

# ANALYSES OF FEEDS.

Table Showing Average Amounts of Digestible Nutrients in the More Common Fodders, Grains and By-Products. Compiled by Hoard's Dairyman, Fort Atkinson, Wis.

NAME OF FEED.	Digestible Nutrients in 100 Pounds.				NAME OF FEED.	Digestible Nutrients in 100 Pounds.			
	Dry Matter in 100 Pounds.	Protein.	Carbohydrates.	Ether Extract (Crude Fat.)		Dry Matter in 100 Pounds.	Protein.	Carbohydrates.	Ether Extract (Crude Fat.)
<b>ROOTS AND TUBERS.</b>									
Artichokes	20.0	2.0	16.8	0.2	Beets, common	13.0	1.2	8.8	0.1
Beets, sugar	13.5	1.1	10.2	0.1	Carrots	11.4	0.8	7.8	0.2
Mangels	9.1	1.1	5.4	0.1	Parsnips	11.7	1.6	11.2	0.2
Potatoes	21.1	0.9	16.3	0.1	Rutabagas	11.4	1.0	8.1	0.2
Turnips	9.5	1.0	7.2	0.2	Sweet Potatoes	29.0	0.9	22.2	0.3
<b>GRAIN AND BY-PRODUCTS.</b>									
Barley	89.1	8.7	65.6	1.6	Brewers' Grains, dry	91.8	15.7	36.3	5.1
Brewers' Grains, wet	24.3	3.9	9.3	1.4	Malt Sprouts	89.8	18.6	37.1	1.7
Buckwheat	87.4	7.7	49.2	1.8	Buckwheat Bran	89.5	7.4	30.4	1.9
Buckwheat Middlings	87.3	22.0	33.4	5.4	Corn	89.1	7.9	66.7	4.3
Corn and Cob Meal	89.0	6.4	63.0	3.5	Corn Cob	89.3	0.4	52.5	0.3
Corn Bran	90.9	7.4	59.8	4.6	Atlas Gluten Meal	92.0	24.6	38.8	11.5
Gluten Meal	88.0	32.1	41.2	2.5	Germ Oil Meal	90.0	20.2	44.5	8.8
Gluten Feed	90.0	23.3	50.7	2.7	Hominy Chop	88.9	7.5	55.2	6.8
Starch Feed, wet	34.6	5.5	21.7	2.3	Cotton Seed	89.7	12.5	30.0	17.3
Cotton Seed Meal	91.8	37.2	16.9	8.4	Cotton Seed Hulls	88.9	0.3	33.1	1.7
Cocoanut Meal	89.7	15.6	38.3	10.5	Cow Peas	85.2	18.3	54.2	1.1
Flax Seed	90.8	20.6	17.1	29.0	Oil Meal, old process	90.8	29.3	32.7	7.0
Oil Meal, new process	89.9	28.2	40.1	2.8	Cleveland Oil Meal	89.6	32.1	25.1	2.6
Kaffir Corn	84.8	7.8	57.1	2.7	Millet	86.0	8.9	45.0	3.2
Oats	89.0	9.2	47.3	4.2	Oat Feed or Shorts	92.3	12.5	46.9	2.8
Oat Dust	93.5	8.9	38.4	5.1	Peas	89.5	16.8	51.8	0.7
Quaker Dairy Feed	92.5	9.4	50.1	3.0	Rye	88.4	9.9	67.6	1.1
Rye Bran	88.4	11.5	50.3	2.0	Wheat	89.5	10.2	69.2	1.7
Wheat Bran	88.1	12.6	38.6	3.0	Wheat Middlings	87.9	12.8	53.0	3.4
Wheat Shorts	88.2	12.2	50.0	3.8					

**Glossary.**

The terms used in the above table and in the discussion of feeding problems in this journal have the following significance.

**Ration.**—The total allowance of feed for twenty-four hours.

**Dry Matter.**—That portion of a feeding stuff which remains after all the water or moisture has been expelled by heat.

**Digestible Nutrients.**—That portion of the dry matter which can be digested by the animal and does not pass off through the bowels as excrement.

**Protein.**—That part of the digestible nourishment which goes to the formation of lean meat, ligaments, hair, horns and the case in (or curd) of milk. It is generally believed, also, that protein may be, and many times is, converted into the fat found in milk. The basis of protein is nitrogen, hence the protein elements are frequently termed the nitrogenous parts of the food. They are also called albuminoids.

**Carbohydrates.**—That part of the digestible nutrients which is the primary source of sustaining animal heat and furnishing the energy for keeping the animal mechanism in operation. They are composed of the woody fibre of the plant and grain, and the starch, sugar, gums, etc. and in the published tables of chemical analyses are usually subdivided into the terms crude fibre, which is the least digestible portion of feeding stuffs and nitrogen-free extract, so-called because it does not contain any nitrogen.

**Ether Extract.**—That portion of the

digestible nutrients which may be dissolved out of the food stuffs by ether. It is frequently called crude fat. It can be used by the animal for maintaining the body temperature, and for this purpose is from 2.2 to 2.5 times more efficacious than the carbohydrates. It is maintained by some, that the fat in the milk comes, largely, from the crude fat in the food, but it has been demonstrated that it is not absolutely necessary for this purpose.

**Feeding Standards.**

Various experiments have been conducted with a view to ascertain the

ANIMAL.	Daily allowance for 1000 lbs. live weight.			
	Dry Matter.	Protein.	Carbohydrates.	Ether Extract. Crude Fat.
<b>Cows.</b>				
At rest in stall	15 to 20	0.5 to 1.0	7.0 to 10.0	0.1 to 0.3
Giving milk	20 to 30	1.6 to 3.0	10.0 to 16.0	0.5 to 1.0
<b>Horses.</b>				
Light work	15 to 20	1.5 to 2.0	9.0 to 10.0	0.4 to 0.6
Heavy work	26 to 30	2.5 to 3.0	13.0 to 15.0	0.8 to 1.0
<b>Young Dairy Stock.</b>				
Age in months.	Av. live wt. per head, lbs.			
2-3	150	4.0	13.0	2.0
3-6	300	3.0	1.8	1.0
6-12	500	2.0	12.5	0.5
12-24	700	1.5 to 1.8	12.0 to 12.5	0.3 to 0.4

amount of feed and the varying amounts or properties of the several digestible nutrients required by domestic animals under the differing conditions in which they are placed. It is evident that a horse or an ox, at rest in a stall, requires less feed than when at work, and that a dry

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cow should not be fed in the same way that one would feed her when giving milk. The more work required of the horse, and the more milk yielded by a cow, the greater is the demand for food. In the nature of the case there can be no exact and arbitrary standards laid down. What will suffice for one animal may be either too much or too little for another accomplishing the same work, owing to differences in adaptability, in digestive and assimilative powers, and in care and environment. It is well known that the well groomed and properly stabled horse requires less feed for the same work than the same horse left to shift for himself without grooming or shelter. It is equally true that the milch cow responds by larger results to good care and proper shelter.

It does not follow that the labors of investigators in seeking to establish standards for feeding, have been fruitless. On the contrary, the results already attained are most helpful if rightly used and carried from as circumstances may require. The following table is compiled from the conclusions reached by different experimenters, supplemented by personal experience and reports from readers of dairy papers.

required for this purpose; but the variation in this respect does not run parallel with the variation in weight. Thus a cow weighing 800 pounds will require more feed per hundred than one weighing 1000 pounds or 1500 pounds. Instead of deducting, for such an animal, one-fifth from the maintenance ration, as given above, it would be nearer right to deduct not more than one-sixth. Whatever is consumed beyond the requirements for maintenance, supplies the material for growth, for making milk or furnishing the power expended in work and exercise and combating enemies and the elements. It follows that as conditions vary the standards should vary.

It should not be forgotten in compounding a ration that the stomachs of different classes of animals vary in relative size. The cow has very capacious receptacles for food, showing that she is fitted to consume relatively more coarse fodder than other animals, and hence, in arranging her feed, regard should be had both to bulk and the proper distribution of the nutrients throughout the entire mass. For example, 20 lbs. of timothy hay or 10 lbs. of corn will furnish practically equivalent amount of nutriment, but the cow will not thrive on corn alone, because of the defective digestion, consequent upon failure properly to distend her stomachs and subdivide the concentrated food. Those of us who belong to the generation that went "through the war" remember that "roughage" was quite as essential as grain for the continued well being and endurance of the animals. The prescribed army ration for the horse contains practically an equal amount of roughage and grain; for the cow, under ordinary conditions, we think it best to have about two-thirds of the dry matter in roughage and one-third in grain. When feeding heavily for rapid increase of weight or extra flow of milk, this proportion cannot be maintained, but the roughage should not be materially increased.

C. M. Templeton, of Tolt, has purchased a complete dairy outfit from W. J. Beggs' Supply House, Seattle.

"What Our Pure Food Laws Have Not Accomplished" is the title of an address before the Indiana Dairy Association by the secretary of the state board of health, is, considering all circumstances, about as perfect a specimen of unconscious humor as we ever had the pleasure of smiling at.—Jersey Bulletin (Indiana).

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