

DEGREE OF AGREEMENT BETWEEN THE RATION FORMULATED AND THE RATION FED ON SEVEN CALIFORNIA DAIRIES.

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INTRODUCTION

Dairy nutritionists utilize computer models to balance and to formulate least cost rations that maximize feed to milk conversion efficiency.

Nutrient composition of the fed ration often differs from the formulated ration as a result of:

- Errors associated with weighing ingredients into the mixer wagon
- Uncertainties in dry matter content and nutrient composition of the ingredients
- Adding or removing commodities without the nutritionist's knowledge.

If large deviations exist between the formulated and the fed ration, important consequences on the environment and animal performance should be expected.

OBJECTIVE

To evaluate the degree of agreement between:

- The dairy cow ration formulated by the nutritionist and the ration fed at the feedbunk.
- The dairy cow ration fed on two different days.

METHODS

Feedbunk samples of total mixed rations were collected on two non consecutive days (Day 1 and Day 2, 3 to 7 days apart) from seven California dairies.

Fresh cow group (n=5), high production group (n=7) and low production group (n=7) were sampled.

Samples were taken in multiple locations (~30) along the feedbunk. The quartering method was used to obtain the final sample that was sent to a laboratory for wet chemistry analysis.

The coefficient of variation between the formulated and the fed diet, and between the diet fed on Day 1 and Day 2 was calculated.

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RESULTS: Difference between the formulated and fed ration

Figures 1-5. Difference in percentage units between the formulated ration (baseline or 0) and the fed ration on two non consecutive days, 3 to 7 days apart (Day 1 solid color, Day 2 pattern color), in seven California dairies.

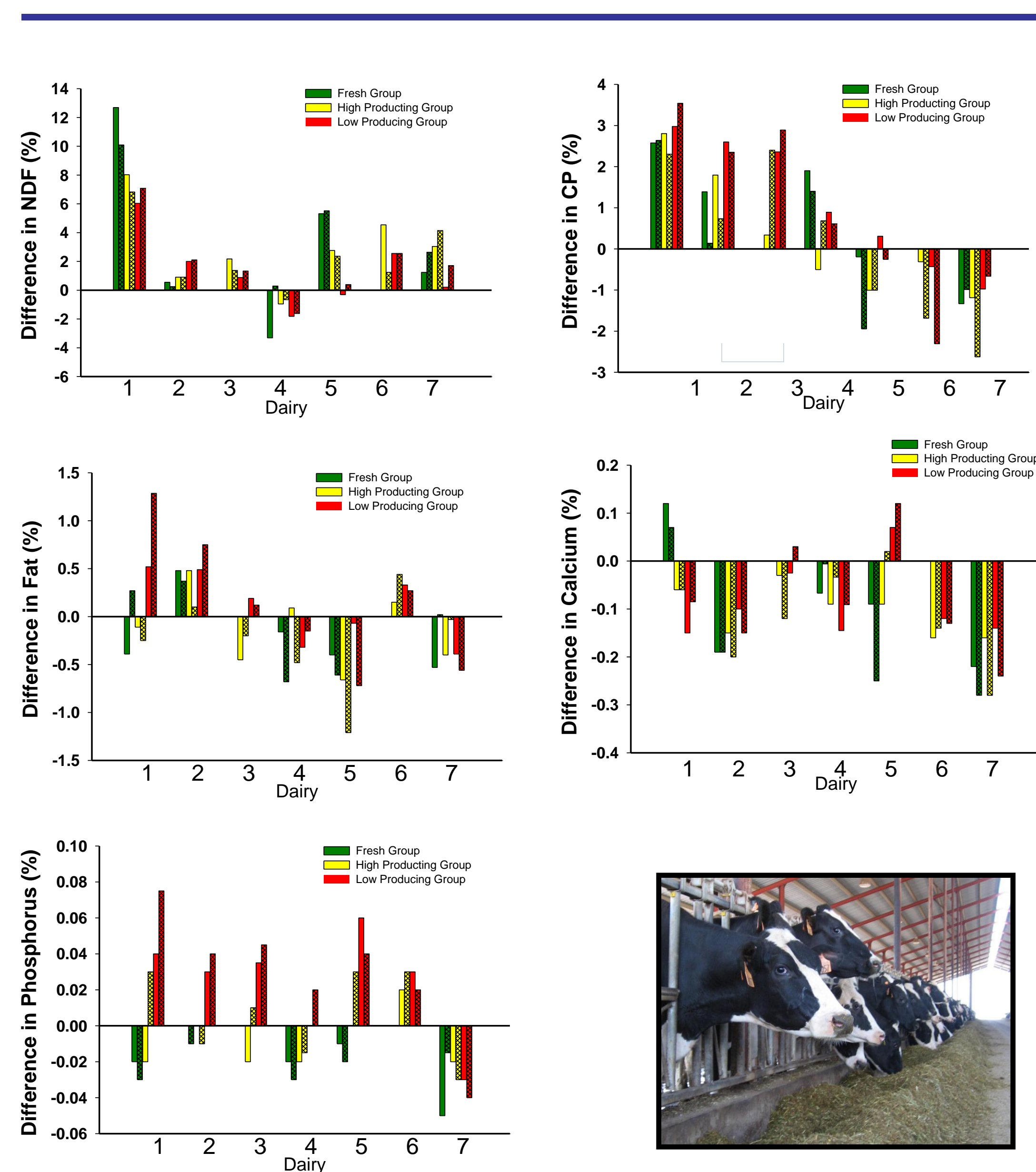


Table 1. NDF, CP, Fat, Ca and P coefficient of variation (CV%) between the formulated and the fed ration on two non consecutive days (Day 1 and Day 2; 3 to 7 days apart) in seven California dairies.

Dairy	Production Group	Day 1					Day 2																										
		NDF %	CP %	Fat %	Ca %	P %	NDF %	CP %	Fat %	Ca %	P %																						
		Dairy 1	Fresh	26.8	9.8	5.9	8.6	2.8	22.2	10.0	3.8	5.1	4.3	High	18.0	10.8	1.7	4.9	3.0	15.6	9.0	3.9	4.9	4.3	Low	16.0	14.3	19.6	6.4	11.3	13.9	12.2	8.6
Dairy 2	Fresh	1.2	5.3	5.6	13.8	0.0	0.6	0.5	4.3	13.8	1.5	High	2.0	6.9	6.1	11.2	0.0	2.0	2.9	1.3	15.4	1.5	Low	4.4	10.0	8.1	6.7	4.2	4.6	9.1	12.0	10.3	5.5
Dairy 3	High	4.6	1.3	6.0	2.3	3.3	2.9	8.9	2.6	9.6	1.6	Low	1.7	8.9	3.2	2.2	5.8	2.6	10.7	2.1	2.5	7.4											
Dairy 4	Fresh	7.5	7.4	2.3	5.7	2.9	0.6	5.6	10.5	0.5	4.4	High	2.0	2.1	1.2	8.1	2.8	1.4	2.8	7.0	2.9	2.1	Low	3.9	3.6	4.6	13.5	0.0	3.5	2.5	2.1	8.2	2.7
Dairy 5	Fresh	11.0	0.8	6.3	6.7	1.8	11.3	8.3	9.8	20.4	3.7	High	5.6	4.1	9.2	7.0	0.0	4.8	4.1	17.8	1.5	5.2	Low	0.6	1.3	1.3	6.6	11.5	0.7	1.1	14.6	11.0	7.9
Dairy 6	High	9.9	1.2	2.3	11.0	3.3	2.8	6.7	6.6	9.5	4.9	Low	5.8	1.7	7.6	8.1	5.2	5.8	9.6	6.3	8.8	3.5											
Dairy 7	Fresh	2.7	5.4	7.9	19.4	6.9	5.6	4.0	0.3	25.7	2.0	High	6.4	4.8	5.8	13.8	2.7	8.6	11.1	0.4	26.1	4.0	Low	0.4	4.0	5.6	12.5	4.0	3.5	2.7	8.2	22.9	5.3

*Coefficient of variation : <5% green; 5 to 10 % yellow, > 10% red.

The variation between the formulated vs fed rations was acceptable (CV <5%) in: **58%** of the rations for NDF, **47%** for CP, **42%** for Fat, **21%** for Ca, and **71%** for P.

The variation between the ration fed on Day 1 vs Day 2 was acceptable (CV <5%) in: **90%** of the rations for NDF, **79%** for CP, **63%** for Fat, **58%** for Ca, and **84%** for P.

SUMMARY

The variation in nutrient composition between the formulated and the fed ration was considerable in some dairies. Overall, Fat and Calcium were the nutrients that deviated the most from the formulated ration. Variation in nutrient composition between Day 1 and Day 2 was not as large as the variation between the ration formulated and the ration fed either on Day 1 or Day 2.

Best feeding management practices should be implemented to minimize errors during feeding.

