

NUTRIENT REQUIREMENT IN SWINE

Swine / Pigs require many nutrients for their maintenance, growth and production.

- *Carbohydrates:*
 - Pigs can utilize crude fibre to a lower extent.
 - The utilization of fibre by the pigs depends on the age of and weight of pigs and characteristic of non-fibrous portion of the ration.
 - For growing and finishing pigs 5-6% crude fibre level in their diet is recommended.
 - In sows, 10-12% level of CF in diet can be well tolerated.
- *Fats:*
 - When high fat diets are fed to pigs there is deposition of excessive fat inside the body.
 - If this feed fat contains higher concentration of short chained fatty acids (ex. Soybean and groundnut) there is a production of soft pork which is not desirable.
 - Pigs fed on rations containing 0.5% fat, make a satisfactory gain and stores normal amount of body fat.
 - However, the practical level of fat inclusion is higher than this i.e. about 4%.
- *Protein Requirement:*
 - In Swine/Pig feeding it is important to provide good quality protein in the ration.
 - All essential amino acids should be present in right quantity and proper balance.
 - Even if one essential amino acids is lacking or is in excess it will cause marked reduction in the feed intake which will affect the growth and production
 - A combination of animal and vegetable protein in a pigs diet will provide all essential amino acids in proper proportion.

- Protein requirements of pigs express as % in the feed is given below:

S.NO	Class of Pig	% of protein in diet
1.	Pigs - preweaning/creep feed	18-22
2.	Weaned pigs	16
3.	Growing pigs '45 kg body wt'	14
4.	Breed gilts	15
5.	Sows	14
6.	Breeding boars	14
7.	Lactating sow	15

- *Mineral Requirements*

- If swine is fed on concentrates alone calcium is more likely to be deficient. Whereas if they are fed only on pasture, phosphorus deficiency results.
- The recommended calcium and phosphorus levels for swine diet are as below:

Category of pig	Weight	Ca %	P %
Growing & Fattening Pigs	(5-10 kg)	0.80	0.60
	(10-45kg)	0.65	0.50
	(45-90 kg)	0.50	0.40
Gilts & Sow bred		0.75	0.50
Lactating Sows		0.60	0.40

- In practical swine ration it is routine practice to add 0.5-1% limestone and 0.5% di-calcium phosphate/bone meal.
- As per the NRC 0.5% common salt is recommended in rations of all classes and ages of pigs.
- Iodine need of pig is 0.2 mg/kg diet which should be supplied in the form of iodised salt.
- Piglet anaemia is seen in piglets, housed in concrete floors under intensive farming system. The condition is called as "thumps". Anaemic piglets are listless and flabby with

wrinkled skin and unhealthy looking hair coat. At birth, piglets contains 50 mg iron. The daily requirement is 7 mg and about 1 mg is supplied in daily sow milk consumed by the piglet. This deficit of 6mg/day will exhaust the body stores within a week if iron is not provided. This condition can be prevented by giving iron orally or by injections. Iron dextrose 100 mg on third day of birth followed by 50 mg on 21 day prevents anaemia. Painting the udder of the sow with a pate of ferrous sulphate causes intake of iron when the piglet suckles its mother and helps prevent thumps.

- Requirement of copper is 6mg/kg diet.
- Requirement for Manganese is 10mg/kg diet.
- Requirement for zinc is 50mg/kg diet.
- *Vitamin Requirements*
 - Vitamin K is synthesized in the intestine of the pigs by micro-organisms in adequate amount and hence has no practical importance.
 - Deficiency of vitamin B-complex may arise under practical conditions in pigs raised on feeds like cereal grains without much inclusion of green forage. Liberal supply of good quality legume fodder hay, dairy products will take care of vitamins of B-series.
 - Vitamin C is synthesized in the body and hence not of practical importance.
- As in the case of poultry pig / swine feeds may be formulated as per NRC specifications or BIS specification.

NUTRIENT REQUIREMENT IN SWINE AS PER NRC

- The following table gives the nutrient requirement of diets of Growing pigs

Growing Pigs Allowed Feed *Ad libitum* (90% dry matter)

	Body Weight (kg)					
	3–5	5–10	10–20	20–50	50–80	80–120
Average weight in range (kg)	4	7.5	15	35	65	100
DE content of diet (kcal/kg)	3,400	3,400	3,400	3,400	3,400	3,400
ME content of diet (kcal/kg)	3,265	3,265	3,265	3,265	3,265	3,265
Estimated feed intake (g/day)	250	500	1,000	1,855	2,575	3,075
Crude protein (%)	26.0	23.7	20.9	18.0	15.5	13.2

- The following table gives the nutrient requirement of diets of Barrows and Gilt

Barrows and Gilts allowed Feed *Ad libitum* (90% dry matter)

Body weight range	50–80 kg Body Weight					
Lean gain (g/day)	300	300	325	325	350	350
Gender	Barrow	Gilt	Barrow	Gilt	Barrow	Gilt
Average weight in range (kg)	65	65	65	65	65	65
DE content of diet (kcal/kg)	3,400	3,400	3,400	3,400	3,400	3,400
ME content of diet (kcal/kg)	3,265	3,265	3,265	3,265	3,265	3,265
Estimated feed intake (g/day)	2,750	2,400	2,755	2,400	2,755	2,400
Crude protein (%)	14.2	15.5	14.9	16.3	15.6	17.1
Body weight range	80–120 kg Body Weight					
Lean gain (g/day)	300	300	325	325	350	350
Gender	Barrow	Gilt	Barrow	Gilt	Barrow	Gilt

Average weight in range (kg)	100	100	100	100	100	100
DE content of diet (kcal/kg)	3,400	3,400	3,400	3,400	3,400	3,400
ME content of diet (kcal/kg)	3,265	3,265	3,265	3,265	3,265	3,265
Estimated feed intake (g/day)	3,280	2,865	3,280	2,865	3,280	2,865
Crude protein (%)	12.2	13.2	12.7	13.8	13.2	14.4

- The following table gives the nutrient requirement of diets of Gestating sows

Gestating Sows (90% dry matter)

	Body Weight at Breeding (kg)					
	125	150	175	200	200	200
	Gestation Weight Gain (kg)					
	55	45	40	35	30	35
	Anticipated Pigs in Litter					
	11	12	12	12	12	14
DE content of diet (kcal/kg)	3,400	3,400	3,400	3,400	3,400	3,400
ME content of diet (kcal/kg)	3,265	3,265	3,265	3,265	3,265	3,265
Estimated feed intake (kg/day)	1.96	1.84	1.88	1.92	1.80	1.85
Crude protein (%)	12.9	12.8	12.4	12.0	12.1	12.4

- The following table gives the nutrient requirement of diets of Lactating sows

Lactating Sows Allowed Feed Ad Libitum (90% dry matter)

	Sow Postfarrowing Weight (kg)					
	175	175	175	175	175	175
	Anticipated Lactational Weight Change (kg)					
	0	0	0	-10	-10	-10
	Daily Weight Gain of Pigs (g)					
	150	200	250	150	200	250
DE content of diet (kcal/kg)	3,400	3,400	3,400	3,400	3,400	3,400
ME content of diet (kcal/kg)	3,265	3,265	3,265	3,265	3,265	3,265
Estimated feed intake (kg/day)	4.31	5.35	6.40	3.56	4.61	5.66
Crude protein (%)	16.3	17.5	18.4	17.2	18.5	19.2

NUTRIENT REQUIREMENT IN SWINE AS PER NRC

- The following table gives the nutrient requirement of diets of Growing pigs

Growing Pigs Allowed Feed Ad libitum (90% dry matter)

	Body Weight (kg)					
	3-5	5-10	10-20	20-50	50-80	80-120
Average weight in range (kg)	4	7.5	15	35	65	100
DE content of diet (kcal/kg)	3,400	3,400	3,400	3,400	3,400	3,400
ME content of diet (kcal/kg)	3,265	3,265	3,265	3,265	3,265	3,265
Estimated feed intake (g/day)	250	500	1,000	1,855	2,575	3,075
Crude protein (%)	26.0	23.7	20.9	18.0	15.5	13.2

- The following table gives the nutrient requirement of diets of Barrows and Gilts

Barrows and Gilts allowed Feed *Ad libitum* (90% dry matter)

Body weight range	50–80 kg Body Weight					
Lean gain (g/day)	300	300	325	325	350	350
Gender	Barrow	Gilt	Barrow	Gilt	Barrow	Gilt
Average weight in range (kg)	65	65	65	65	65	65
DE content of diet (kcal/kg)	3,400	3,400	3,400	3,400	3,400	3,400
ME content of diet (kcal/kg)	3,265	3,265	3,265	3,265	3,265	3,265
Estimated feed intake (g/day)	2,750	2,400	2,755	2,400	2,755	2,400
Crude protein (%)	14.2	15.5	14.9	16.3	15.6	17.1
Body weight range	80–120 kg Body Weight					
Lean gain (g/day)	300	300	325	325	350	350
Gender	Barrow	Gilt	Barrow	Gilt	Barrow	Gilt
Average weight in range (kg)	100	100	100	100	100	100
DE content of diet (kcal/kg)	3,400	3,400	3,400	3,400	3,400	3,400
ME content of diet (kcal/kg)	3,265	3,265	3,265	3,265	3,265	3,265
Estimated feed intake (g/day)	3,280	2,865	3,280	2,865	3,280	2,865
Crude protein (%)	12.2	13.2	12.7	13.8	13.2	14.4

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Estimated feed intake (kg/day)	1.96	1.84	1.88	1.92	1.80	1.85
Crude protein (%)	12.9	12.8	12.4	12.0	12.1	12.4

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Lactating Sows Allowed Feed Ad Libitum (90% dry matter)

	Sow Post farrowing Weight (kg)					
	175	175	175	175	175	175
	Anticipated Lactational Weight Change (kg)					
	0	0	0	-10	-10	-10
	Daily Weight Gain of Pigs (g)					
	150	200	250	150	200	250
DE content of diet (kcal/kg)	3,400	3,400	3,400	3,400	3,400	3,400
ME content of diet (kcal/kg)	3,265	3,265	3,265	3,265	3,265	3,265
Estimated feed intake (kg/day)	4.31	5.35	6.40	3.56	4.61	5.66
Crude protein (%)	16.3	17.5	18.4	17.2	18.5	19.2

NUTRIENT REQUIREMENT IN SWINE AS PER BIS (BUREAU OF INDIAN STANDARD)

- The following table gives the nutrient specification of various categories of swine / pig feed as per Bureau of Indian Standards specification

S. No	Nutrient	Requirement		
		Pig starter/ Creep feed	Pig growth meal	Pig finishing / Breeding meal
(i)	Moisture content (Max %)	11.0	11.0	11.0
(ii)	Crude protein (Min %)	20.0	18.0	16.0
(iii)	Crude fat or ether extract	2.0	2.0	2.0
(iv)	(Min %)	5.0	6.0	8.0
(v)	Crude fibre (Max %)	8.0	8.0	8.0
(vi)	Total ash (Max %)	4.0	4.0	4.0
(vii)	Acid insoluble ash (Max %)	3 360	3 170	3 170
	Metabolizable energy (Kcal/kg), Min			

NUTRIENT REQUIREMENT IN EQUINES - INTRODUCTION
