

PRELIMINARY RESULTS
 POSTPARTUM REPRODUCTIVE RESPONSES
 OF TWO YEAR OLD BEEF COWS
 SUPPLEMENTED WITH PROTEIN AND FAT

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We investigated the effects of feeding protein, fat, and energy in postpartum supplements on young cow reproductive and lactational performance. Forty-four Hereford x Angus x Hereford and 12 Angus x Simmental x Hereford, two year old cows grazed dormant winter-spring range (primarily blue grama) at the NMSU Corona Range and Livestock Research Center. To balance for breed type and calf sex, cows were allotted at calving (February 14 to March 24, 1995) to receive the following five supplements (cubes):

Cube	# cows	Total protein	Rumen degradable protein	Bypass protein
Control	12	454 (g/day)	310 (g/day)	144 (g/day)
Bypass	13	655	325	329
Fat	12	456	304	152
Bypass + Fat	13	630	295	335
Energy	6	207	167	40

The Energy cube was made of concentrate grains. Cottonseed meal and wheat middlings made up the ruminally degradable protein fractions of the other four cubes. Feathermeal and meat & bone meal were added to increase the bypass protein amount provided to cows, and hydrogenated tallow (Alifet®, 10.3% of diet, as fed basis) was the fat source. Each cow received the same amount of energy. Starting on March 20, supplements were individually fed at noon on three days/week. Cows received full treatments (5.7 lbs /head/ feeding) from April 5 to June 6, after the first 21 days of the breeding season.

Supplement effects on cow and calf performance are presented in the table following the text. All cows weighed the same at the beginning of the supplementation period. By the beginning of the breeding season (May 11), cows receiving Fat and Bypass + Fat cubes weighed less ($P < .05$) than cows fed the Control and Bypass cubes. Body condition score determined by visual observation suggested that most of the negative effect may have been from feeding fat alone, because cows fed bypass protein alone or with fat had a more ($P < .01$) positive change in condition from March 17 to May 11 than cows supplemented with Control and Fat cubes. Objective measurements of backfat using ultrasound yielded these same results ($P < .05$). By fall weaning, cows that had received Fat and Bypass + Fat cubes in the spring still tended ($P < .20$) to weigh less than cows fed Control and Bypass cubes. Weight loss in cows

supplemented with Fat cubes may have resulted from a higher milk production. This is supported by Fat-fed cows weaning the heaviest ($P < .10$) calves than all other treatments, especially being heavier ($P < .05$) than calves having dams fed Bypass and Bypass + Fat cubes. In all other measures, Energy-fed cows did not differ from the other treatments. This similarity may have resulted from the group supplemented with Energy cubes having a smaller number of cows in good condition at the start of the trial. The resulting greater variation may have prevented statistical differences from being detected.

At this time, reproductive data is limited. Results from fall pregnancy testing via rectal palpation showed no differences in pregnancy rates among treatments following a 72 day breeding season, with only one Control-fed cow open. Currently, blood samples are being analyzed to evaluate diet effects on cow metabolism, return to estrus, and conception rates in the first 21 days of the breeding season. Spring 1996 calving data will also be collected. To further evaluate the effects of fat and protein on young cows, a similar trial will be conducted in spring of 1996 by feeding the Control, Bypass, and Bypass + Fat supplements.

Ultimately, these results will provide more conclusive data in searching for the minimal nutrient or nutrient combination which can stimulate an early fertile conception without severely decreasing calf performance.

Cube fed ^a	3/17 Cow weight (lbs)	5/11 Cow weight (lbs)	10/4 cow weight (lbs)	Condition change ^b	Backfat change (in) ^c	24-h Milk yield (lbs) ^d	Weaning weight (lbs)
Control	844	859 ^e	1020	.04 ^a	-.10 ^e	20.3	531 ^{ef}
Bypass	852	857 ^e	1029	.28 ^b	.00 ^f	20.1	515 ^e
Fat	841	828 ^f	987	-.14 ^a	-.13 ^e	22.3	551 ^f
Bypass + fat	828	830 ^f	1000	.30 ^b	-.04 ^f	18.1	524 ^e
Energy	859	863 ^{ef}	1033	.02 ^{ab}	-.04 ^{ef}	21.4	526 ^{ef}

^aTreatments are explained in text.

^bDifference between body condition score (1 to 10 scale) from March 17 to May 11.

^cDifference between ultrasound measurements from April 5 to May 16.

^dDaily milk production estimated by milking cows out, separating from calves for 5 hours, and milking again on May 10.

^{e,f}Rows with different superscripts differ (P < .05).

^{a,b}Rows with different superscripts differ (P < .01).