Corn in pet food

Why is corn a valuable ingredient in pet food? Can you create a balanced animal feed ration?

Background

Corn is a valuable nutritional component that is used in the pet food industry. Corn kernels are composed of 9% protein, 63% starch, 9% fiber, 4% oils, and 15% moisture. Dry pet foods often contain a range of 30–60% starches, making corn a common ingredient in these diets. In extruded kibbles, corn is commonly used due to its palatability and structure-forming properties, producing tasty kibbles with a desirable texture. Corn is also a good feed source due to its nutritional qualities for animal health. When whole corn or corn starch are properly cooked and included in pet food, the starch becomes digestible for the pet.

Reasons to include corn in pet foods:

- Corn provides energy and nutritional value.
- Corn in pet food promotes quality stools.
- Corn is high in the carotenoid antioxidants lutein and zeaxanthin.
- Corn is an economical choice.
- Corn is sustainable! Since 1980, yields have increased 64%, energy usage has decreased 44%, soil loss has decreased 68%, and greenhouse gas emissions have decreased 36% per bushel of corn.

A Pearson Square is a tool used to develop a total mixed ration (TMR) for livestock and pets. The main consideration is knowing the final requirement or percentage of the nutrient needed in the ration, in this case protein. Complete the computaion steps in order to achieve the correct percentages. See the calculation directions to complete a sample Pearson Square.

Materials

- Calculator
- Pearson Square app (optional) at: **homesteadapps.com/app/free/feedcalc/pearsonsquare.php**

Instructions

Example Pearson Square

Make a 15% crude protein (CP) total mixed ration by blending soybean meal (45% CP) and corn (9% CP) to create a 15% protein feed ration using the Pearson Square.

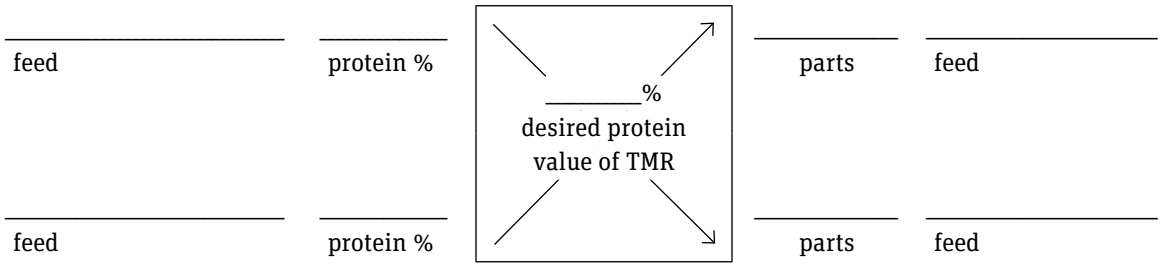
soybean meal feed	***45%*** protein %		***15 − 9 = 6*** parts	***soybean meal*** feed
		15 % desired protein value of TMR		
corn feed	***9%*** protein %		***45 − 15 = 30*** parts	***corn*** feed

1. Calculate the parts of the feed mixture:
   - 45 – 15 = 30 parts of corn
   - 15 – 9 = 6 parts of soybean meal
2. Add up the differences:
   - 30 + 6 = 36 total parts
3. Calculate the feed ratios:
   - Soybean meal: 6 ÷ 36 = 0.157 × 100 = 16.7%
   - Corn: 30 ÷ 36 = 0.8333 × 100 = 83.3 %

Content designed by educationprojects.org on behalf of Ohio Corn & Wheat.

Perform your own calculation

1. Using the feed ingredients of your choice from the data table below, calculate two different combinations of feed rations with the instructions below.



2. Using the feed ingredients of your choice from the crude protein data table, calculate two different total mixed rations (TMRs) with the instructions below.
3. Create one 19% TMR and second 26% TMR for two different pet foods. Place the desired protein for each TMR in the center of the Pearson Square to begin.
4. Select two possible feed ingredients from the Crude Protein chart. Write their names and protein % on the left side of the square on the lines labeled “feed”.
5. Calculate the difference between the protein of the selected feed and the desired protein in the middle of the square. To do this, subtract diagonally across the square. Subtract the smaller number from the larger one, ignoring any negative signs. The results represent the parts of each feed needed.
6. Add the two differences together to get the total parts. Then, divide each individual difference by the total parts. This will give you the proportion of each feed ingredient needed in the ration.
7. Multiply each ingredient's proportion by its respective nutrient concentration and add the results. This should equal the desired nutrient concentration you started with.

Crude protein data table

Feed	Protein %
Corn	9
Distiller’s grains	25
Soybean meal	45
Barley	14
Beef	28
Liver	76
Wheat middlings	16
Oats	12
Fish	28
Flaxseed	37
Cottonseed	21
Alfalfa	22

Fill in the following table:

	Feed 1	Feed 2	Ratio	Percentage of each
19% TMR				
26% TMR				

Now calculate how much of each of your feed types you would need for both examples to make a 50-pound batch.

	Feed 1	Feed 2	Ratio	Total pounds
19% TMR				50 pounds
26% TMR				50 pounds

Reflection

1. Why did you choose each feed ingredient for your feed ration?
2. How did your feed percentages change from one example to the other?
3. Looking at the pounds of each feed you would need, are your choices practical? Economical for the buyer? Healthy for the pets consuming the feed?