

FORMULATION OF RATION FOR SWINE

1. **Fix/ leave slack space:** 2 kg
For nutritive (mineral mixture, salt) and non-nutritive feed additives, added at later stage while balancing the ration.
2. **Fix level of cereal by-products i.e. DORB :** 07 kg, 20 kg and 25 kg for pig starter, pig growth meal and pig finisher feeds, respectively.
3. **Fix level of animal protein source i.e. Fish meal:** 10 kg, 7 kg and 5 kg for Pig starter, Grower and Finisher meals, respectively.
4. **Calculate proportion of Energy feed and Vegetable protein through Pearson square method**
5. **Balance ME content:** Same as you have done in case of poultry
6. **Balance Available phosphorus:** Same as you have done in case of poultry
7. **Balance Calcium Content:** Same as you have done in case of poultry
8. **Check Crude fiber level:** calculate CF contributed by different feed ingredients, total it and compare with recommended Max. CF levels given in the feeding standard, it should not be higher than that level. This can be maintained by using good quality DORB (CF, Max. 12 %) and GNC (CF, Max. 11 %), or even then if, CF level is slightly higher, supplementation of fiber digesting enzyme preparations may be recommended.
9. Finally total, quantities of feed ingredients and each nutrients, it should match with the recommended nutrient levels given in the feeding standards.
- 10 .Vit AB₂D₃ and B-complex are necessarily added @ 25 g/100 kg each.

Requirements of Pig Feeds [IS 7472: 1986(Clause 3.3)] BIS 1986

Nutrients	Pig starter/ Creep feed	Pig growth meal	Pig finishing/ Breeding meal
CP (%)	20 (17.80)	18 (16.00)	16 (14.20)
ME (Kcal/kg)	3360 (2990)	3170 (2821)	3170 (2821)
Ca (%)	0.6 (0.53)	0.6 (0.53)	0.6 (0.53)
Available P (%)	0.6 (0.53)	0.4 (0.36)	0.5 (0.45)
CF (%)	5.0 (4.45)	6.0 (5.34)	8.0 (7.12)

Note: All values are based on moisture free basis (100 % DMB), while values in Parenthesis are converted to 89 % DMB (as fed basis)

Proportion of maize in the remaining quantity (81 kg) = $24.38/31 \times 81 = 63.70$ kg

Proportion of SBM in the remaining quantity (81 kg) = $06.62/31 \times 81 = 17.30$ kg

Ingredients	Qty (kg)	CP %	ME Kcal/kg	Av. P %	Ca %	CF %
NR, Pig starter (BIS 1986)	-	17.80	2990	0.530	0.530	4.45
DORB (CF 12 %)	07.00	0.95	154	0.105	0.005	0.84
Fish meal	10.00	4.20	240	0.243	0.373	0.10
Maize	63.70	5.73	2178	0.178	0.013	1.40
GNC (expeller)	17.30	6.92	450	0.097	0.028	2.25
Av.P. and Ca thr. ingredients	--	--	--	0.357	0.420	--
MM + salt + other additives	02.00	--	--	MM *	MM*	--
Total	100.0	17.80	3022	Fulfilled	Fulfilled	4.59

Note:1. Available P = $0.105+0.178+0.097= 0.380 \times 0.3 = 0.114$ (30 % of 0.380) + $0.243 = 0.357$

2. MM* (mineral mixture normally contains Ca 20-22 % and P, 9-12 %, in addition to this it also contains essential trace minerals, therefore addition of 2 % will take care of Ca & Av. P and TM); Vit. AB2D3 and B- complex are added @ 25 g/100 kg.

Note: Similarly, by following above steps, you can formulate rations for Growing and Finisher pigs. Final results are given below:-

Ingredients	Qty (kg)	CP %	ME Kcal/kg	Av. P %	Ca %	CF %
NR, Pig grower (BIS 1986)	-	16.00	2831	0.360	0.530	5.34
DORB (CF 12 %)	20.00	02.70	440	0.300	0.014	2.40
Fish meal	07.00	02.94	168	0.170	0.261	0.07
Maize	58.29	05.25	1947	0.163	0.015	1.28
GNC (expeller)	12.71	05.08	330	0.071	0.020	1.65
Av. P & Ca thr. ingredients	--	--	--	0.330	0.310	--
MM + salt + other additives	02.00	--	--	MM *	MM*	--
Total	100.0	15.97	2885	Fulfilled	Fulfilled	5.40

Note 1: Available P = $0.300+0.163+0.071= 0.534 \times 0.3 = 0.160$ (30 % of 0.534) + $0.170 = 0.330$

2. MM* (mineral mixture normally contains Ca 20-22 % and P, 9-12 %, in addition to this it also contains essential trace minerals, therefore addition of 2 % will take care of Ca & Av. P and TM); Vit. AB2D3 and B- complex are added @ 25 g/100 kg.

Ingredients	Qty (kg)	CP %	ME Kcal/kg	Av. P %	Ca %	CF %
NR, Pig finisher (BIS 1986)	-	14.20	2821	0.450	0.530	7.12
DORB (CF 12 %)	25.00	03.38	550	0.375	0.018	3.00
Fish meal	05.00	02.10	120	0.122	0.187	0.05
Maize	59.50	05.36	1987	0.167	0.012	1.31
GNC (expeller)	08.50	03.40	221	0.048	0.014	1.44
Av. P & Ca thr. ingredients	--	--	--	0.299	0.231	--
MM + salt + other additives	02.00	--	--	MM *	MM*	--
Total	100.0	14.24	2878	Fulfilled	Fulfilled	5.80

Note 1: Available P = $0.375+0.167+0.048= 0.590 \times 0.3 = 0.177$ (30 % of 0.590) + 0.122 = 0.299
2. MM* (mineral mixture normally contains Ca 20-22 % and P, 9-12 %, in addition to this it also contains essential trace minerals, therefore addition of 2 % will take care of Ca & Av. P and TM); Vit. AB2D3 and B- complex are added @ 25 g/100 kg.

