

them for chevon production or for sacrifice (Eid). Fattening of male kids on high protein diet i.e. concentrate and roughage feeds of 50:50 ratios may provide body weight of 35-40 kg in medium size and 40-50 kg in large size breeds.

7. Explore market for male and female, goat products and by products. Goats produced for meat (male) get much higher price during festivals such as Eid, Lohadi, Dushara, Diwali and Holi etc.
8. Always cull (dispose off) unproductive goats from the farm to save unnecessary maintenance expenditure on unproductive animals. Goats with off colour, stunted growth and low body weight, less milk yield and poor reproductive efficiency and those which do not respond to treatment become old should be culled.

The expenditure on above mentioned strategic inputs account from Rs 900 to 1200 per goat per year as per size and productivity of breed but profit per doe increases from Rs 2500 to 3500/goat/year over and above traditional system of goat management.

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**Authors**

**Manoj Kumar Singh, R Pourouchottamane, Mhod Arif,  
Rakesh Kaushik and Anuj K Singh**

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**Dr. M. S. Chauhan, Director, ICAR-CIRG, Makhdoom**

**For further information please Contact :**

**ICAR-Central Institute for Research on Goats, Makhdoom, Farah,  
Mathura - 281122 (U.P.)**



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**Contact us: 0565-2763380**

## Tips for Commercial Goat Farming



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(Indian Council of Agricultural Research,  
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Makhdoom, Farah, Mathura - 281 122 (U.P.) INDIA  
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India has 148.88 million goats which is 27.80% of total livestock population. Goats have been an integral component of farming systems and most preferred species of small, marginal farmers and land less community for their livelihood due to low initial investment, lesser risk, high prolificacy, round the year market, early return, acceptability across religions and wider adaptability in various agro-climatic regions of India. There are 34 defined breeds of goat apart from large population of nondescript regional goats. Indigenous goat breeds have an immense production potential and resistance against diseases and climatic fluctuations. However, their optimum potential has not been expressed due to subsistence production system. In order to harness the full potential of these goats, following important least cost and users friendly tips are suggested to increase productivity of goats and income of goat keepers.

### Breeding Management

1. Choose breed according to adaptability for prevailing climatic conditions, purpose of rearing and suitability for feeding management system. Performance and survivability of goat breeds of North-western region deteriorate in hot and humid eastern and southern regions. Many goat breed (as a breeding farm) do not perform well under stall feeding farm however some breed do well such as Barbari, Black Bengal and some need open area for walk/ grazing such as Beetal, Sirohi etc.
2. Start goat farm with 30-50 animals of high genetic potential so that all aspects of goat production and management could be learnt and understood without risk in 1<sup>st</sup> year. Later on (in 2<sup>nd</sup> year onwards) increase goat strength depending upon animals and input availability.
3. Goats, being used as foundation stock should be of pure bred, high genetic merit and from different flocks i.e., unrelated especially breeding buck. Efforts should be made to purchase young stock as they could be easily adopted in newer environment. Always purchase PPR vaccinated animals.
4. The male which is pure-bred as individual and progeny of purebred parents, large in size (sire and doe) as per breed standards, doe (mother) with good milk yield record should be chosen as buck (breeding). It could be selected at 6-9 months age for small size breed and 9-12 months of age for large size breeds. However should be used



in breeding at 12 month for small size (Black Bengal), 14-16 month for medium size (Barbari) and 16-18 months in large size breeds (Beetal).

5. In case of non-availability of pure-bred and high potential females then purchase relatively high potential graded or non-descript females and do up-gradation of them through high potential bucks suitable for prevailing climatic conditions. Castrate crossbred male (F-1) and sale them for meet or sacrifice purpose, however half-bred females should be regularly upgraded for 3-4 generation from pure-bred buck of choice. Take precaution that halfbred or females under process of upgradation should not be breed by their father (avoid inbreeding).
6. Rotate bucks after 2-3 seasons use and always select un-related buck to avoid inbreeding.
7. One healthy buck is sufficient to breed 25 to 35 females. However, at beginning 10 to 15 females should be allotted a buck so that sufficient genetic variation could be created in breeding farm.
8. Regularly detect heat and breed females after 12-16 hrs after initiation of estrous for higher conception. Right age and body weight of first service in small, medium and large size goat breeds are 7-9 month age and 8-9 kg weight (Black Bengal), 10-12 month age and 16-18 kg body weight (Barbari, Osmanabadi) and 12-16 month age and >20 kg body weight such as Beetal, Jakhrana and Jamunapari.
9. Plan kidding in such manner that kidding of goats should occur in spring (Feb-March) and autumn season (Oct-November). Therefore, breed goats in summer (15 April-June) and autumn season (20 September - 20 November) to achieve kidding in these seasons comfortable for kid's survivability. More than 80% females exhibit estrous symptoms in these months only. Doe also deliver significantly higher milk as compared to those which kidded in different months.
10. Some goats (10-20%) do not perform/adopt up to optimum level in spite of proper precaution, care and feeding. Therefore, regularly cull poor performer and aged animals as expenditure remain more in their management while productivity remains low.



### Feeding Management

1. Goat production should be shifted from pastoral grazing to strategic/semi intensive system as it increases overall production by 40-100%. Concentrate ration should be essentially provided to advance pregnant, growing kids during 3-9 months, first 60-90 days of lactating

females and bucks during breeding season.

- Concentrate ration should be given in grinded form (pellet or mesh). It should be rich in protein (cakes, maize) for growing kids whereas rich in energy (wheat bran, gram bran, maize) for adults. Mix 2% mineral mixture and 1% salt in concentrate ration.



- Feed colostrum within half hour of birth and allow suckling to kids 3 times for five days of (10%) body weight. Colostrum is the first milk produced after kidding. Colostrum contains a high content of immunoglobulin (antibodies), vitamin A, minerals, fat and other sources of energy. Antibodies are proteins which help the goat kid fight against diseases Wash udder of lactating goats with 2-5% potassium permanganate solution before suckling and milking. Take proper precautions to avoid over or under feeding of milk.
- Pay more and prompt attention and care of multiple born kids up to one month for suckling, feeding, cleanliness and protection from harsh environment.
- Ensure clean water supply all time to new born kids and 2-3 times for adults.
- For fattening of male kids under intensive system they should be given ration with 60:40 concentrate: roughage feeds for 3 months to 12 months age to attain 20-2, 30-35 and 40-45 kg weight in small, medium and large size breeds.
- When there is deficiency of biomass in grazing field then adult goats (male and female) should be provided 150-250 gram concentrate per day for their maintenance depending upon breed size. However, for advance pregnancy, lactation and for growth goats should be provided additional ration of 150-250 gm/day depending upon breed size and production performance.
- Do not suddenly change the diet of goats and atleast ensure sufficient straw to feed them as per age, body weight and production stage.

#### Housing Management

- Provide housing with adequate space, ventilation, clean and separate housing at least for sick animals and growing kids. Goats should be well protected against inclement weather. Neonatal and growing kids should be provided beddings and it should be changed at 2-3 day interval.

- Keep young stock (0-3 month and 3-6 month) in separate shed. Never keep them with adult goats and do not allow access to adult goats sheds to minimize parasitic infestation.
- Replace soil 4 inch of shades before and after rainy seasons (June and late September) to minimize parasitic infestations.

Description	Scientific requirement/recommendation
Orientation of shed	Sheds with long axis running East-West with generous provision for ventilation/air movement to help dry up the shed will be most suitable.
Length of shed	No restriction on the length of shed.
Breadth of shed	Normally between 6 m to 8m (Preferably not e" 20 feet).
Wall height	0.5-1.0m above ground on long side of shed & up to roof on width side .
Roof height	2.7 m at eaves & 3.5 m at centre
Overhang of roof	0.75-1 m on both sides.
Gap between sheds	6 m to 8m ((Preferably not < 20 feet).
Open paddocks	One side of shed preferably south, if space constraints then on both side.

#### Floor space requirements

Age / Category of goats	Covered area (m <sup>2</sup> /goat)	Open paddock (m <sup>2</sup> /goat)
0 - 3 months	0.2-0.25	0.4 - 0.5
3 - 6 months	0.5 - 0.75	1.0 - 1.5
6 - 12 months	0.75 - 1.0	1.5 - 2.0
Yearling goats (above 12 months)	1.00	2.00
Adult goats	1.5	3.0
Pregnant and lactating goats	1.5 - 2.0	3.0 - 4.0
Bucks	1.5 - 2.0	3.0 - 4.0

#### Health Management

- Farmers should learn the clinical symptoms of important goat diseases to take early interventions and treatment.
- Perform vaccination against important infectious diseases goats as per below mentioned schedule.
- Pay more attention on weaned kids. Kids showing signs of coccidia

infestation should be treated immediately; otherwise they will dehydrate and die.

4. Deworming is very important as parasites, mainly internal parasites are one of the biggest problems of organized goat farming. Provide of minimum 2 doses of anthelmintic before and after monsoon seasons to the goats of all ages. Rotation of the drugs should be done to prevent emergence of the drug resistance
5. Drenching should be done between 1 to 6 months of age to prevent coccidiosis in goats. The most common coccidiosis drugs used at the organized goat farms are Amprolium (50-100 mg/kg for 5-7 days) and Toltrazuril (20 mg/kg for 2 days).
6. Dipping should be done to prevent infestations caused by ectoparasites, and to be carried out before and after winter season.

Name of Disease	First Vaccination age **	Booster Dose	Repeat Vaccination after	Dose*	Route*
PPR	3 months	Not Required	3 years	1 ml	subcutaneous
Goat Pox	3 months	3-4 weeks post first vaccination	1 year	1 ml	-do-
Foot and Mouth Disease (FMD)	3 months	-do-	6 months***	1 ml	-do-
Enterotoxaemia (ET)	3 months	-do-	6 months	2 ml	-do-
Hemorrhagic Septicemia (HS)	3 months	-do-	6 months***	2 ml	-do-

\*Dose & Route may vary manufacturer to manufacturer; \*\*At the age of 3 months, any of the above may be given \*\*\*May differ as per the adjuvant used in the vaccine

### Forage Crop Management

1. Green, nutritious and palatable fodder is necessary throughout the year for good milk and meat production.
2. It is necessary to follow a scientific cropping system/cycle for round the year for green fodder production.
3. Forage crops *viz.* Pearl millet, Sorghum, Cowpea, Cluster bean *etc.* can be sown from the month of February to July, if the availability of irrigation water is assured. In this sowing situation if a forage crop sown in the month of February it will provide green fodder from April onward.
4. Likewise March sown crop provide green fodder from May onward,

April sown crop, June onward; May sown crop, July onward; June Sown crop, August onward; July sown crop, September onward and so on.

5. Further, the forage crops *viz.* Oats, Berseem, Barley, Lucerne *etc.* can be sown in the month of October – November and these crops provides green fodder from the month of December to April-May.



Fig. 1. Forage crop cycle for round the year green fodder production

### General Management

1. Always transport dewormed and vaccinated goats at least for PPR 20-25 days prior vaccination, do not transport advance pregnant (last quarter of pregnancy) and newborn (up to one month) kids, sick and week animals. Comfortable and safe transportation of goat should be performed with due care. After reaching at their destination don't overfeed or sudden change in feeding regime should be avoided.
2. If kids are not able to suckle own, the assistance should be provided. The ability of kids to resist diseases is greatly affected by the timing of colostrum intake and the quantity and quality of the colostrum fed. At about two weeks, kids begin to nibble green food or dry fodder, and it would be good to feed that small quantity within their easy reach at this time.
3. After kidding, cutting of navel cord from about 7 cm away from body using new blade or sterilized scissor and tie it using new thread 2 cm before cut. After cutting it should be dipped in antiseptic solution.
4. Perform weaning of kids at 3 months of age. Weaning is the separation of kids from their does. It is a very stressful period for kids and coccidia infestations generally show up at weaning.
5. Keep breeding, pedigrees, production, feeding and health records for sustainable improvement and profit.
6. New person could start goat farming with limited space and resources by purchase of male kids at 2 months of age from goat farmers. Rearing