TIPS ON GOAT RAISING

I. INTRODUCTION

The optimum potential of goat as one of the main sources of milk and meat has not been fully tapped in the Philippines. The goat is popularly known as the poor man's cow because children and old folks who can not afford cow's milk prefer drinking goat's milk. Aside from being cheap, goat's milk is more digestible compared to cow's milk.

The goat is a clean animal and its male odor is only present during the breeding season. Female goat does not smell. Contrary to myth, goats do not I eat trash. They do, however, lick the labels of tin cans to taste the glue on the label's back.

Goat raising is undertaken commonly by small farmers or backyard raisers. A farmer raises an average of one to two head goats. Only a handful of commercial-scale goat farms can be found in the country.

As of 1998, goat population is estimated to be 3,083,262 compared to the 1988 population of 2,120,110 that shows an average annual increase 4.54 percent.

In a study conducted by a government agency, it was found out that goats are multi-purpose ruminants producing 58.4% milk, 35.6% meat, 4.3% hide, and 1.7% fiber. According to them, these small ruminants can provide the answer to improve nutritional requirements of the predominantly rural farm families scattered allover the archipelago.

II. BREEDS TO RAISE

There are many breeds of goat worldwide but the available breeds in the Philippines are as follows:

1. *Anglo Nubians* - basically a tropical breed that was successfully adapted in the western countries. Its distinguishing features include drooping and pendulous ears, and a brown hair or a combination of brown and black. It has a long body that usually weighs 70-90 kilograms at mature age and produces 1-21iters of milk daily.

2. *Boer* - a meat type breed with distinct white body color and usually black or reddish brown from rear legs to the head. The goat weighs an average of 90 kilograms at mature age.

3. *Saanen* - originated from Switzerland, is a pure white to off-white in color. It holds the distinction as the highest milk producer (1.8 liters daily), that weighs an average of 70 kilograms-

4. *Toggenburg* - also from Switzerland, have distinct white markings on the face, legs and tail and an erect ears like the Saanen. Milk production averages 1.5 liters daily.

5. *Alpine* - also of European breed has a color that ranges from off-white to red, to black. An alert breed of medium to large size, it weighs I 70 kilograms at mature age. It posses an upright ears and a straight face, the breed produces 1.5 liters of milk daily.

6. *Native* - the breed are small, stocky and low-set. Colors range from red, white or black or a combination of these colors. Milk production is just enough for its kids. It weighs 20 to 30 kilograms at mature age.

SELECTION CTITERIA

A. Does

1. Does should be purchased from a locality or area with similar climatic conditions;
2. Native or graded does should not be less than 25 kilograms;
3. Udder should be palpated for size, detection of lumps, and other abnormalities;
4. Teats should be uniform at length and large enough for easy milking;
5. It must have a good appetite, possessing alert eyes, and well formed pupils; and
6. Do not buy breeders from markets;

B. *Bucks*

1. One year old breeder or buck that have successfully mated once is desirable;
2. Acquired buck should be accompanied by pedigree records;
3. It must have a good producing line based from farm records;
4. Buck must come from doe with high twinning rate;

5. Buck must be active and ready to breed in-heat doe;
6. Replace buck, preferably, every three years;

III. MANAGEMENT

A. Housing

Whether on range or confined feeding, housing provisions are necessary. A goat house or shed must be built to provide shelter. Goats are afraid of rain and wetness as these make them prone to pneumonia. They also prefer sleeping in elevated platforms like a stair type arrangement. It must be well ventilated and drained, and easy to clean. Feeding racks (silage, water, mineral and concentrate) should be accessible to both animals and caretaker, preferably in the front of the aisle. Flooring should be provided and elevated at least 15 degrees to facilitate cleaning and drainage.

Separate pens should be provided for lactating and dry does, kids, growers and bucks. The buck pen should be visible to breeding does yet far enough to avoid transfer of the typical goat smell especially to lactating does when milk is to be sold.

Space Requirement for Goats:

	Flooring ($Meter^2$)	Feeding (Linear Cm.)
Does/Bucks/Adults	0.75-1.50	15.24-25.40
Growing	0.50-0.75	10.16-15.24
Kids	0.20-0.50	7.62-12. 70

A fenced loafing area beside the goat house must be provided (100 to 150 m2/50 hd.), complete with feeding racks and water troughs, to allow animals to loaf freely. Flooring of the area must be cemented to facilitate drying. Cogon and nipa as roof materials are preferred in hot and humid areas.

Ventilation is of utmost importance. Majority of pneumonia cases can be traced to excessively warm anQ humid interior and sudden changes in temperature. Allow a 0.5 to 1 ft clearance between floor to wall

and wall to beam to create an adequate circulation and to lower draft. It is desirable to maintain an interior temperature of 28 to 30°C. It has been established that above 30°C ruminants are inhibited from eating.

Lighting may also be provided in the barns during the night. Goats consume up to 30% of the day's intake during the night when light is provided.

B. *Fencing*

Nine-eye hog wire is the cheapest and most effective fencing available locally. Posts must be staked every 2 meters. Goats are fond of pounding their feet and scraping their bodies on the fences so it must be sturdily built. Barbwire fencing requires a minimum of four strands so it becomes more costly besides making goats prone to wounds.

C. *Pasturing*

A well developed/improved pasture can carry up to 15 head/ha. When a combine grazing confinement method is observed, provision of a developed 3 ha./50 hd. Pasture divided into 9 paddocks will be desirable. Separate pastUre paddocks should be provided for the dry doe, buck kids and growers. Pasturing during the cool times of the day is commonly due.

D. *Care of Dry and Pregnant Doe*

If the doe is being milked, dry (stop milking) at least 1 Y2 to 2 months before kidding date. This will give her enough reserve for the next lactation. Put all dry does in one compartment. One week before kidding, place her in a separate kidding pen. This can be predicted by swelling and discharge from the vulva, engorgement and waxing of the teats and constant lying down of the doe. Avoid any form of noise in the kidding area. Sometimes it is necessary to help the pregnant doe during the kidding, especially to native does bred with pure bucks because the kids are bigger. *Dystocia,* or difficult delivery, is common in these cases. Be sure that the presentation is right before attempting to pullout the kid. In anterior presentation, both front legs and head are presented and in posterior presentation, both hind limbs come out at the same time. Oversized kids should be pulled out with an even, continuous pressure. In difficult cases, it is best to see a practicing veterinarian.

E. *Care of the Lactating Doe and Newborn Kids*

Immediately after delivery, wipe the kid's mouth, nose and body with a clean, dry cloth and massage the thoracic area to initiate breathing.

Normally, the mother does this, but sometimes the mother is too weak to do it. Be sure no mucus is clogging the airways. The kids must be able to suck within one hour. For very weak kids, feeding collostrum through a stomach tube usually produces dramatic results.

First time mother sometime are reluctant to suckle their young due to udder pain caused by over engorgement of milk. Restraining the doe for the first suckling will usually relieve udder pain. If colostrum in the udder is not fully consumed by the kid, stripping (manually milking out excess) will be necessary to prevent mastitis. The placenta must come out within 24 hours from expulsion of the fetus.

Tie the umbilical cord with a sterile string and apply disinfectant. Allow the kids to suckle for the first 4 to. S days. If the doe is to be milked, separate the kids from the mother and start feeding using a baby bottle (8 oz. Size), (refer to feeding guide for dosage). If the doe is not to be milked, the doe can be taken out of the pen for feeding and returned to the kid three times a day and the whole night. This method will ensure greater livability to the kid by not exposing it to the elements, and proper feeding of the doe. Does weaned early (4 to 5 days) usually return to heat after 1 to 2 months.

When the doe comes into heat, introduce it to the buck, not vice-versa. Two services a day for two days is an optimum. If the doe does not conceive, heat may return in 8 to 12 days. Higher conception is accomplished in the secondary heat. If breeding is successful, milk production drops after one month and the right side of the abdomen starts to fill up.

Milking

Milking periods must be established and strictly adhered. If milking is done twice a day, e.g. 6 AM and 6 PM, the process should not be delayed or advanced. Possibly, same personnel should be used. Goats can withhold milk, so unnecessary changes in the routine should be avoided.

Milk quickly and continuously

Milk let down can be initiated by washing the udder with lukewarm water and wiping with a clean towel. All milking utensils, especially the milkers' hands, must be thoroughly cleaned.

Feed concentrates during milking

This serves as incentive to the goats for them to enjoy and look forward.

Contrary to popular belief, properly drawn and processed goat milk have no offending smell. During milking, the buck should not be near the doe to avoid transfer of the typical goat smell to the milk.

F. Care of Weanling and Growing Kids 5

Place all weaned kids in a separate pen, and if possible, according to size. If male kids are to be raised for meat, castrate as early as possible, preferably within the first month. If female are to be raised for milking, check for excess teats and have them removed. Horn buds usually appear within the first to third month. De-horn when buds reach the size of a fingernail. Separate males from females at the age of four months. Goats sometimes reach puberty at this age.

Start breeding females at 8 to 10 months. Bucks can start breeding at the same age.

G. Care of the Breeding Buck

The breeding buck must always be confined separately but always visible to the does. The buck is the source of the typical goat smell such that direct contact with the doe must be avoided. Provide a loafing area. One to two years old buck can make 25 to 50 doe services a year, an older buck more.

H. Breeding

Does reach puberty from 4 to 18 months. Best breeding age will be 10 to 12 months, depending on desired weight. Limit yearling buck services to 25 doe services/year. Older bucks can cover up to 75/year. Buck to doe ratio is I :25.

Reproductive Characteristics of Goats

Age of puberty	4- 8 months
Cycle of type	Polyestrus
Cycle length	18 -21 days
Duration of heat	2- 3 days (secondary Heat: 8- 12 days after)
Gestation period	150 (+/-) 5 days
Best breeding time	Daily during estrus

Signs of Heat or Estrus:

1. Mucus discharge from the vulva, causing matting of tail hair.
2. Uneasiness, constant urination, lack of appetite and bleating.
3. Seeks out or stays near the buck and lets herself be mounted.

When breeding, always introduce the doe to the buck, not to the doe herd. Particularly when bucks have not been used for a long time, it will be dangerous to mix it with a herd of pregnant does for d1ey will breed indiscriminately. Two to four breedings during the heat period will suffice.

It is highly impractical if not economical to raise pure breed goats, unless the main purpose is to sell breeders. The preferred method will be to upgrade local native or grade does with pure bucks. Crossbreeds usually perform better than pure ones under local conditions. Infusion of two or more bloodlines into the native doe will elicit a better product due to hybrid vigor. Three-way crosses between the native, any of three Occidental breeds and the Nubian has produced a greatly superior animal than any of the three under our conditions. Higher milk production should be the main consideration for it will not only mean bigger kid but also more milk for human consumption. A maximum infusion of75% foreign bloodline must be observed to retain the natural resistance of the native. Never practice inbreeding unless fully knowledgeable in breeding techniques. On the otherhand, intensive culling, especially in milking herds, will largely be beneficial.

Dystocia is very common in crossing natives with large pure breeds due to the invariably large size of the unborn kids. Crossbreed birthweights of up to four kilos for multiple births and up to six kilos for single births have been observed while native birthweights reach only 2 and 4 kilos for multiple and single births, respectively. Thus, in crossbreeding, large native does with a minimum weight of25 kilos or more and those that have given birth at least once, should be used. Providing human assistance during birth will also be ofhelp in saving kids, but this should be done only when necessary.

Anestrus, or failure to come in heat, is a common problem most particularly with high-producing does. Vitamin, mineral and other nutrient deficiencies, infections of the genital tract and hormone deficiencies are some of the various causes. Several hormones, like prostaglandin, progesterone sponges and implants and pregnant mare serum (PMS) have been used with varying rates of success. Routine administration of oxytocin right after kidding and before weaning (5 days) aids in faster expulsion of the placenta, uterine fluids and in the rapid regression of the uterus. Routine Vitamin A, D & E injections to breeding herds also contribute to reproductive well being.

Fifty percent of breeding problems can be traced to the buck used. Routine check up of the bucks' health condition, especially of the , genito-urinary tract, should be done. Preputial scraping, blood tests and , sperm motility tests

are some very useful procedures to follow in , successful buck management. Always consult a trained veterinarian to do these tests.

*Procedures in Artificial Insemination (AI) **

1. *Keep the semen warm* - Goat semen is extremely temperature sensitive and will be irrevocably damaged if improperly handled. Never allow the temperature of semen thawed in 95°F water to drop below 80°F. If at all possible, perform your inseminating in a heated environment. Thoroughly pre-warm the inseminating gun before inserting the straw. If no heated facility is available, use a heating pad or hot water bottle to keep the semen and related equipment at the proper temperature before use.

2. *Inseminate at the proper time* - Most successful inseminators agree that conception rates are generally highest when breeding during the later third of standing heat. In our experience, breeding a doe approximately 6-10 hours before she goes out of standing heat has yielded the best results. During the main part of the breeding season and with most does, this means breeding approximately 24-30 hours after the onset of estrous.

3. *Deposit semen deep intracervically* - Always measure the depth of penetration of the breeding gun. After passing through several cervical rings, place a clean breeding sheath in the speculum alongside the gun with its tip against the back wall of the does' vagina. Compare the difference between the length of the two breeding sheaths. Ideal depth of penetration is approximately I *Y2* inches.

4. *Use only one straw per breeding - Recent* research in goat production indicates that sperm cells introduced into the doe's reproductive tract tend to form "colonies" in the mucous present in the folds of the cervix. After undergoing a short maturation process, they migrate in fairly constant numbers from the cervix into the uterus and ultimately on to the oviduct, where union with the egg actually occurs. Quantities of viable sperm cells sufficient for adequate fertilization should remain in the reproductive tract for up to 18 hours after the first insemination. The use of a second straw of semen later in heat can cause a disruption in the orderly migration of mature sperm cells from the colonies already established in the cervix and actually reduces the chance for conception.

5. *Avoid attempting to AI does who remain in standing heat longer than* 48 *hours* - For reasons not fully understood, does exhibiting extremely lengthy standing estrus generally fail to conceive when artificially inseminated. Abnormally long heats are more common early in the breeding season, and occur more frequently in some areas than others. Fortunately, in most cases the condition is transitory, and most does begin

to exhibit more normal estrous behavior as the breeding season progresses.

6. *Use of hormones to synchronize does, though successful and useful, may result in lowered conception rates* - Many breeders have reported disappointing AI conception rates after having used hormones to induce estrus in goats. If it is necessary to synchronize a group of does in this way, wait until the first natural heat after the drug induced estrus before artificially inseminating. Be aware that the use of prostaglandins may cause erratic estrous behavior in some animals, which can persist for several months.

7. *Deposit semen very slowly* -Rapid expulsion of semen from the breeding gun can damage sperm cells and cause irritation of the doe's reproductive tract. Count to fifteen very slowly while depressing the plunger on the breeding gun.

8. *Don' t haul a doe in heat to have her bred A* - If you do not have your own equipment or storage tank and must transport your does to have them bred, plan to board them for several days before they are due to come into heat. It is probably preferable; if you cannot breed your own does yourself, to have the AI technician come to your farm to perform the insemination. You can do your own inseminating even if you do not own your own tank. Small quantities of semen can be transported and stored for a half day or longer in a stainless steel thermos bottle. Make sure that you do not screw the lid onto the thermos as possible rupture can occur as a result of nitrogen gas pressure.

9. *For best conception rates, inseminate only does with regularly occurring heats and no history of breeding or kidding problems* - Does that are difficult to settle by natural service are not good AI candidates. Proper nutritional management also pays a big role in reproductive efficiency. Does that are overly fat or thin are less than ideal prospects for AI breeding. Virgin does should present no problem so long as they weigh at least 75 lbs.

10. *Don't attempt to Al a doe on her first heat cycle of the season* - The first heat cycle of the year is often infertile and is frequently followed by a second heat 5-8 days later. Conception rates will usually be higher if you wait until the second or later heats to do your breeding. Likewise, conception rates may drop off if you attempt AI towards the very end of the normal breeding season.

11. *Watch your does carefully* 17 - 22 *days after breeding them by Al* -F or some reason, some does who conceive by AI experience a false heat three weeks later. Although they may exhibit otherwise typical estrous

behavior, such does will seldom allow a buck to mount them. If in doubt, submit a milk or blood sample to a testing laboratory for a progesterone assay.

12. *Keep detailed records of your AI breeding* - Note such factors as color and consistency of cervical mucous, depth and relative difficulty or cervical penetration, length of standing heat both before and after inseminating, weather conditions, time required to complete the insemination, and other pertinent information. These records will often be of great help in explaining why some does settle and others did not.

13. *Know your does* - Chart the heat cycles of each of your animals on a calendar. Observe them at least three times daily during the breeding season of signs of estrous behavior. Note the number of hours that each doe remains in standing heat, and the relative intensity of estrous activities such as flagging, fighting and mounting other does.

14. *Observe proper sanitary procedures* - Specula should be thoroughly washed and sanitized between use. Scrub the doe's external genitalia with soap and water and dry completely before inserting the speculum. Do not use iodine-based products, as iodine is spermicidal. Take care not to touch the part of the speculum or breeding sheath which is inserted in the doe's vagina.

15. *Attend an AI school* - Attendance at an AI school taught by a competent and knowledgeable instructor can increase your chances of success with AI. As with any other acquired skill, hands-on experience is the best way to develop the confidence and correct techniques necessary to use AI effectively.

16. *Do your homework* - Artificial insemination is only a tool, albeit a powerful one. To be really successful with AI, you need to do more than just put kids on the ground. Only through intelligent selection of sires compatible with the objectives of a carefully thought out breeding program can AI benefit you, the breeder, or the meat and dairy goat industry.

I. Other Management Practices

1. *HoofTrimming* - Goats' hooves under confinement are usually overgrown. Trimming is then required. A rose pruner and a small curved knife are adequate tools. Cut excess hoof until level with the frog (white-centerpart). Untrimmed hooves will cause lameness and make it prone to foot rot. Bucks refuse to mount when having sore feet.
2. *Dehoming* - Especially in milking herds, dehorning is essential. A dehorned animal is more docile than a horned one. It will also eliminate unnecessary wounds due to fighting. Dehorn when horn buds appear (2 to

4 mos.) using hot iron cautery. A *Y2* inch GI pipe is an effective and cheap material for cauterizing. Chemical cautery is not preferred because kids tend to lick one another and may therefore lead to cauterized or burned tongues.

3. *Castration* - Castration of unwanted male goats is preferable within the first month of age. The testicles at this age are still not developed; thus there is lesser bleeding and stress. Castrated males grow faster than uncastrated males and are free of the goaty male odor.

4. *Tattooing, Ear Notching and Other Forms of Identification* - In order to keep track of individual animals, a positive identification are needed. No recording is possible without this. Ear notching is done more commonly because of permanence and easy identification. Refrain from using plastic tags. Tattooing causes no deformities but requires special tools that may be costly.

5. *Recording* - For a good breeding herd program, a proper and well-kept recording system is necessary. The record reflects all the essential data of individual animals. Below is an example:

INDIVIDUAL RECORD

Goat No./Name _____ Date of Birth _____
Sire _____ Birthweight, Kg _____
Dam _____ Color _____
Sex _____ Littermates -(Single. Twin. Triplet)-
Method of Disposal _____ Wt. At Disposal, Kg._____

Date Breeding	Sire	Date Kidding	Kid No. Sex	Birth Weight	Milk Prod.	Lact. Days	Ave. Prod.	Remarks

Herd Data: Kidding Rate
Kidding Frequencies
Productive Pattern
Superior to Doe Combination

Other Data: Forage Production
Forage and Concentrate Intake
Health and Treatment Situations

IV. FEEDING

A. Recommended Pasture Grasses and Legumes

Goats, like other livestock require the same nutrients such as protein, carbohydrates, fats, minerals, vitamins, and water but their need for some of these nutrients is not as critical. Bacteria and protozoa in the rumen of the goat have the ability to manufacture and make available many of the nutrients from such feeds as silage, hay-soilage, and other fibrous feedstuffs. Goats are known to relish Paragras, Stargrass, Napier grass, Guinea grass and Centrosema over many improved tropical grasses and legumes. It is also known that goats can browse on leaves of shrubs and bushes for their feed requirements. (See Table I below)

Table 1. **List of Common Philippine Feedstuffs for Goat Production**

Feedstuffs	**Dry Matter % (DM)**	**Total Digestible Nutrients % (TDN)**	**Crude Protein % (CP)**	**Digestible Crude Protein % (DCP)**
Concentrates				
Copra Meal	89.6	78.5	20.6	14.5
Corn Glutten, Feed	90.1	74.9	20.2	17.1
Corn Grain	88.8	84.2	8.1	7.1
Rice Bran (Cono)	88.0	69.1	12.3	8.3
Rice Bran (Kiskis)	89.0	46.6	6.2	4.5

Feedstuffs	Dry Matter % (DM)	Total Digestible Nutrients % (TDN)	Crude Protein % (CP)	Digestible Crude Protein % (DCP)
Wheat Pollard	88.2	73.1	17.1	10.4
Soybean Oil Meal	88.4	76.0	44.0	41.0
Molasses, Cane	76.3	53.0	2.0	0.4
Corn Bran	88.0	72.1	10.5	5.6
Green Roughage				
Napier Grass				
21 Days	16.5	9.3	2.4	1.7
42 Days	18.3	10.8	1.9	1.1
84 Days	19.6	10.9	1.0	0.4
105 Days	25.6	13.6	1.2	0.5
Paragrass				
Dry season				
28 Days	22.5	12.9	2.0	1.0
56 Days	24.0	11.0	0.7	0.1
84 Days	39.1	17.6	0.9	0.2
Wet season				
28 Days	16.3	9.4	2.4	1.6
56 Days	22.8	12.9	2.8	1.7
84 Days	21.7	12.2	1.7	0.8

Feedstuffs	Dry Matter % (DM)	Total Digestible Nutrients % (TDN)	Crude Protein % (CP)	Digestible Crude Protein % (DCP)
Guinea Grass				
Dry season				
21 Days	22.5	12.9	2.0	1.0
42 Days	24.0	11.0	0.7	0.1
84 Days	39.1	17.6	0.9	0.2
Wet season				
28 Days	16.3	9.4	2.4	1.6
56 Days	22.8	12.9	2.8	1.7
84 Days	21.7	12.2	1.7	0.8
Centrocema				
28 Days	24.4	14.0	3.9	2.6
56 Days	29.5	16.8	5.1	3.5
133 Days	32.6	18.9	6.1	4.4
175 Days	30.6	17.3	4.9	3.3
Tree Leaves/Browse Plants				
Banana	94.0	-	9.8	5.7
Kakawati	25.3	-	6.52	-
Ipil-Ipil	13.30	-	27.80	22.50
Santan	27.68	-	4.02	-

Feedstuffs	Dry Matter % (DM)	Total Digestible Nutrients % (TDN)	Crude Protein % (CP)	Digestible Crude Protein % (DCP)
Caimito	48.32	-	4.98	-
Camachile	34.78	-	9.96	-
Gumamela	19.10	-	4.14	-
Bamboo	42.0	-	7.60	3.54
Acacia	43.40	-	9.10	-

Sources of Ca and P	% Ca	%P
Steamed Bone Meal	28.0	14.0
Dicalcium Phosphate	26.0	18.0
Oyster Shell Flour	33.0	0.0

Source: Gerpacio, A. and L.S. Castillo, 1974. Nutrient Composition of Some Philippine Feedstuffs. Tech. Bul. 21, UPLB-College of Agriculture, College, Laguna p. 117

B. Feed Requirements

A practical feeding program for goats, being ruminants, should be based on the type and quality of roughage available. This is because the quality of roughage available determines both the amount and the quality of concentrates needed to supplement the diet. (See Table 2 below)

Table 2. Feed Requirements

AGE	FEEDS	AMOUNT PER DAY
Birth – 3 days	Colostrum	Ad Libitum (3-5 times feeding)
4 Days – 2 Weeks	Whole Milk (Goat/Cow Milk) Vitamin – Mineral Water	0.5 – 1 Li/Kid divided into 3 time feeding Ad Libitum Ad Libitum
2 Weeks–16 Weeks	Whole Milk of Milk Replacer Grass-Legume Hay or Qualti Fresh Forage Viatmin-Mineral Mix Water Starter (22% CP)[1]	0.5 – 1 Li/Kid divided into 2 time feeding Ad Libitum Ad Libitum Ad Libitum Ad Libitum Increasing amount without causing digestive upset
4 Months-Kidding	Forage, Vitamin-Mineral Mix Water Concentrates (18-20%CP)[2]	Ad Libitum Ad Libitum 0.2-0.7 Kg/Hd
Dry, Pregnant, Bucks	Forage, Vitamin-Mineral Mix Water Concentrates (16-18%CP)[3]	Ad Libitum Ad Libitum
Lactating	Forage, Vitamin-Mineral Mix Water Concentrates	Ad Libitum Ad Libitum 0.3-0.5 Kg/Li of Milk Produced

[1] Ground Corn -12; Rice Bran -24; Copra Meal- 40; Soybean Oil Meal -8; Meat & Bone Meal- 10; Molasses- 5; and Salt-1 Kg.
[2] Copra Meal- 50; Wheat Pollard -32; Molasses -15; Bone Meal- 2; and Salt -1 Kg.
[3] Copra Meal- 40; Corn -25; Soybean Oil Meal-15; Rice Bran -10; Molasses -8; Bone Meal- 1; and Salt -1 Kg.

1. *Lactating Does*

Confined goats should be given good quality forage for free choice, *ad libitum.* To increase water consumption, concentrates can be added at ! the rate of 1 kg./20 liters of drinking water. Provide vitamin-minera1 and salt, *ad libitum.*

2. *Pregnant Dry Does*

Pregnant dry does should be adequately fed with quality feeds to build reserves for the coming lactation and to nourish the developing fetuses. Does should be allowed liberal access to good quality forage and roughage, vitamin-mineral plus concentrates at a level of 0.20 to 0.70 kg./ day depending on the body condition of the does.

3. *Four Months Old and Above*

They should be fed enough for maintenance and for desirable growth, but not for fattening them. Generally, a liberal supply of good quality forage/roughage plus 0.20 to 0.50 kg./day of concentrates is enough to obtain desired growth rate. Under complete confinement, goats may be fed with quality forage plus vitamin-mineral, and salt, *ad libidum.*

4. *Breeding Bucks*

Bucks should be maintained on good pasture alone when not used for breeding. Two weeks before and during the breeding season, the ration of the breeding bucks should be supplemented with 0.2 to 0.7 kg. of concentrates. Forage, vitamin-mineral mix, and water should be given *ad libitum.*

5. *Practical Feeding Guides*

The general herd should be pastured most of the time to lower the cost of feeding and maintaining them. Provide enough space for grazing, but be sure that the pasture is rotated frequently, i.e., the herd is moved to another pasture after one pasture lot has been grazed for sometime. This will keep a pasture from being overgrazed and polluted or heavily infested by parasites. Even if the pasture has abundant feed, it may become a breeding place for parasites if the goats are allowed to graze on it for so long.

Breeding goats, as well as the growing and fattening stock, can be raised solely on pasture feeds. Goats enjoy feeding on a large variety of plant growths so that bush land, together with the common pasture grasses, is an ideal combination for raising healthy goats.

Goats are also selective when it comes to grazing. They eat only what seems suitable to them; hence, there is little danger of their eating poisonous weeds. Goats will be able to live on grazing even if only grasses are available on the pasture. However, they can feed better and grow better if there are different species of plants on the pasture. Leguminous plants can also help improve the quality of the pasture.

During the rainy days, keep the goats shut in the barn, well protected from the draft and provided with a clean solid floor. Give them cut grass or hay to eat. Ifthe weather is humid and cold, and especially if there are strong winds, cheap grain feeds, like rice bran, will help maintain body vigor among the animals.

Care of the herd also includes giving them clean water and salt. Place a watering trough in the pen where the goats can drink any time they like. Also, place enough salt in the pen for them to lick whenever they want to.

V. HEALTH MANAGEMENT

A. Health Management Practices

1. Sanitation

Have pens cleaned daily and washed at least three times a week. Disinfect at least twice a month. Accumulated feces and urine provide a good breeding ground for disease-causing microorganisms. Provide a lagoon or pit to store waste for at least a month before spreading to the pasture. Use as fertilizer for orchards or vegetable garden.

Train personnel to observe sanitary procedures. Provide separate pens for diseased animals.

Limit visitors coming into the farm, including other animals. Quarantine newly arrive stock for at least a month before mixing with the main breeding stock.

2. Deworming

Aside from pneumonia, parasites rank second in causing heavy mortality. From experience, tapeworms are the most debilitating worm problem in all ages of goats, Protozoa-like

coccidia and amoeba are also common problems especially in young kids.

Have your goats checked regularly for specific worm load and deworm regularly depending on worm load and seasonal occurrences. Know what kind of internal parasite is affecting your herd before attempting to use a deworming product, or else it will be a waste of money; and effort. I

3. *External Parasites*

Lice and ticks are common problems. When these are observed, apply acaricide or chemicals against lice and ticks, in powder or dust form. This can be done by mixing the powder-form chemicals with 7 to 10 parts of starch or flour and apply as dusting powder. Refrain from using the liquid or spray form.

B. Common Infectious Diseases of Goats

1. Bacterial Pneumonia

Mode of transmission: Direct contact from infected or contaminated udder, navel infection, genital or intra uterine infection of dam, contaminated environment

Symptoms: Fever, inability to suckle, nasal discharge, coughing and respiratory distress
Gradual emaciation may terminate as pneumonia-enteritis combination. Death common.

Prevention: Proper nursing in clean, dry environment necessary. Early cases respond to antibiotic treatment.

2. *Infectious Arthritis*

Mode of Transmission Direct, through mouth, skin, open wounds or via umbilicus

Symptoms: Swollen knees, lameness, pain if pressure is applied on affected joint. Fever may be present. Joints involved are hock, knee, elbow and stifle. Animal prefers recumbency, appetite affected with gradual deterioration.

Prevention / Control: Minimize infection by treating wounds (castration and navel) dressing, hygiene management especially in areas of confinement. Treatment includes wide spectrum anti-biotic and sulfa drugs.

3. *Mastitis*

Mode of Transmission: Direct or indirect .

Symptoms: Hot, painful and swollen udder. May become red due to inflammation later changing to dark reddish-blue indicating necrosis of udder tissue. Milk may be bloodstained, may contain flakes or clots. Fever, loss of appetite, depression and dehydration; gait or movement of doe is affected.

Treatment: Intramammary infusion of antibiotics. Early and repeated treatment needed to prevent complications such as gangrene and toxemia.

Prevention: Proper treatment of injured teats with antiseptics; disinfecting udders for milking and proper milking technique. Monitor by surveillance to detect early cases for immediate isolation and treatment.

4. *Sore MouthlORF/Contagious Ecthyma*

Mode of transmission: Contaminated equipment, fences, manure, bedding and feeds

Over crowding

Contaminated vehicles and workers

Infected suckling Iambs, contaminated teats and udders of dams

Symptoms: Characterized by papules, pustules, vesicles and scabs on the skin of the face, genitalia and feet, mucous of the mouth, rumen, nostrils eyelids, gums, tongue, palate and middle ear. Occurs commonly to less than one-year-old sheep/ goat, and feedlot Iambs 3- 7 months of age.

Prevention/Treatment: Vaccinate feedlot Iambs after entering the fattening facilities

Vaccinate suckling Iambs 1-3 days of age

5. *HMD*

Mode of Transmission: Direct and indirect contact with naturally infected animals, carriers, implements and other infected materials

Blister fluid, saliva and other bodily discharges highly infective.

Symptoms: Fever vesicles, erosion in between hooves, coronary band (junction between skin and hoot), teats and udders, oral mucosa and tongue

Raw ulceration follows, rupture ofvesicles, stingy or foamy salivation, smocking of the lips, difficulty in feed ingestion; staggering gait and lameness. Abortion in pregnant animals.

Prevention: Immediate notification of the authorities

Designation of quarantine areas and restricted movement of animals; disinfecting areas with virucidal agents (commercial disinfectant or lye caustic soda)

Animal should be kept on dry ground and lesions treated with mild antiseptic (5% formalin) I , Mass immunization and effective restriction in movement of animals and carriers is necessary

6. *Brucellosis*

Mode of Transmission: Ingestion of contaminated feed and water. Aborted fetus, fatal membrane, placenta, urine and uterine discharge are main sources of infection

Infected males may transfer disease through natural/ artificial breeding

Symptoms: Infertility, abortion, retained placenta, persistent vaginal discharge. In males, swollen and painful testicles with subsequent infertility/sterility

Prevention: Blood tests and removal of infected animals

Vaccination may be tried

Antibiotic medication is found to be impractical

7. *Hemorrhagic Septicemia*

Mode of Transmission: Ingestion or inhalation of infective agent. Maybe normally present in the nasopharyngeal area but predisposition causes flare-up of infection

Symptoms: High fever, loss of appetite

Respiratory distress, salivation, nasal discharges, swelling of the throat and brisket congestion of mucous membrane, diarrhea becoming bloody later.

Prevention: Prophylactic vaccination

Removal of predisposition when possible

Early treatment with parenteral antibiotics and sulfa drugs

8. *Anthrax*

Mode of Transmission: Direct ingestion of infected material, biting flies

Indirect, through contact with materials and carriers

Symptoms: Sudden onset of fever, depression and loss of appetite

Swelling of chest, head, belly and legs, bloody diarrhea Death common in early stages

Colic, abortion in pregnant animals, blood stained discharges, convulsions

Prevention: Dead animals should be cremated or buried deeply under a layer of lime

Antibiotic treatment is only effective in early and less acute cases

9. *Blackleg*

   Mode of Transmission: Infection initiated by trauma of the body and oral mucosa. Cases in larger ruminants maybe source of infection in the area

   Symptoms: Sudden deaths in acute cases

   Less acute: depression, fever, rapid respiration and suspended ruminatism

   Typically, not painful swelling in thigh and leg muscles. Crackling sensation of palpation of swelling due to gas in tissues

   Lameness in affected limb

   Prevention: Vaccination

   Cremation of carcasses

   Early isolation and treatment with massive doses of antibiotics

10. *Tetanus*

    Mode of Transmission: Direct infection due to introduction of organism in wounds. Castration, old ulcerating wounds, dehorning complications. Not contagious to other animals

    Symptoms: Early stages characterized by rigidity and stiffness of muscles, stilthy gait

    Late stages: with tetanic convulsions, prolapse of third eyelid, stiff tail, head and neck thrown back; hyperexcitability

    Bloat and other nervous signs.

    Prevention: Treat wound with oxidizing antiseptic (hydrogenperoxide) until completely healed; use clean instrument in castration and dehorning

11. *Parasitic Gastroenteritis*

Mode of transmission: Commonly through direct infection with parasitic larval stages through herbage, less common through skin penetration and intrauterine infection in some species

Symptoms: Poor body condition, anemia, diarrhea, potbelly and weakness

Prevention: Regular deforming with effective anthelmintics (tetramisole, parbendazole, thiabendazole, pyrantel, etc.)

Pasture rotation and improve feeding practices

12. *Parasitic Pneumonia*

Mode of Transmission: Infection with the parasite in the larval stage through herbage

Symptoms: As in parasitic gastroenteritis for general signs

Specific symptoms includes persistent husky, coughing, respiratory distress

Prevention: Regular deworming with tetramisole, albendazole or oxfendazole

General prevention as parasitic gastroenteritis

13. *Tapeworm Infection*

Mode of Transmission: Through ingestion of plant mites that are intermediate host

Symptoms: Same as other internal parasitism, passage of tapeworm segment in the feces

Prevention: Regular deworming (albendazole, niclosanide, lead arsenate, and oxfendazole)

14. *Liverfluke Disease*

Etiology: Four Species of trematodes:

a. Fasciola hepatica
b. Fasciola gigantica
c. Facioloides magna
d. Dicrocoelium dendriticum

Clinical Signs: Post Mortem Lesions

a. Affected animals isolate from the flock
b. Decline the feeds
c. Distended abdomen is painful upon manipulation
d. Lose weight and become unthrifty, anaemic and edematous in the lips and intermandibular tissues
e. Ascites may form
f. The wool looses its flexibility and tensile strength

Clinical Forms: Acute Form - traumatic invasion of liver paranchyma by immature flukes

Chronic Form - billiary fibrosis resulting from prolonged residence of adult flukes

Symptoms: Characterized by unthriftiness, loss ofweight, anemia and edema

Prevention/Treatment: Control of fluke infestations

Prevent the animals from grazing on infected pastures

Use flukicide / anthelmintics in treatment

15. *Lice Infestation*

Mode of Transmission: Direct or indirect contact with infected animals through environment or facilities

Symptoms: Constant scratching and rubbing to relieve itching and rritation.

Scurfy coat (dandruff) and encrustation of exudate with scabby deposit Loss of hair

Raw skin and bruises in severe infestations

Animals becomes unthrifty, poor thriving, weak and anemic

Prevention: Use insecticide (Asuntol, Ciodrin, Diazinon, Neguvon, Supona, Nankor, etc.) In dust or solution form repeat treatment in 10-14 days to kill nymphs that hatch out.

Also spray pens and litter

Isolate treated from untreated animals

16. *Mange*

Mode of Transmission: Direct and indirect contact with infected animals

Symntoms: Marked itchiness and irritation with animals constantly rubbing or licking affected areas, maybe patchy or generalized

Skin becomes hairless, thickened or scabby

Prevention: Periodic examination to detect cases

Regular spraying with effective acaricides such as Malathion, Trichlorfon, Fenthion, Diazinon, Crotoxyphos or Coumaphos

Interval of treatment should be 7 -10 days with 2-3 applications to destroy mites that have hatched after each treatment

17. *Bloat*

Kinds of Bloat:

a. Green Legume Bloat -results from eating fresh copped green grasses

b. Hay Legume bloat -results from feeding whole, chopped, ground or pellet grasses which is conducive to bloat

c. Free-gas Bloat -result from the inability of the animal to eructate usually associated with systemic disease or due

to foreign bodies and abscesses, inflammatory swelling, enlarged thoracic nodes, and also dysfunction such as atrophy of the muscles that interfere with escape of gases and favor its accumulation

d. Grain Concentrate Bloat -results from feeding bloat producing concentrate such as corn, soybean meal and barley

Symptoms: Retention of gas in the rumen, characterized by increased intra-abdominal or intra-thoracic pressure caused by interactions of plants, animals and microbial factors

Distention of the abdomen

Animals become uneasy

May alternate between standing and reclining positions

Breathing becomes difficult, rapid and shallow

Ruminal movement is prominent

Prevention/Treatment: Good management and medicinal regiment in feeding Avoid grinding the hay and other components too finely

Stomach tube should be passed ill!\) the dorsal part of the rumen to remove any free gas

Administer 0.5 to 1.0 liters of mineral oil or vegetable oil

18. *Acute Ingestion of Grain Overload*

Mode of Transmission: Non-contagious

Symptoms: Signs appear from 10-36 hours after dietary changes. Depression, loss of appetite, and abdominal distention causing pain and discomfort. Diarrhea develops. Rapid respiration and pulse, incoordination, weakness, coma and death

Prevention: Avoid sudden dietary changes. Treatment is generally unsatisfactory. Early case~ may respond to high antibiotic levels given orally to reduce population of acid-forming bacteria (Acidosis). Indigestion maybe treated with anti-acids like baking soda (sodium bicarbonate), magnesium carbonate or magnesium hydroxide given orally in warm water (Igm/kg body weight) to neutralize rumen acidity. Systematic acidosis requires intravenous injection of acid neutralized like 5% sodium bicarbonate repeatedly given.

VI. PRODUCTION INPUTS

A. Backyard Operations

1. *Investment*
   a. Goat House
   b. Purchase of Breeding Stock

2. *Operating Expenses*
   a. Veterinary Medicines
   b. Vaccines
   c. Concentrates
   d. Additional Feed Supplements

B. Commercia[/ Large Sca[e Operation

1. *Fixed Investment*
   a. Goat House
   b. Water Pump
   c. Feeding trough
   d. Spade
   e. Wheel Barrow
   f. Pasture Grass Species
   g. Ropes
   h. Fences
   i. Land

2. *Purchase of Stock*
   a. Breeding Does
   b. Breeding Bucks

3. *Operating Expenses*
    a. Veterinary Medicines, drugs, vaccines, feed supplements and goat rations
    b. Labor: fixed or seasonal
    c. Repair and Maintenance of building, equipment and pasture

For further information consult:

PCARRD Recommends for Goat Raising