cultural Extension Service specialists. The methods used are shown in tables 1, 2, 3 and 4 (for barley, sorghum, canning olives and Grade A milk). Returns were measured in terms of net farm income by estimating the gross income and deducting all production costs except management and interest on the land investment. The method used to arrive at net farm income per acre and net farm income per $100 invested is shown in table 5.

In table 5, a comparison is made of the costs and returns for one dryland crop—barley—with five of the alternatives that would be available if the land were to be developed for irrigation.

The effect of land parcel size on capital requirements and on net farm income per acre and net farm income per $100 invested is shown in table 6.

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TABLE 6. CAPITAL REQUIREMENTS AND NET FARM INCOME FOR ALTERNATIVE CROPS ON LAND PARCELS OF DIFFERENT SIZES

	Barley crop every other year	Grain	Ladino seed	Olives canning	Irrigated pasture	
					Dairy heifers	Grade A milk 75% Class I
Initial cost per acre:						
20 acre land parcel	$300.00	$1,035.00	$1,035.00	$1,835.00	$1,193.00	$2,232.00
40 acre land parcel	225.00	745.00	745.00	1,545.00	854.00	1,661.00
80 acre land parcel	225.00	615.00	615.00	1,415.00	709.00	1,380.00
160 acre land parcel	175.00	515.00	515.00	1,315.00	606.00	1,146.00
320 acre land parcel	150.00	465.00	465.00	1,265.00	541.00	1,050.00
640 acre land parcel	125.00	415.00	415.00	1,215.00	491.00	971.00
Average investment per acre:						
20 acre land parcel	$300.00	$ 793.00	$ 793.00	$1,193.00	$ 871.00	$1,704.00
40 acre land parcel	225.00	623.00	623.00	1,023.00	677.00	1,177.00
80 acre land parcel	225.00	533.00	533.00	933.00	580.00	1,010.00
160 acre land parcel	175.00	458.00	458.00	858.00	503.00	866.00
320 acre land parcel	150.00	408.00	408.00	808.00	446.00	792.00
640 acre land parcel	125.00	358.00	358.00	758.00	396.00	728.00
Net farm income per acre:						
20 acre land parcel	$-10.98	$ -72.78	$ 5.69	$ 5.55	$ -52.65	$ 5.80
40 acre land parcel	- 7.23	-49.29	30.55	28.60	-13.01	82.74
80 acre land parcel	- 7.23	-38.85	41.56	37.93	- 0.36	119.95
160 acre land parcel	- 5.73	-33.47	46.94	44.31	5.52	151.30
320 acre land parcel	- 4.98	-31.97	48.44	45.81	8.47	157.73
640 acre land parcel	- 4.23	-30.47	49.94	47.58	9.95	161.78
Net farm income per $100 invested:						
20 acre land parcel	$- 2.86	$ - 9.71	$ 0.72	$ 0.47	$ - 5.93	$ - 0.34
40 acre land parcel	- 2.79	- 7.91	4.90	2.80	- 1.92	7.03
80 acre land parcel	- 2.79	- 7.29	7.80	4.07	- 0.06	11.88
160 acre land parcel	- 2.73	- 7.31	10.25	5.16	1.10	17.47
320 acre land parcel	- 2.68	- 7.84	11.87	5.67	1.90	19.92
640 acre land parcel	- 2.70	- 8.51	13.95	6.28	2.51	22.22

DIETHYLSTILBESTROL ON SUCKLING

MONTE BELL

Implanting suckling steer calves with 12 mg pellets of diethylstilbestrol (DES) resulted in weight gains of 22 lbs more by weaning time, and 42 lbs more by the end of the feedlot period, as compared with the controls. During marking and branding, 34 head of 114-day-old suckling steer calves were randomly assigned to either an implant, or control group. After weaning at 262 days of age, implanted and control cattle were fed for slaughter with all calves receiving 10 mg DES per day in the feed. The carcass weights and carcass weight-per-day-of-age of the implants (691 lbs and 1.43 lbs) were significantly greater ($P<.001$ and $P<.05$) than the controls (649 lbs and 1.34 lbs). Carcass measures and grades were similar for both groups except the implants had significantly ($P<.01$) more pounds of retail cuts per day of age than the controls (.68 vs. .65).

GROWTH STIMULANTS, principally diethylstilbestrol (DES), are used almost universally in California feedlots. A 1970 summary reports up to 24 lbs increase in weaning weights with 12 mg DES implants in suckling steer calves, but with variable postweaning effects. Locally, high producing cows on excellent range wean calves heavy enough to go directly into the feedlot. The effect of preweaning implants on postweaning gain is of concern to those feeding cattle for slaughter. This experiment was designed to test the effect of DES implants on preweaning and postweaning feedlot gains and carcass grades of steer calves.

On March 18, 1969, 114-day-old bull calves (½ Shorthorn, ¼ Angus and ¼ Hereford), weighing 329 lbs were castrated and individually weighed. Alternate calves were implanted with a 12 mg DES pellet. Birth dates and individual identification had been recorded previously by Glen Eidman of Nye Ranch, Glenn County.

After treatment, the calves were put back with their dams and all grazed the same native annual range pastures until weaning 148 days later. No supplement was fed during this period.

The calves were individually weighed at weaning and after three weeks preconditioning were shipped to a Nevada feedlot. There, in a common pen, all steers were fed a fattening ration which supplied 10 mg DES per head daily. The steers were not implanted at the feedlot. The animals were slaughtered in two lots on March 18 and March 25, 1970 with equal number of calves from each treatment in each slaughter lot. Carcass grades and measurements were made in Minch's Slaughterhouse, Red Bluff, by the regular USDA grader. Analysis of variance was computed on the data.

Table 1 shows the preweaning and postweaning gains. The implanted calves gained 2.22 lbs per day to weaning and 2.51 lbs per day from weaning to slaugh-

High quality ½ Shorthorn, ¼ Angus, ¼ Hereford calves on the Nye Ranch in Glenn County were used in this test.

IMPLANT EFFECTS CALVES

CHARLES B. WILSON

ter, compared with 2.11 lbs and 2.33 lbs daily gains for the controls during the two periods.

Implanting calves at marking time certainly did not depress subsequent feedlot gains, and may have enhanced them. These steers were fed 10 mg DES daily but were not implanted upon entering the feedlot.

The steers averaged 16 months of age when slaughtered. The hot carcass weight and carcass weight per day of age was 691 lbs and 1.43 lbs, respectively for the implanted calves, compared with 649 lbs and 1.34 lbs for the controls.

The live weight gains only approached statistical significance, but the hot carcass weight and the carcass weight per-day-of-age comparisons were significant at the 0.1% and 5% levels, respectively.

The carcass traits are shown in table 2. The implanted and control steers were virtually the same in all measures except

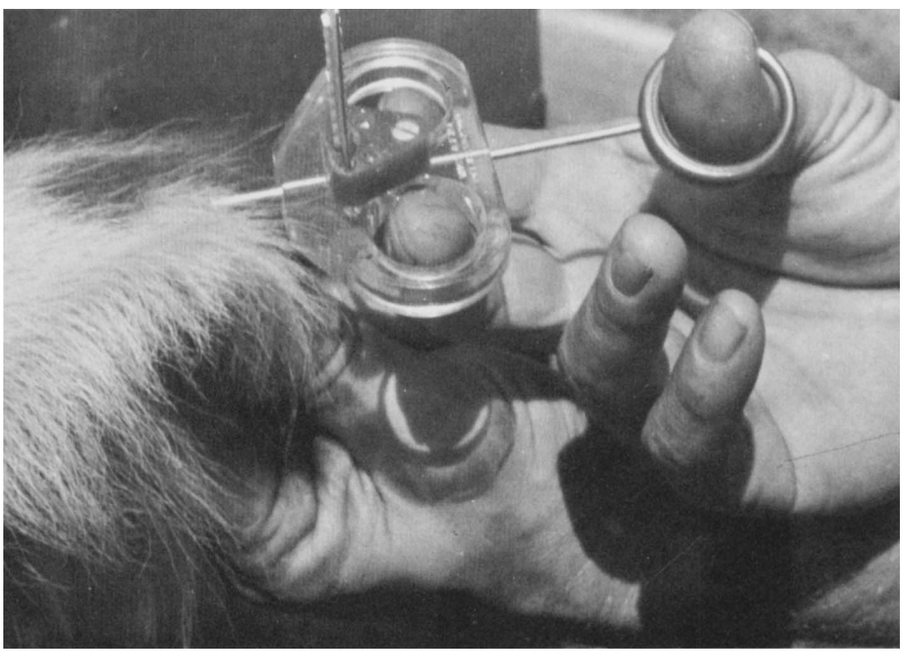

TABLE 1. PREWEANING AND POSTWEANING GAIN COMPARISONS FOR STEER CALVES IMPLANTED WITH 12 MG DIETHYLSTILBESTROL

	Control	Implant
No. steers	17	17
Initial age (days)	114	113
Initial wt (lbs)	328	330
Weaning age (days)	262	261
Weaning wt (lbs)	620	645
Nursing ADG (lbs)	2.11	2.22
Slaughter age (days)	486	485
Slaughter wt (lbs)	1010	1071
Feedlot ADG (lbs)	2.33	2.51
Carcass wt (lbs)	649	691***
Carcass WDA (lbs)	1.34	1.43*

* <.05
*** P<.001

TABLE 2. CARCASS TRAITS

	Control	Implant
No. prime, choice, good	1, 14, 2	1, 15, 1
Marbing score†	12.5	13.0
USDA cutability grade	3.8	3.9
Fat over ribeye (inches)	.73	.79
Adj. fat over ribeye (inches)‡	.67	.69
Ribeye area (inches)	12.0	12.3
Adj. ribeye area (inches)	11.6	11.7
Kidney, heart & pelvic fat %	3.9	4.0
Lbs USDA retail cuts/days of age	.65	0.68**

** P < .01
† Modest 12, Moderate 15
‡ Adjusted to 600 lb carcass

(P<.01) more pounds of retail cuts per day of age (USDA cutability equation).

These three-way-cross calves carried more fat than is desirable, which resulted in the poor cutability grades of 3.8 and 3.9. The carcass weight and grades indicate a longer feeding period than usual for the area. Even so, the carcass weights and pounds of cuts per-day-of-age were excellent.

When the fat thickness and ribeye area measures were adjusted to a 600-lb carcass, they were very close: 0.67 in fat and 11.6 sq in ribeye, respectively, for the controls compared with .69 in and 11.7 sq in for the implanted calves. This indicates the effect of treatment for these measures could be explained in part on the basis of increased rate of gain.

This experiment conducted under Glenn County conditions supported research in other areas and served as a demonstration to local cattlemen in the use and economic benefit of implanting suckling steer calves with 12 mg DES.

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Experimental animals were provided by Glen Eidman and Ken Sexton, Nye Ranch, Willows, California, and assistance in collection of data was obtained from the Nevada Nile Ranch, Inc., Feedlot, Lovelock, Nevada, and Minch's Wholesale Meats, Inc., Red Bluff, California.

PREPLANT FUMIG
for sugar beet
ON CABBAGE

Photo 1. Cabbage plants growing in soil fumigated with 30 gpa of 1,3-dichloropropene two weeks previous to the first harvest.

Photo 2. Cabbage plants growing in nonfumigated soil two weeks previous to the first harvest.