
UNIT 1 BACKYARD POULTRY FARMING

Structure

- 1.0 Objectives
- 1.1 Introduction
- 1.2 Backyard *versus* Free Range Farming
 - 1.2.1 Backyard Poultry Farming
 - 1.2.2 Free-range Poultry Farming
- 1.3 Backyard Poultry Varieties for Egg and Meat Production
 - 1.3.1 Varieties Developed by CARI
 - 1.3.2 Giriraja and Swarnadhara
 - 1.3.3 Vanaraja
- 1.4 Supplementary Feeding, Watering and Night Shelter
 - 1.4.1 Supplementary Feeding and Watering
 - 1.4.2 Night Shelter
- 1.5 Let Us Sum Up
- 1.6 Glossary
- 1.7 Suggested Further Reading
- 1.8 References
- 1.9 Answers to Check Your Progress

1.0 OBJECTIVES

After studying this unit, you will be able to:

- differentiate between free range and backyard poultry farming;
- identify the backyard poultry varieties for egg and meat production; and
- justify the need for supplementary feeding, watering and night shelter.

1.1 INTRODUCTION

You are aware that poultry is one of the fastest growing segments of the agricultural sector in India today. The annual growth rates between 1996-97 and 2005-06 were 4.86% for Poultry Population; 3.64% for Egg Production and 8.45% for Poultry Meat Production. The annual egg production in India was 45 billion with per capita availability of 44 eggs per annum during 2006. Annual broiler production is 1.6 billions with per capita availability of 750 g chicken. However, the recommended consumption levels are 180 eggs and 10 kg meat. Further, per capita availability of eggs in rural and urban areas is 10 and 170, respectively about 25% population residing in urban areas consumes 75% eggs and poultry meat, and in a typical Indian village, the egg consumption is not more than 10 eggs per person per year. The above trends in the poultry sector provide a striking example of how sector growth does not necessarily go hand-in-hand with rural sector and poverty reduction.

1.2 BACKYARD *VERSUS* FREE RANGE FARMING

Backyard poultry has been by-passed by the poultry revolution, with virtually all the

growth occurring in the large-scale industrial sub-sector. The percentage of native birds has dropped from 50% (about 30 years back) to about 10% now. However, the meat and eggs of backyard chicken is much more highly valued (prices being 50 to 100% higher), because their taste and texture are considered superior and organic in nature.

1.2.1 Backyard Poultry Farming

Backyard farming is a traditional extensive system of rearing poultry with an average flock size of 5 to 20 native breed or non-descript fowls or improved backyard birds by farm families to meet their dietary needs or small cash needs. It is not an occupation but a supplementary household activity. Here, the birds are mainly reared for food security and supplementary income. Women and children in the house will take care of these birds along with their regular household activities. Under this system of farming, birds are housed at night but allowed free-range during the day. They are usually fed a handful of grain in the morning and evening to supplement scavenging. As such, no specific feeding is required. A little increase in the care provided to a small poultry flock will improve livability, growth rate and egg production. Usually non-descript fowls or specific breeds or strains developed for this purpose are used. High yielding exotic varieties fail to give better results under this system.

Backyard poultry production forms the basis for transforming the rural poultry sector from subsistence to a more economically productive base. Also, increased backyard poultry production would result in a positive impact on household food security both in terms of increased dietary intake as well as income generation. Hence, increasing meat and egg production from backyard poultry has been a major concern of Government of India for many years and supported by various programmes to improve backyard poultry production. This has resulted in release of some important backyard poultry varieties *viz.*, Debendra, Giriraja, Gramapriya, Krishna-J, Swarnadhara, Vanaraja etc.



Fig.1.1: Backyard Poultry Farming in Different Parts of the Country

Importance of Backyard Poultry Farming

Backyard poultry, a traditional system of poultry keeping is a part of livestock rearing practiced by rural folks since time immemorial. It is a type of organic farming with no

harmful residue in egg and meat. It is an eco-friendly approach. Further, these are very active in pest control, provide manure and required for special festivals and traditional ceremonies. Backyard poultry is advantageous as it provides supplementary income in shortest possible time with very minimum capital investment, simple in operation and ensures availability of egg and meat even in remote rural areas. As the local birds are used mostly, they got better adaptability and protect themselves from predators and diseases. Backyard poultry, due to its least demanding nature in terms of infrastructure has been widely accepted by the rural poor.

Scavenging backyard poultry farming is practiced in tropical countries like India, Bangladesh etc. Under this system, the birds are confined to a large or small fenced area where they receive more care and shelter. The birds can scavenge for food during the day. As such, they are not confined completely as in case of commercial system, but night shelters are provided to birds and these are used to confine the birds in night. As such, no specific feeding is required but they are usually fed a handful of grain in the morning and evening to supplement scavenging. The flock contains, usually the birds of same species but may be of mixed sex and age groups. The growth rate and egg production is better than the free range system as some extra care is taken in this and uniformity of flock is there. Consumption of eggs and meat by own family is the major motivation for the farmer to rear the birds in their backyard and they are able to efficiently use the waste grains, household scraps and leftover kitchen wastes for feeding the birds. This system requires the following to increase returns compared to free range poultry :

- High yielding birds which are capable of scavenging in the field.
- Substantial supplementary feeding and proper housing for better production.
- Proper vaccination and medication schedule to reduce mortality due to diseases.

1.2.2 Free-range Poultry Farming

Free range system is best adapted to small- scale farmers who raise chicken for sale. Free-range extensive poultry farming (Fig. 1.2) is commonly practiced in Africa and Latin America. This low-cost free range system increases the commercial value of poultry. Under free-range conditions, the birds are not confined and can scavenge for food over a wide area. They are often kept in movable houses surrounded by fence. Their position is changed on a regular basis, so that the birds have access to a more or less constant supply of fresh green vegetation, with some insects, worms and other natural food. This is similar to systems in North America called Range Poultry or Pasture Poultry. Here, rudimentary shelters may be provided which may or may not be used by birds. The birds may perch outside, usually in trees and nest in the bush. As such, there is no practice of feeding not even handful of grains. The flock contains birds of different species and varying ages. The growth rate and egg production is very less. Usually, non-descript fowls are reared in this system. Extensive range poultry production requires more land and is usually part of a diversified operation with cattle, sheep, goat, pig, rabbit etc. Soil fertility is a major motivation and producers are able to take advantage of the poultry manure to improve their pastures for ruminants.



Fig. 1.2: Free range system of poultry rearing

Both backyard and free range systems are extensive system of rearing the poultry with many similarities between them which are as follows:

- These are as such not an occupation but a supplementary household activity to farmers.
- In both the conditions, the high yielding exotic varieties fail to give better results. So, the non-descript or crossbred fowls are used.
- Both systems of rearing are usually found in rural areas unlike commercial poultry which is more in peri-urban and urban areas

Check Your Progress 1

Note: a) Use the space given below for your answers.

b) Check your answers with those given at the end of the unit.

1) Differentiate between backyard and free-range poultry farming.

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2) List out four important benefits of backyard poultry

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3) Name some important backyard varieties of poultry.

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Activity 1

Ask some of your friends what they mean by backyard and free range poultry farming. Compare their views with the one given in this unit and identify the differences.

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1.3 BACKYARD POULTRY VARIETIES FOR EGG AND MEAT PRODUCTION

As mentioned earlier, few improved backyard poultry varieties have been developed for egg, meat and dual purpose. For your understanding, they are described briefly with relevant photographs in this section.

1.3.1 Varieties Developed by CARI

Four important varieties of backyard poultry are developed by Central Avian Research Institute (CARI) which are detailed below:

(i) CARI Debendra

This is a medium-sized dual-purpose bird suitable for backyard rural poultry production system (Fig. 1.3). It was developed by crossing coloured synthetic broiler line as male line and Rhode Island Red (RIR) as female line at Central Avian Research Institute (CARI), Izatnagar – 243 122 (UP). The bird achieves moderate body weight of 1200 g at eight weeks of age with economic feed conversion ratio of 2.6. The meat has lower carcass and abdominal fat than broiler meat, which makes it a consumer's delight. It is a suitable bird for rural poultry because of its better survivability and moderate egg production ability. From 100 Debendra birds under semi-scavenging system, 20000 brown-shelled eggs can be obtained per year with a net return of Rs. 25,000.

Production Characteristics

Body weight at 8 weeks	1100-1200 g
Body weight at 10 weeks	1400 - 1500 g
Body weight at 12 weeks	1700 - 1800 g
Feed conversion ratio (0 to 8 weeks)	2.5-2.6
Age at sexual maturity	155 - 160 days
Annual egg production	190-200
Livability (Growing)	97%
Livability (Laying)	94%



Fig. 1.3: CARI - Debendra

(ii) CARI Nirbheek

It is a cross of Indian native breed Aseel with CARI Red developed for free range as well as backyard poultry production (Fig. 1.4). These are very active birds, large in size, aggressive in nature with high stamina and majestic gait. They are able to save themselves from predators due to their fighting characters and activeness. They are also adopted to all climatic zones of the country for backyard production.

Production Characteristics

Body weight at 20 weeks	1350 g
Age at sexual maturity	176 days
Annual egg production	198
Egg weight at 40 weeks	54 g
Fertility	88%
Hatchability FES	81%



Fig. 1.4: CARI - Nirbheek

(iii) CARI Upcari

CARI Upcari has been developed utilizing Indian native chicken with Frizzle plumage (Fig. 1.5). These are multicoloured birds with single comb and medium body size. Presence of Frizzle plumage helps in fast dissipation of heat due to which birds are better adopted specially in tropical climate in arid zones under backyard production.

Production Characteristics

Body weight at 20 weeks	1285 g
Age at sexual maturity	165 days
Annual egg production	220
Egg weight at 40 weeks	60 g
Fertility	90%
Hatchability FES	84%



Fig. 1.5: CARI - Upcari

(iv) CARI Hitcari

This variety has been developed utilizing Indian native chicken with naked neck plumage, which are adapted to tropical climate especially for hot and humid coastal

regions of the country. These multicoloured birds have single as well as pea comb and birds are larger in built (Fig. 1.6).

Production Characteristics

Body weight at 20 weeks	1320 g
Age at sexual maturity	178 days
Annual egg production	200
Egg weight at 40 weeks	61 g
Fertility	92%
Hatchability FES	81%



Fig. 1.6: CARI - Hitcari

(v) CARI Shyama

It is a cross of Kadaknath breed of Indian native chicken with CARI Red. Birds have plumage of various colours dominated by black (Fig. 1.7). The skin, beak, shank, toes and soles are dark gray in colour. The peculiarity of this bird is that most of the internal organs (muscles and tissues) show the characteristics black pigmentation. The black colour of muscles and tissues is due to deposition of melanin pigment, which causes increase in protein and decrease of fat and muscle fibre.



Fig. 1.7: CARI - Shyama

Production Characteristics

Body weight at 20 weeks	1120 g
Age at sexual maturity	170 days
Annual egg production	210
Egg weight at 40 weeks	53 g
Fertility	85%
Hatchability FES	82%

For further information or to obtain chicks of Debendra, Hitcari, Nirbheek, Shyama and Upcari, you may contact Central Avian Research Institute, Izatnagar, Bareilly-243 122 (U.P). Phone numbers: 0581- 2300204 and 2303223.

The other native breeds evolved and acclimatized over the period of time are also being reared in smaller numbers in different parts of the country. The names of these breeds are given below for your information:

Breed	Native/Home Tract
Ankaleshwar	Gujarat
Aseel (Fig. 1.8)	Andhra Pradesh and Madhya Pradesh
Busra	Gujarat and Maharashtra
Chittagong	Meghalaya and Tripura
Danki	Andhra Pradesh
Daothigir	Assam
Ghagus	Andhra Pradesh and Karnataka
Harringhata Black	West Bengal
Kadaknath (Fig. 1.9)	Madhya Pradesh
Kalasthi	Andhra Pradesh
Kashmir Faverolla	Jammu and Kashmir
Miri	Assam
Nicobari	Andaman & Nicobar
Punjab Brown	Punjab and Haryana
Tellichery	Kerala



Fig. 1.8: Aseel



Fig. 1.9: Kadaknath

1.3.2 Giriraja and Swarnadhara

Giriraja and Swarnadhara varieties were developed by Karnataka Veterinary, Animal and Fishery Sciences University, Bangalore. The hybrid coloured chicken variety named Giriraja (Fig. 1.10) was developed for backyard rearing by College of Veterinary Science, Bangalore. The birds have a high egg production potential along with better growth compared to local varieties and are suited for mixed and backyard farming. Giriraja female lays about 130-150 eggs a year. Each egg weighs about 52-55 g. The eggs have a good hatchability (80-85 per cent) and enable the farmers to raise their own stock. Day-old chick weighs about 42-45g. The eggshell is brown in colour and thicker than that of other commercial eggs and does not break easily. The eggs are priced at a premium rate of Rs. 3 to 4 in the local market. For backyard rearing, a flock of five hens and one cock can be ideally grown. No special care is required to grow them. They can be raised as free roaming birds and can be fed with locally available materials. Being good scavengers, they feed on a variety of insects and green foliage. They can also be fed on farm and kitchen waste. The birds are resistant to many diseases except Ranikhet disease.



Fig. 1.10: Giriraja

Swarnadhara chickens have a high egg production potential along with better growth compared to other local varieties and are suited for mixed and backyard farming. The bird can be reared for its eggs and meat. It attains maturity from the 22-23rd week after hatching. Hens attain a body weight of about 3 kg and cocks about 4 kg. “Swarnadhara hens lay about 180-190 eggs in a year. When compared to Giriraja, this breed yields 15-20 eggs more in a year. Swarnadhara breed (Fig. 1.11) is smaller in size when compared to Giriraja with a lighter body weight, which makes them easier to escape attacks from predators such as jungle cats and foxes. Each egg weighs about 55-60 g with good hatchability (80-85 per cent) and enable the farmers to raise their own stock. A day-old chick weighs about 35-40 g. The eggshell is brown in colour and thicker than that of other commercial eggs and does not break easily. The eggs can be stored for 8-10 days at room temperature during summer and during winter for about 15 days. The eggs are priced between Rs.3 and 5 in the local market. The birds are only layers and not brooders. The eggs have to be hatched by local brooder hens. For backyard rearing, a flock of five hens and one cock can be ideally grown. The birds are sturdy and have a high longevity. No special care is required to grow them. They can be raised as free roaming birds and can be fed with locally available materials. Being good scavengers, they feed on a variety of insects and green foliage. They can also be fed on farm and kitchen wastes. The birds are resistant to major diseases except New Castle disease. A pair of Swarnadhara chicken fetches an income of about Rs.920 a year through the sale of its eggs and meat. One-day-old chicks and eggs of this breed are priced at Rs. 9 and Rs. 5, respectively.



Fig. 1.11: Swarnadhara

For obtaining chicks and fertile eggs of Giriraja and Swarnadhara, you may contact Department of Poultry Science, College of Veterinary Sciences, Karnataka Veterinary, Animal and Fishery Sciences University (KVAFSU), Hebbal, Bangalore-560 024 (Karnataka). Phone numbers: 080-23414384 and 23411483.

1.3.3 Vanaraja

Vanaraja is a choice bird for backyard farming in rural and tribal areas developed by the Project Directorate on Poultry (PDP), Hyderabad (Andhra Pradesh). It is a

multi-coloured dual purpose bird with attractive plumage (Fig. 1.12). The male parent is a coloured cornish strain and the female parent is a synthetic multi-coloured meat strain. The male parent has been developed for moderate juvenile body weight, long shanks and good immuno-competence. The female parent has been developed for high egg production, better egg size, high hatchability and immune competence. The plumage pattern and colour of Vanaraja bird is very attractive and closely resembles that of the desi fowl. It has better immune status against common poultry diseases and is adaptable to the backyard rearing. The general resistance to common poultry diseases and the ability to withstand adverse climatic conditions makes Vanaraja perform well in rural areas. Due to their relatively light weight and long shanks, these birds are capable to protect themselves from predators which are otherwise a major problem observed in birds reared in backyard. Further, the genetic potential of Desi hens can be improved by crossing them with Vanaraja males and the upgraded progeny of such a cross performs better than Desi bird for body weight and egg production.

Vanaraja males attain moderate body weight at 8 weeks of age under regular feeding system and the pullets produce around 160-180 eggs in a laying cycle with minimum supplementation of locally available feed ingredients and other managerial inputs.



Fig. 1.12: Vanaraja Fig. 1.13: Rural Women in Andhra Pradesh with Vanaraja

Day old Vanaraja chicks need brooding up to 4-6 weeks of age. They should be protected against Ranikhet disease through proper vaccination programme. During brooding period, they can be fed with layer starter diet. After brooding, these chicks need initial acclimatization to backyard environment before they are let free. Once they get adapted to the backyard farming conditions, they can perform better by scavenging for feed in the backyards. Additional feed need to be offered to the birds depending upon the extent of vegetation in the backyard and open area available for scavenging.

Among the backyard poultry varieties, Vanaraja is the most popular in different parts of the country. The germplasm of Vanaraja is available in the form of fertile eggs, day old chicks or grown up chicks from Project Directorate on Poultry, Rajendra Nagar, Hyderabad-500 030 (Andhra Pradesh). Phone numbers: 040-24015651 and 24017000.

Check Your Progress 2

- Note:** a) Use the space given below for your answers.
b) Check your answers with those given at the end of the unit.

- 1) Name some important backyard varieties of poultry developed by CARI, Izatnagar for egg and meat purpose.

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- 2) Name some important backyard varieties of poultry developed by KVAFSU, Bangalore and PDP, Hyderabad for egg and meat purpose.

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1.4 SUPPLEMENTARY FEEDING, WATERING AND NIGHT SHELTER

In backyard farming, though birds are reared in extensive system, some amount of supplementary feeding is required for improving their productivity. Provision of night shelter will help in protection from extreme weather conditions and predators.

1.4.1 Supplementary Feeding and Watering

In the backyard system of rearing, the birds scavenge outside for food during the day and eat insects, pests, crop residues etc. But scavenging cannot provide a complete diet for birds for optimum production. The nutrient intake of scavenging birds varies from place to place according to the seasons, the crops grown and the natural vegetation available. During the rainy season and harvest time, there will be plenty of food in the form of worms, insects and post-harvest leftovers, but the scarcity exists in the dry season. In field experiments, feed supplements, including household waste (kitchen leftovers, cooked potatoes, yams or cassava tubers), and oilseed cakes, have a positive effect on egg production and body weight of scavenging birds. So, a handful of grains or kitchen waste, in the morning and evening can be given to supplement scavenging (Fig. 1.14). The common feedstuffs given in family poultry includes maize grains, maize scrap, millet bran, food scraps, grower mash and poultry mash. Mash or pellets are usually fed in one hopper and grain is fed in another. Some poultry farmers use pellets for backyard feeding, because the larger particles are less subjected to blowing out of feeders. Feeding whole grain by spreading it on the litter stimulates hens to scratch in the litter and maintain it in good condition.



Fig. 1.14: Supplementary Feeding

The correct supplementation feed strategy is important for growth, immune status and survival of young chicks. Without supplementation, there will be mortality in the chicks during the first few weeks of age. With the supplement containing 26% crude protein, mortality can be reduced, because it is known that sufficient protein in the diet is required to build up the young chick’s immune system. The scavenging feed

base is very important for propagation of backyard birds. The scavenging feed base is the amount of feed that the birds can scavenge in a location and is important for egg production and body weight gain and thereby the profitability. Soil type, cropping systems and cropping intensity dominated by wheat, maize, rice, sugarcane and finger millets are related to supplementary feed base.

Ensure good supply of clean water always to the birds in shelter as well as outside. Feeders and water should be placed conveniently. About four inches of feeder space per bird should be provided. Plan to have enough space so that all birds can eat at the same time. Feeders and waterers should be raised as the birds get older. The top of the feeder should be raised to at least the level of the bird's back as it stands in a normal position on the floor. The birds should have to reach up and over the edge of the feeder. This will help prevent feed wastage. In this way, the birds will have ready access to their main diet of insects and seeds that they obtain for themselves and the amount of supplementary feed to be provided by the farm family will be reduced. Any feed of grain or household scraps that is offered should be given inside the shelter. If this is regularly provided in the evening, it will help to train the birds to willingly enter the enclosure before nightfall.

1.4.2 Night Shelter

In backyard poultry rearing, it is necessary to confine the birds in a secure shelter at night, to protect them from natural predators, while allowing them to roam freely around the enclosure during the day, when the predators are less active. The night shelters are mostly made of bricks, while a few are made of wire mesh. Roofing is either thatched or made of corrugated iron.

The basic requirements of night shelter are:

- Protection from weather
- Protection from predators
- Enough space to move around
- Adequate ventilation
- A clean environment

So, one should keep the points given below in mind while constructing the night shelter for the birds in backyard system of rearing.

- Build the night shelter for the birds on higher, well-drained areas in order to prevent prolonged dampness and water saturation of the floor and outside areas.
- Provide an adequate level of space per bird to avoid overcrowding.
- Use building materials which will be easy to clean and simple to disinfect, when necessary.
- For laying hens, a darkened, raised secure nesting area with nests containing clean nesting material should be available. Nests can be in the fenced area or in the shelter itself.
- Hens will lay many more eggs if artificial light is available in the morning and evening to give 15 to 16 hours of light each day.
- Remove any loose or projecting wire, nails, or other sharp-edged objects from the house and run. Except for purpose-made perches, remove any other projections where the birds could attempt to perch as they may injure themselves attempting to perch on inappropriate objects.

- The housing for night shelter must also provide a stable environment in which the birds must feel comfortable and stress free. Chickens need a shelter with optimum temperature, fresh air and sufficient light.

Check Your Progress 3

- Note:** a) Use the space given below for your answer.
 b) Check your answers with those given at the end of the unit.
- 1) List out the basic requirement of night shelter.

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Activity 2

Visit a nearby farmer maintaining backyard poultry. Collect information regarding type of supplementary feeding, watering and night shelter provided to the birds. Also collect information on the feedstuffs or feed ingredients provided to the birds as supplementary feed.

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1.5 LET US SUM UP

Backyard farming is a traditional extensive system of rearing poultry with an average flock size of 5 to 20 native breed or non-descript fowls or improved backyard birds by farm families to meet their dietary needs or small cash needs. Scavenging backyard poultry farming is practiced in tropical countries like India, Bangladesh etc. Under this system, the birds are confined to a large or small fenced area where they receive more care and shelter. Under free-range conditions, the birds are not confined and can scavenge for food over a wide area. They are often kept in movable houses surrounded by fence. Some important backyard varieties of poultry developed by CARI, Izatnagar for egg and meat purpose include CARI Debendra, Hitcari, Nirbheek, Shyama and Upcari. Some important backyard varieties of poultry developed by KVAFSU, Bangalore for egg and meat purpose include Giriraja and Swarnadhara and by PDP, Hyderabad include Vanaraja. The correct supplementation feed strategy is important for growth, immune status and survival of young chicks. Without supplementation, there will be mortality in the chicks during the first few weeks of age. In backyard poultry rearing, it is necessary to confine the birds in a secure shelter at night, to protect them from natural predators, while allowing them to roam freely around the enclosure during the day, when the predators are less active.

1.6 GLOSSARY

- Acclimatization** : Adaptation to a new climate (temperature or altitude or environment).
- Arid Zone** : Areas having little or no rain.

Flock	: A group of animals or birds that live, travel, or feed together.
Foliage	: The green leaves of a plant.
Frizzle	: curl tightly.
Gait	: A particular way or manner of moving on foot; manner of walking.
Hopper	: Something that jumps.
Immuno-competence	: Having the normal bodily capacity to develop an immune response following exposure to an antigen or outside protein or micro-organism.
Juvenile	: Not fully grown or developed; young.
Non-descript	: Native or local.
Perch	: To stand, sit, or rest on an elevated place or position.
Progeny	: One born of, or derived from another.
Scavenging	: To collect food by searching.
Stamina	: Energy and strength sustained while performing an activity over a long time.
Sturdy	: Healthy, strong, and unlikely to tire or become injured.
Supplementary	: Additional.

1.7 SUGGESTED FURTHER READING

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1.9 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

- 1) Backyard farming is a traditional extensive system of rearing poultry with an average flock size of 5-20 native breed or non-descript fowls or improved backyard birds by farm families to meet their dietary needs or small cash needs. Free-range farming is best adapted to small- scale farmers who raise chicken for sale. Under free-range conditions, the birds are not confined and can scavenge for food over a wide area. These are often kept in movable houses surrounded by fence with often changing position to have access to a more or less constant supply of fresh green vegetation, with some insects, worms and other natural food.
- 2) Benefits of backyard poultry farming are:
 - Provide nutritional security
 - Income generation
 - Cultural and recreation benefits
 - Active in pest control, provide manure
- 3) Some important backyard varieties of poultry are Debendra, Giriraja, Gramapriya, Krishna-J, Swarnadhara, Vanaraja.

Check Your Progress 2

- 1) Some important backyard varieties of poultry developed by CARI, Izatnagar for egg and meat purpose include CARI Debendra, Hitcari, Nirbheek, Shyama and Upcari.
2. Some important backyard varieties of poultry developed by KVAFSU, Bangalore for egg and meat purpose include Giriraja and Swarnadhara and by PDP, Hyderabad include Vanaraja.

Check Your Progress 3

- 1) The basic requirements of night shelter are:
 - Protection from weather
 - Protection from predators
 - Enough space to move around
 - Adequate ventilation
 - A clean environment