

Bull Fertility Studies.—In this work identical twin bulls have been used and their fertility has been measured by the exhaustion technique. Semen from ten successive services collected at fifteen-minute intervals is examined for live sperm concentration and for reduction time of methylene blue.

In the first series of experiments, bulls on a low-protein intake were compared with bulls receiving a high-protein intake derived in the first instance from meatmeal and linseedmeal and later from spring pasture. Neither the level of protein, which varied from 0.9 lb. to 3.36 lb. of digestible protein per day, nor the type of protein fed had any effect on either quantity or quality of semen as judged by the above tests.

Five pairs of bulls have been reared to the twelve-months stage on a high and low plane of nutrition, the pairs being split at weaning. Differences in body weight at this time were 270 lb. The animals will be used to study the effect of good and bad rearing upon sperm-production as yearlings and as two-year-olds. This work is incomplete, but preliminary data show large differences in both quantity and quality of semen between the two groups at the yearling stage.

Production of Artificially-bred Heifers by Merit Sires.—In the 1947–48 season a second crop of heifers by merit sires completed their first lactation on Ruakura and other farms in the Waikato. In addition, the first crop completed its second lactation. Results are summarized below :—

Herd.				Number of Heifers.	Production of Butterfat.		Production, Mature Cows.*
					Actual.	Mature Equivalent.	
<i>Two-year-olds, 1947-48 Season</i>							
					lb.	lb.	lb.
A	..	..	..	4	269	339	312
B	..	..	..	6	260	330	300
C	..	..	..	1	422	492	331
D	..	..	..	2	232	302	307
E	..	..	..	4	287	357	343
F	..	..	..	4	212	282	295
G	..	..	..	6	234	304	258
I	..	..	..	5	185	255	233
J	..	..	..	4	230	300	302
K	..	..	..	1	262	332	279
L	..	..	..	1	303	373	324
M	..	..	..	8	222	292	256
N	..	..	..	2	170	240	223
O	..	..	..	2	194	264	178
P	..	..	..	3	298	368	313
Q	..	..	..	3	199	269	270
Total, Waikato herds				56	240	310	280*
Ruakura				55	297	367	..
<i>Three-year-olds, 1947-48 Season</i>							
					lb.	lb.	lb.
A	..	..	..	10	275	310	312
B	..	..	..	12	298	333	300
C	..	..	..	6	255	290	331
D	..	..	..	11	278	313	307
E	..	..	..	7	329	364	343
F	..	..	..	3	306	341	295
G	..	..	..	7	204	239	258
Total, Waikato herds				56	277	312	307*
Ruakura				30	301	336	..

* Mature normal cows weighted according to the number of A.I. daughters in the herds.