

Again, how often is it told that a certain sow is an extremely fine mother because her litter pulls her down extremely in condition. But if this can be regarded as proof of her quality it certainly can be taken as proof of the owner's inability to realize his duty to such a sow. Where litters are taken off the breeding-sow once a year the damage done by such management will not be so readily detected, but where the breeding is done twice yearly it very soon results in small litters, too high a percentage of deaths before weaning, and sterility in the sow. If strong healthy piglings are to be weaned regularly, then the sow must be well treated and kept in good breeding condition, neither too fat nor too thin. This means liberal feeding and a plentiful supply of good drinking-water, together with room for plenty of exercise.

VALUE OF NUTRIENTS.

It is essential, before proceeding further, to discuss some standard whereby the values of the nutritive materials in a food may be compared.

Digestibility: It is common knowledge that all the food consumed by stock is not utilized by them for sustenance and production. As the food passes through the digestive tract a certain portion of it is prepared by the animal for assimilation. That is known as the digestible portion, and is chiefly composed of digestible protein, carbohydrate, and fat. It is this portion which is of feeding and producing value to the animal fed; and when considering the food eaten by an animal it is the digestible portion which most concerns the farmer. Each type of food used is generally digested in similar quantities within close limits. For convenience this quantity digested for each particular food is referred to as the "coefficient of digestibility." So far as average farm crops are concerned, no great differences exist in the digestibility of the respective foods.

Digestible carbohydrate equivalent: The energy-giving portion of a ration has been described already as the carbohydrates and the fats. For convenience these two substances have been grouped together, and allowance made for the fat to contain two to three times as much energy as a similar quantity of starchy matter. This is calculated, of course, on the digestibility of the carbohydrates.

Total digestible nutrients: The meaning of this term should be obvious. It is the value of the digestible protein when added to the digestible carbohydrate equivalent.

Nutritive ratio: At one time this term held great significance. When rations were being compiled of concentrated foods it was regarded as essential for proper nutrition that the nutritive ratio should be a definite thing. This nutritive ratio means the knowledge of the relation of the digestible crude protein to the digestible non-protein constituents in the diet (digestible carbohydrate equivalent). As the quantity of digestible non-protein becomes greater in proportion to the digestible protein the ration is said to become "wider," and as it lessens the ration becomes "narrower." This is really suitable for the classification of feeding-stuffs; but otherwise, as an index as to the suitability of a ration being adequate to the needs of an animal for a specific purpose, experience has emphasized what was originally felt to be a weakness. At the present day the nutritive ratio of a diet