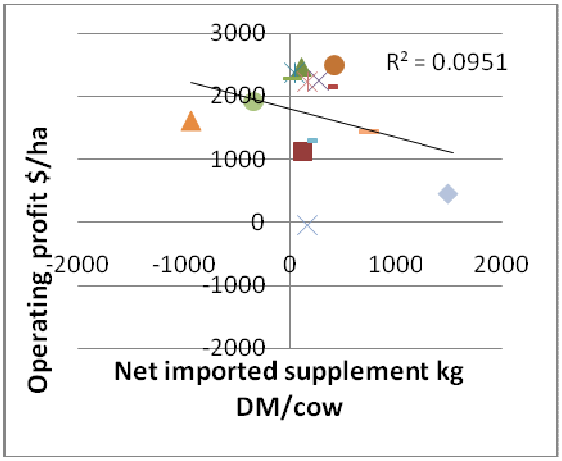


Figure 4. Imported supplement per cow and operating profit per ha

Figures 2 and 3 give the best insight this review was able to generate into how farmers were able to maximise their profit by minimising operating expenses per kg MS. Whilst figure 4 shows that the group had a very small negative relationship between the level of cow feeding on imported supplement and profit, figure 2 with an R2 of 0.4459 suggests most strongly that it is the cost of feed going into the system which has a profound effect on farm profitability. We do not know the source or of supplement but it is likely that many successful farmers have systems in place which provide feeding particularly winter feeding [see Figure 3], at very sharp prices. Personal comments from some participating farmers were that growing and making their own feed within the farm was very cost effective and low risk. This may be occurring through feed purchasing and or transfers between the milking platform and support land areas. As a point of clarification the negative values for imported supplement mean that these farms are actually net exporters of supplement from the milking area.

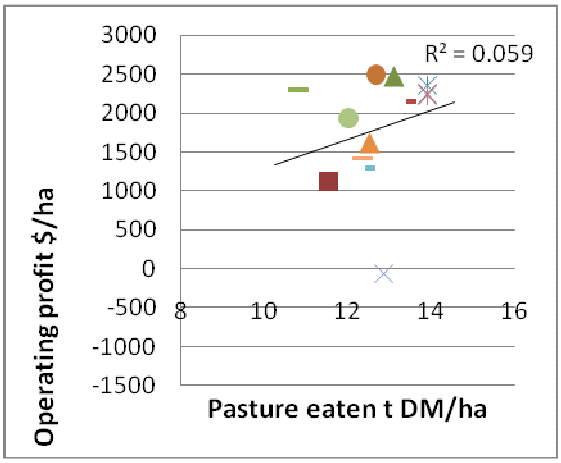


Figure 5. Pasture eaten and operating profit

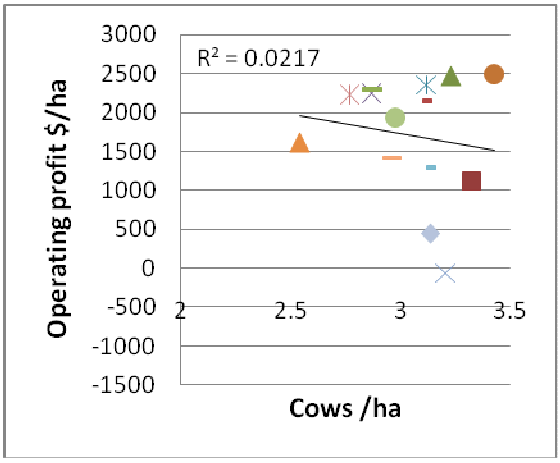


Figure 6. Stocking rate and Operating Profit

Figures 5 and 6 indicate that in this group pasture eaten and stocking rate were not strongly correlated with profitability for this group. It is particularly interesting that pasture eaten was observed within a narrow band with most farmers eating between 11 and 14 T. There may be some inherent limitation to pasture eaten caused by a combination of climatic [shorter growing season and less sunshine hours] and the effects of pugging and or water logging.

Milksolids production, breeding worth and profit

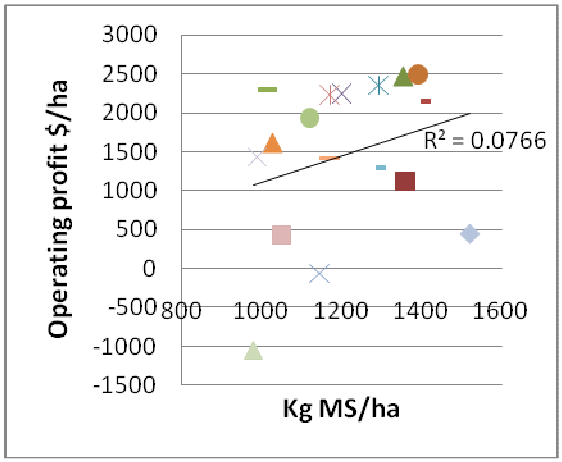


Figure 7. MS production/ ha and profit/ha

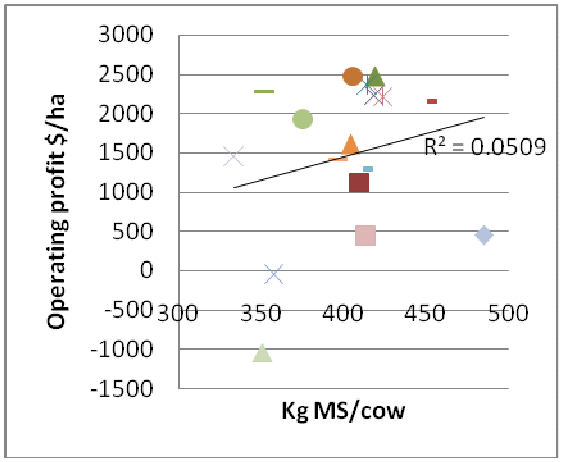


Figure 8. Per cow production and profit/ha

There is a slightly positive relationship for per ha and per cow production [Figures 7 and 8]. It appears from Figure 8 that farmers are clustered close together in the low 400s for kg MS production per cow, suggesting that this per cow MS production level [range 78 – 86% of cow liveweight] has been selected or evolved as an optimal level or production target for many farmers in the South [possibly as a low input production level for a for a low payout season]. Interestingly however, there are highly profitable farmers in the group with low production per cow [351 kg MS] and high per cow production [451 kg MS].

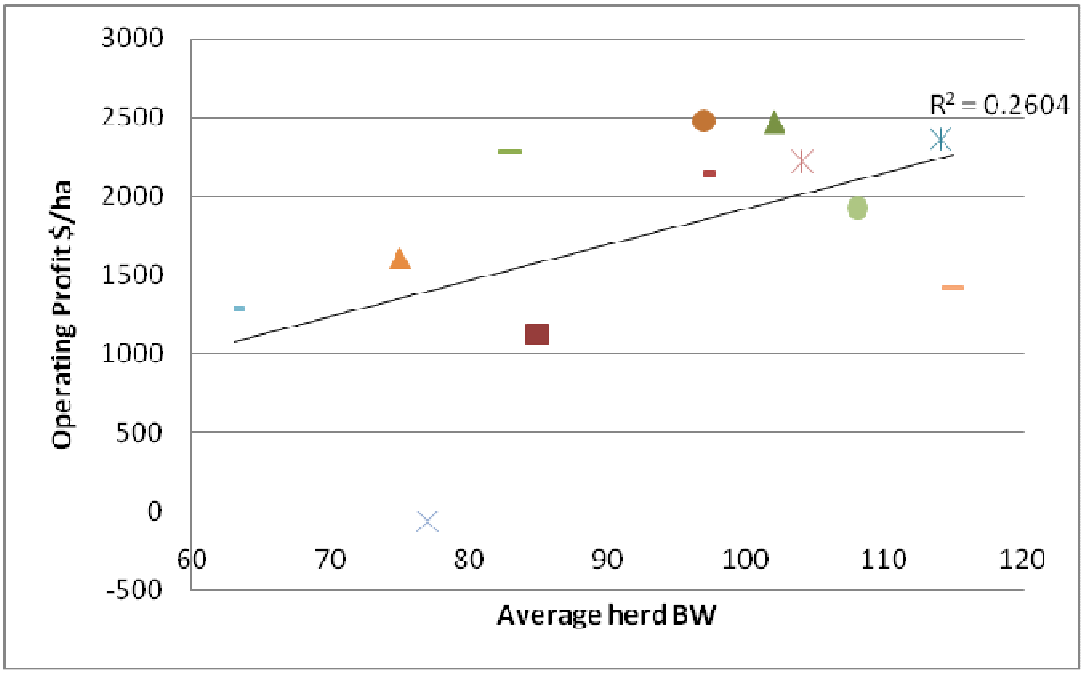


Figure 9. Breeding worth and operating profit per ha

This positive relationship shown in Figure 9, between BW and operating profit with an R^2 =0.2604 does suggest, although not strongly, that a key potential area for Southern farmers to improve farm profitability is by improving herd genetics [BW]. It would appear that the limitations the group appear to exist under for pasture eaten and stocking rate due to climatic influences and the high costs related to cow and heifer grazing [which rise and fall in proportion to stocking rate], can be to some extent overcome by breeding genetically superior cows, which perform better in the southern farm systems and yield profits through gains from productivity.

Financial Analysis of Operating Profit

Financial

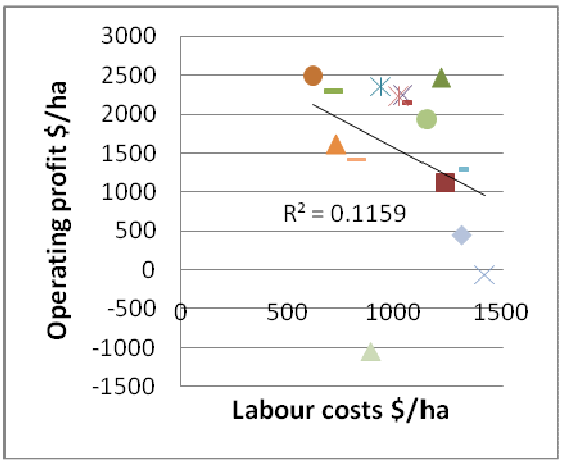
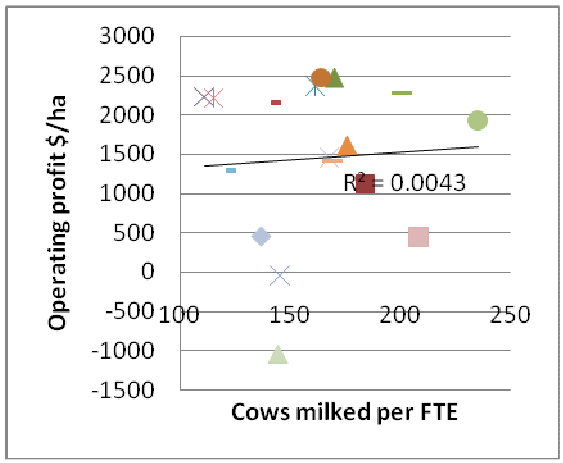


Figure 10. Labour costs and operating profit/ha



*= Full Time Equivalent labour unit

Figure 11. Cows miked per FTE* and operating profit/ha

All farms were treated equally for labour costs, it appears from figures 10 & 11 that scale and investment in large sheds is not driving profitability so much as cost control in terms of individual labour unit costs and effective labour utilization.

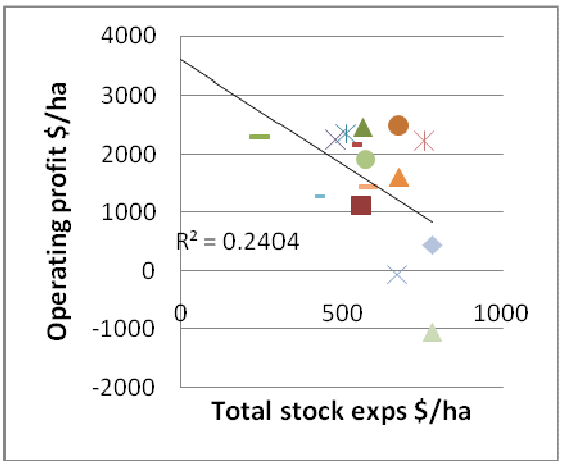


Figure 12. Stock expenses & operating profit/ha operating profit/ha

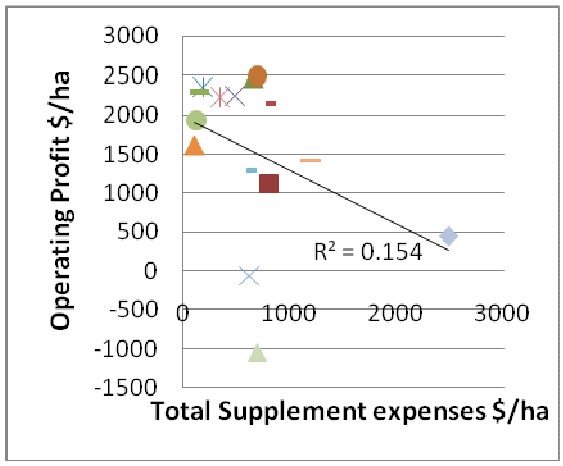


Figure 13. Total supplement expense &

igure 12 with a negative relationship between total stock expenses and operating profit support the finding that lower costs of production are the main driver of profit. However the weaker correlation shown in figure 13 suggests that the big benefits made through keeping feed costs down as shown in Figure 2 are driven to a large extent by feed costs other than by pure lactation supplements ie. youngstock and wintering costs.

Acknowledgement

The author thanks the Participating farmers for their time and generous sharing of information. Also due credit is given to the contribution by staff of DairyBase for their cooperation, assistance and guidance in the preparation of the report. Their help in identifying participants and liaising with farmers and other associated people is greatly appreciated. Whilst at all times acting as a guardian of confidential information the people at DairyBase facilitated the extracting of value from the important information which they hold. Also thanks are due to Annabel Craw, DairyBase Analyst for her help and guidance given in the gathering and entering of information for the analysis. In the South particular thanks go to Caroline Hadley and Sheena O'Reilly for their great support of the project.

Table 1. Summary of observations

Farm number	Adj Operating Profit $/ha	Opex /kgMS	Total feed exps $/ha	Total grazing & runoff exps $/ha	Av Breeding Worth	Milksolids per cow as % of Liveweight	Pasture (crop) Eaten t DM/ha	Imported suppl [excl grazing] % of feed eaten	Net imported Supplements kgDm per cow	Cows/ha	Milk solids/ha	Milksolids/ cow
1	2479.02	3.62	1502.49	807.92	97	0.8125	12.66	0.0842	423.61	3.43	1392.78	406.23
2	2467.82	3.72	1544.16	881.95	102	0.8390	13.11	0.0226	113.70	3.23	1355.80	419.52
3	2355.41	3.19	626.62	436.32	114	0.9214	13.90	0.0109	52.91	3.12	1293.73	414.65
4	2284.31	3.24	1176.53	1026.32	83	0.7666	10.83	0.0050	22.04	2.87	1013.24	352.65
5	2231.18	4.41	887.08	394.63		0.8367	13.90	0.0543	278.42	2.87	1199.26	418.35
6	2217.97	3.89	646.77	303.33	104	0.8149	13.90	0.0326	169.28	2.77	1172.32	423.73
7	2140.33	5.00	2168.71	1393.02	97	0.8517	13.40	0.0650	356.17	3.10	1400.96	451.42
8	1919.99	3.71	609.73	475.31	108	0.8167	12.04	-0.0722	-334.05	2.98	1119.75	375.70
9	1608.11	4.08	607.42	496.75	75	0.7927	12.53	-0.1789	-926.47	2.54	1028.26	404.30
10	1439.68	4.08		1105.13							988.39	334.10
11	1421.35	4.63	1421.68	215.58	115	0.7626	12.38	0.1524	752.39	2.96	1173.08	396.54
12	1276.92	3.93	918.58	320.37	63	0.9159	12.44	0.0350	169.99	3.12	1286.40	412.15
13	1127.87	4.70	2259.63	1460.71	85	0.8204	11.53	0.0231	118.52	3.32	1361.84	410.22
14	447.08	5.10	3297.67	812.27		0.9300			4358.00	0.00	1521.06	485.27
15	435.78	4.95		864.61							1049.27	414.18
16	-58.82	5.02	1832.84	1207.03	77	0.7448	12.85	0.0364	168.07	3.21	1146.19	357.53
17	-1042.04	6.67	2985.98	2292.55							978.40	351.15
18					80	0.8630	11.48	0.1230	660.26	2.80		
19					72	0.8973	14.55	0.0995	560.44	3.20		
20					67	0.8464	10.24	0.2804	1547.31	3.11		
21					102	0.7263	11.35	0.0868	410.89	3.09		
22					78	0.8074	12.85	0.1512	799.13	3.32		