Pearson square method for preparation of concentrate mixture

Objective

To prepare concentrate mixture using Pearson square method

Introduction

For preparation of balanced rations for dairy animals, inclusion of concentrate ingredients is must. Generally diets are first formulated for one nutrient. Then the other nutrients are checked to see whether the feedstuffs used will meet the requirement or whether the feedstuffs used will meet the requirements or whether alternate feeds need to be included in the diet. One mehod is to balance for protein first and then to check energy levels to see whether they are met. Then the ration can be checked for other nutrients like Ca and P.

When the number of nutrients specified is small, the diet formulation can be easily carried out using simple calculations. However as the number of nutrient specification or the number of feedstuffs available increases, the formulation becomes tougher. There are 2 methods namely algebric and Pearson square of balancing diets for 1 to 2 nutrients using 2 or more ingredients or using ingredients at fixed level.

Use of Pearson square for concentrate mixture preparation

To use the square, place the desired percentage of protein in the centre of square (for example 16%). Place the percentage of proteins at the left hand corner of the square (9.55 for maize grain) and 495 for soybean meal). Then subtract diagonally, the smaller percentage from the larger percentage and place the answers on the right hand corners of the square (16-9.5=6.5 is placed in the bottom right and 49-16=33 in the top right.

Grain sorghum 9.5 .... 33 parts

16.0

Soyabean meal 49.0 CP 6.5
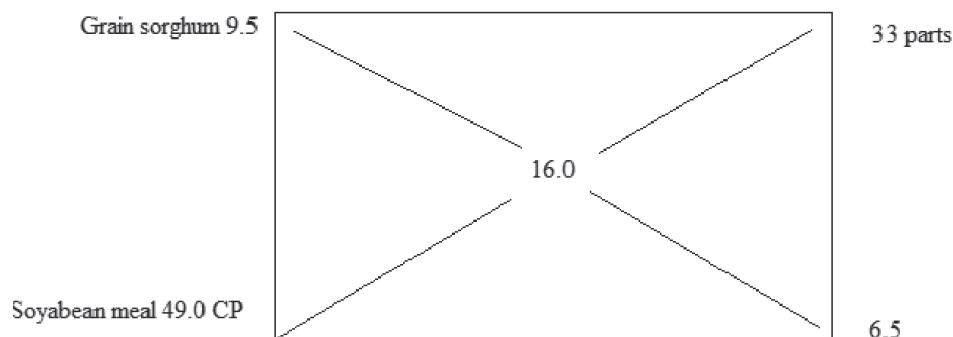
The figures at right hand corners are called parts (33 parts sorghum grain and 6.5 parts soybean meal). The total parts are determined by adding up the individual parts (33+6.5= 39.5 parts. The individual parts are changed to percentages by dividing the individual parts by the total parts (33/39.5= 83.54% for sorghum grain and 6.5%39.5= 16.46% for soybean meal).
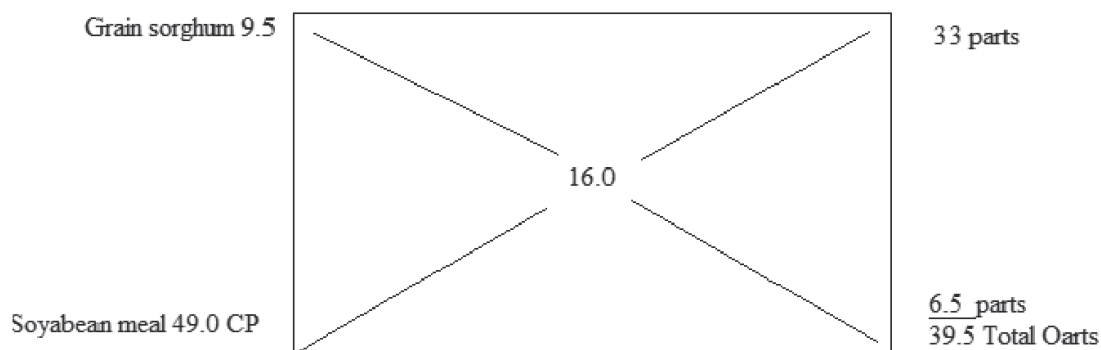
Percent sorghum grain in the concentrate mixture: 33/39.5 x 100= 83.54%

Percent soybean meal in the diet: 6.5/39.5 x 100= 16.46%.

Sample question

1. Prepare a concentrate mixture having 18% protein using maize grain (CP=11%) and groundnut cake (CP=45%) by Pearson Square method.