Formulation Methods to Produce Fish feed

Pearson Square Method

• Pearson square
• The simplest method to calculate the ration,
• It can be used for 2 and more ingredients,
• It can be balanced only one nutrient (make your choice for crude protein or crude fat)
Pearson Square

• Sample Calculation

• 1. Please calculate to prepare a fish feed that includes 45% crude protein, using fish meal and corn gluten meal...

• 2. Always keep in mind the nutrient value of the ingredients...

• 3. Fish meal includes 65% crude protein,

• 4. Corn gluten meal includes 40% crude protein...
Pearson Square

5. What will be the solution to reach 45% crude protein using fish meal and corn gluten meal?

You have 5 minutes to solve it...

---

Pearson Square

6. The solution is to create a mixture rip...

- Fish meal, 65% → 45%
  5
  20
- Corn gluten meal, 40% → 20
  +-----
  25
Pearson Square

• % of Fish meal is calculated as:
  • \((5 \times 100) / 25 = 20\)

• % of Corn gluten meal is calculated as:
  • \((20 \times 100) / 25 = 80\)

Pearson Square

• 7. The contribution from fish meal is:
  • 20% \times 65 = 13

• The contribution from corn gluten meal is:
  • 80% \times 40 = 32

• The total is; 13 + 32 = 45
Pearson Square

• What will we do if we have more than 2 ingredients?

• We have a solution...

• Sample: Please reach 40% crude protein using fish meal, corn gluten meal, wheat meal and soybean meal.

Pearson Square

• The crude protein % of ingredients:

• Fish meal: 65%

• Corn gluten meal: 38%

• Soybean meal: 42%

• Wheat meal: 17%
• You have 5 minutes to create a solution...

• The solution is to make two groups into the ingredients, the first should be consisted of ingredients whose crude protein % is higher than the requested and the second should be consisted of ingredients whose crude protein is lower than the request.
Pearson Square

- First group will be consisted of fish meal and soybean meal.

- Second group will be consisted of corn gluten meal and wheat meal.

- You should calculate the average crude protein % for first group and then you should do the same for second group.

Pearson Square

- First group average: \((65 + 42) / 2 = 53.5\)
- Second group average: \((38 + 17) / 2 = 27.5\)

- Now you should apply Pearson Square as if you have 2 ingredients that were called group one and group 2.
Pearson Square

- Group one 53.5
- 40
- Group two 27.5

\[ \text{% of group one: } \frac{100 \times 12.5}{26} = 48.07 \]
\[ \text{% of group two: } \frac{100 \times 13.5}{26} = 51.92 \]
Pearson Square

- First group’s ingredients %:
  - $48.07 / 2 = 24.035$

- Second group’s ingredients %:
  - $51.92 / 2 = 25.96$

- % of Fish meal: $65 \times 24.35\% = 15.83$
- % of Soybean meal: $42 \times 24.35\% = 10.23$
- % of Corn gluten meal: $38 \times 25.96\% = 9.86$
- % of Wheat meal: $17 \times 25.96\% = 4.41$

- **Total = 40.33**