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## Report for 1933

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### Animal Husbandry Experiments

#### Rothamsted Research

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## PIG EXPERIMENT

**The Value of Green Food.  
Comparison of Wet and Dry Feeding.  
Effects of differing numbers of pigs per pen (with equal floor space per pig).**

### ARRANGEMENT

Three randomised blocks of 4 litters of 6 pigs each, sex and litter being equalised as far as possible over the different treatments (the interaction of the feeding treatments is partially confounded with litters, and in blocks II and III sex is also partially confounded with litters). Each block contains one pen of 8 pigs (13 ft. × 6 ft. 3 ins.), two pens of 4 pigs (6 ft. 6 ins. × 6 ft. 3 ins.) and 4 pens of 2 pigs (3 ft. 3 ins. × 6 ft. 3 ins.). Each of these sets of pens contains two pigs on each of the four feeding treatments, namely wet or dry feeding with or without green food. Pigs were fed individually in small pens (1 ft. 8 ins. × 3 ft. 7 ins.) opening off the main pens. Food consumption and live weights were recorded weekly.

### DETAILS OF ARRANGEMENT

| Block and Duration.    | Block I (21 weeks) |      |      |      | Block II (22 weeks) |      |      |      | Block III (20 weeks) |      |      |      |   |   |   |   |   |   |   |   |   |   |   |   |
|------------------------|--------------------|------|------|------|---------------------|------|------|------|----------------------|------|------|------|---|---|---|---|---|---|---|---|---|---|---|---|
| Litter No.             | 9                  | 12   | 19   | 21   | 17                  | 20   | 29   | 48   | 27                   | 28   | 35   | 58   |   |   |   |   |   |   |   |   |   |   |   |   |
| Age at start (wks.) .. | 7.9                | 10.9 | 13.6 | 12.0 | 9.7                 | 11.7 | 11.3 | 12.1 | 8.1                  | 10.4 | 10.7 | 12.6 |   |   |   |   |   |   |   |   |   |   |   |   |
| Sex .. ..              | H                  | G    | H    | G    | H                   | G    | H    | G    | H                    | G    | H    | G    |   |   |   |   |   |   |   |   |   |   |   |   |
| Dry and Green Food     | 8                  | 2    | 2    | 8    | —                   | 4    | 4    | —    | 8                    | 2    | 4    | —    | 2 | 8 | 4 | 8 | 4 | 2 | — |   |   |   |   |   |
| Wet and Green Food     | —                  | 4    | 4    | —    | 2                   | 8    | 8    | 2    | 2                    | 4    | —    | 8    | 4 | 2 | 8 | — | 4 | 8 | 2 | 2 | 8 | 4 |   |   |
| Dry Food .. ..         | 4                  | —    | —    | 4    | 2                   | 8    | 8    | 2    | 2                    | 4    | —    | 8    | 4 | 2 | 8 | — | 4 | 8 | 2 | 2 | 8 | 4 |   |   |
| Wet Food .. ..         | 8                  | 2    | 2    | 8    | 4                   | —    | —    | 4    | —                    | 8    | 4    | 2    | 8 | — | 2 | 4 | — | 2 | 8 | 4 | 8 | 4 | 2 | — |

The number 2, 4 or 8 indicates that the pig was one of a pen of 2, 4 or 8 respectively.  
H denotes hog (*i.e.* castrated male); G denotes gilt (*i.e.* female).

### FEEDING RATIIONS

|                     |   | Percentage Rations. |     |     |      |       |
|---------------------|---|---------------------|-----|-----|------|-------|
|                     |   | I                   | II  | III | ..   |       |
| Weeks of Experiment | } | I                   | 1—3 | 4   | 5—18 | 19—21 |
|                     |   | II                  | 1—3 | 4   | 5—14 | 15—22 |
|                     |   | III                 | 1—3 | 4   | 5—9  | 10—20 |
| Middlings .. ..     |   | 60                  | 50  | 40  | 28   |       |
| Bran .. ..          |   | —                   | —   | —   | 14   |       |
| Hominy chop .. ..   |   | —                   | 15  | 20  | 18   |       |
| Barley meal .. ..   |   | 20                  | 25  | 30  | 30   |       |
| Flaked maize .. ..  |   | 10                  | —   | —   | —    |       |
| Fish meal .. ..     |   | 10                  | 10  | —   | —    |       |
| Meat meal .. ..     |   | —                   | —   | 10  | 10   |       |

Two per cent. minerals (3 parts lime, 1 part salt) added to each ration.  
Green food (kale, wheat, oats and vetches) fed twice daily at the rate of about ½ lb. per head per day.



**INITIAL AND FINAL WEIGHTS AND FOOD CONSUMPTION**  
**Pigs receiving Green Food**

| Block.                              |             | I   |     |     |     | II  |     |     |     | III |      |      |      |
|-------------------------------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| Litter.                             |             | 9   | 12  | 19  | 21  | 17  | 20  | 29  | 48  | 27  | 28   | 35   | 58   |
| <b>Initial Weights (lb.)</b>        |             |     |     |     |     |     |     |     |     |     |      |      |      |
| Dry                                 | Hogs .. ..  | 21  | 37  | —   | 40  | 38  | 35  | —   | 42  | —   | 56   | 35†  | 42   |
|                                     | Gilts .. .. | 24  | 25  | 45  | —   | —   | 47  | 44  | 36  | 41  | 50*  | 38   | —    |
| Wet                                 | Hogs .. ..  | —   | 29  | 47  | 30  | 37  | —   | 41  | 43  | 58  | 50   | —    | 63   |
|                                     | Gilts .. .. | 28  | —   | 50  | 37  | 40  | 47  | 57  | —   | 49  | —    | 43   | 43   |
| <b>Final Weights (lb.)</b>          |             |     |     |     |     |     |     |     |     |     |      |      |      |
| Dry                                 | Hogs .. ..  | **  | 218 | —   | 205 | 172 | **  | —   | 133 | —   | 196  | 124† | 145  |
|                                     | Gilts .. .. | 151 | 142 | 191 | —   | —   | 163 | 170 | 153 | **  | 168* | 136  | —    |
| Wet                                 | Hogs .. ..  | —   | 190 | 229 | 205 | 182 | —   | 190 | 176 | 149 | 220  | —    | Sold |
|                                     | Gilts .. .. | 194 | —   | 232 | 212 | 185 | 214 | 224 | —   | 226 | —    | 186  | 206  |
| <b>Total Food Consumption (lb.)</b> |             |     |     |     |     |     |     |     |     |     |      |      |      |
| Dry                                 | Hogs .. ..  | **  | 719 | —   | 688 | 629 | **  | —   | 565 | —   | 739  | 356† | 542  |
|                                     | Gilts .. .. | 516 | 502 | 598 | —   | —   | 607 | 521 | 548 | **  | 556* | 413  | —    |
| Wet                                 | Hogs .. ..  | —   | 637 | 873 | 781 | 685 | —   | 685 | 718 | 489 | 785  | —    | 861  |
|                                     | Gilts .. .. | 649 | —   | 908 | 844 | 707 | 844 | 844 | —   | 819 | —    | 690  | 688  |

\* Hog. † Gilt. \*\* Pig died.

**DETAILS**

| Block  | I                | II       | III       | Mean or Total |
|--|------------------|----------|-----------|---------------|
| Commenced .. .. .                                    | April 11th       | May 10th | June 15th | —             |
| Time (weeks) .. .. .                                 | 21               | 22       | 20        | 21            |
| Average age at start (weeks) .. .. .                 | 11.1             | 11.2     | 10.5      | 10.9          |
| Average wt. (lb.)                                    | At start .. .. . | 35.6     | 32.9      | 41.2          |
|  | At end .. .. .   | 197.2    | 178.4     | 180.1         |
| Number of pigs receiving green food rejected .. .. . | 1                | 1        | 3         | 5             |
| Regression of final on initial wt. ..                | 4.51             | 3.52     | 2.81      | 3.68          |

**STANDARD ERRORS OF TOTAL LIVE-WEIGHT INCREASE**  
**(Per Pig—lb. and per cent. of Increase)**

|   |                   |
|---|-------------------|
| Without elimination of differences of initial weight .. .. .              | 16.1 lb. or 10.8% |
| With elimination of differences of initial weight .. .. .                 | 11.3 lb. or 7.60% |
| With elimination of initial weight and food consumption .. .. .           | 9.3 lb. or 6.29%  |
| Means of two initial and two final weights (initial weight eliminated) .. | 9.9 lb. or 7.02%  |



**SUMMARY OF RESULTS**  
**EFFECT OF LACK OF GREEN FOOD**

|                       | Doing badly and removed from experiment | Lost weight during two or more weeks (excluding those removed) | Remained till end of experiment. |
|-----------------------|---|--|----------------------------------|
| Without Green Food .. | 13                                      | 15   | 8                                |
| With Green Food ..    | 3                                       | 4  | 29                               |

**WET AND DRY FEEDING**

| Block                             | I      | II     | III    | Total or Mean |
|-----------------------------------|--------|--------|--------|---------------|
| Increase per pig per week (lbs.)  |        |        |        |               |
| Mean of Wet and Dry .. ..         | 7.70   | 6.61   | 6.94   | 7.08          |
| Difference (W-D) .. ..            | +1.18  | +1.23  | +2.47  | +1.63         |
| Standard Error of difference.. .. | ±0.339 | ±0.324 | ±0.398 | ±0.205        |
| Food per 1 lb. increase (lbs.)    |        |        |        |               |
| Mean of Wet and Dry .. ..         | 4.306  | 4.596  | 4.504  | 4.469         |
| Difference (W-D) .. ..            | +0.334 | +0.196 | -0.159 | +0.124        |
| Standard Error of difference.. .. | ±0.234 | ±0.234 | ±0.262 | ±0.141        |

**EFFECTS OF NUMBERS IN PEN**

Mean Final Weights adjusted for differences of initial weight

| Block             | I     | II    | III   | Mean  |
|-------------------|-------|-------|-------|-------|
| Two in a pen ..   | 196.1 | 173.4 | 185.7 | 185.1 |
| Four in a pen ..  | 191.3 | 179.0 | 175.4 | 181.9 |
| Eight in a pen .. | 190.6 | 179.9 | 179.2 | 183.2 |

**CONCLUSIONS**

Green food appears essential to the health of young pigs kept under the conditions of the experiment. Pigs on wet food had a significantly greater live weight increase than those on dry food, owing to the greater amount of wet food consumed ; there was no significant difference in efficiency of food utilisation for the two types of feeding. Variation of numbers in a pen (with equal floor space per pig) appears to have no effect.