Agricultural Practices

Introduction to Agriculture

People were originally nomadic, gathering food and hunting animals. Over time, they learned to cultivate land and grow crops such as rice and wheat. Agriculture is the practice of growing plants in large quantities at one place, called a crop.

Types of Crops

Crops are classified based on the season they grow in. In India, there are two main cropping patterns:

- **Kharif Crops:** Sown during the rainy season (June to September). Examples include paddy, maize, soyabean, groundnut, and cotton.

- **Rabi Crops:** Grown in the winter season (October to March). Examples include wheat, gram, pea, mustard, and linseed.

Crop Diversity in India

India's varied climate leads to a rich variety of crops grown in different regions. Proper management and distribution are essential to provide food for the large population.

Solved Examples

Practice Set

- **Level 1:** What is agriculture?
- **Level 2:** Name two kharif and two rabi crops.
- **Level 3:** Explain why paddy is grown only in the rainy season.

Answer Key

- **Level 1:** Agriculture is the practice of cultivating land and growing crops.
- **Level 2:** Kharif crops: paddy, maize; Rabi crops: wheat, gram.
- **Level 3:** Paddy requires a lot of water, which is available during the rainy season, so it is grown only then.

Soil Preparation

Importance of Soil Preparation

Soil preparation involves turning and loosening the soil to allow roots to penetrate deeply and breathe. It also helps bring nutrient-rich soil to the surface, supporting plant growth.

Tilling and Ploughing

Tilling or ploughing is the process of loosening and turning the soil using tools like the plough. This process also helps earthworms and microbes to thrive, enriching the soil.

Agricultural Implements

Tools used for soil preparation include:

- **Plough:** A wooden or iron tool pulled by animals to till the soil.
- **Hoe:** Used for removing weeds and loosening soil.
- **Cultivator:** Tractor-driven tool that saves labor and time.

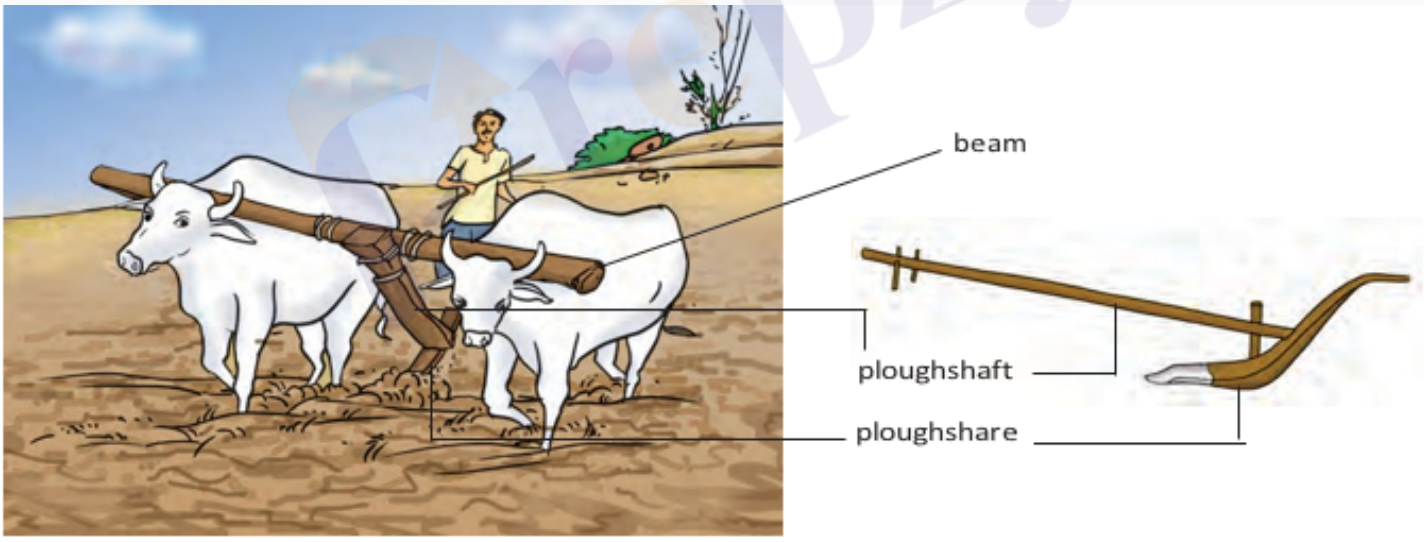

Fig. 1.1 (a) : The plough

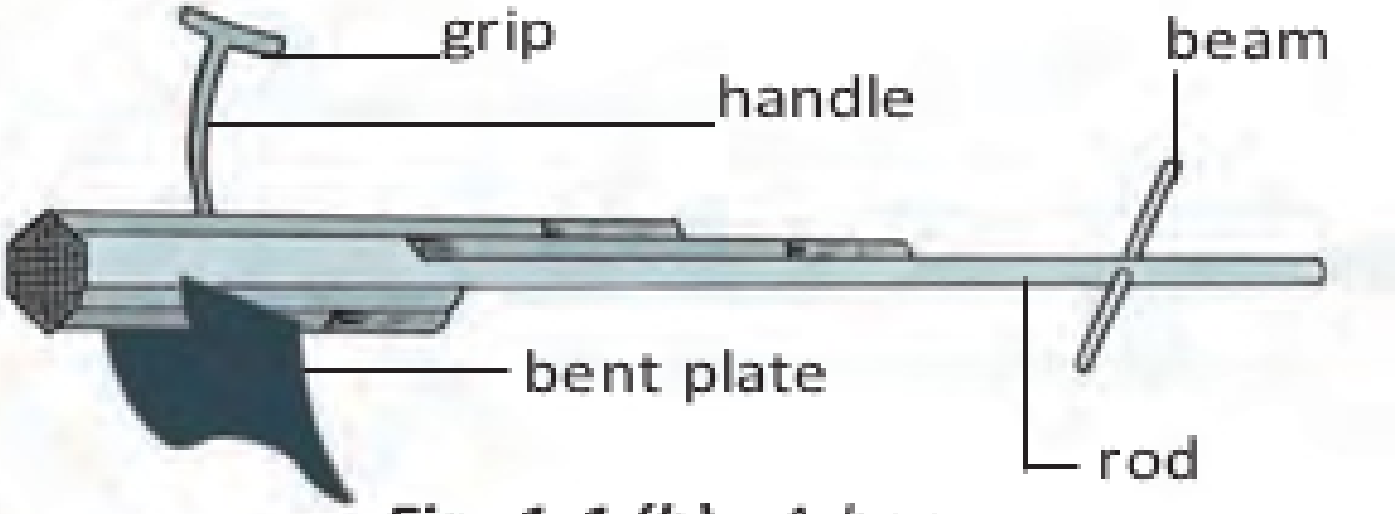

Fig. 1.1 (b) : A hoe

Fig. 1.1 (c) : Cultivator driven by a tractor

Solved Examples

Practice Set

- **Level 1:** What is the purpose of ploughing?
- **Level 2:** Name three tools used for soil preparation.
- **Level 3:** Explain how tilling benefits soil organisms.

Answer Key

- **Level 1:** Ploughing loosens and turns the soil to prepare it for sowing.
- **Level 2:** Plough, hoe, cultivator.
- **Level 3:** Tilling creates a loose soil environment that supports earthworms and microbes, which enrich the soil.

Sowing

Seed Selection

Good quality, healthy seeds of high-yield varieties are selected for sowing. Seeds that float in water are usually damaged and are discarded.

Sowing Methods

Traditional sowing uses a funnel-shaped tool to place seeds in the soil. Modern sowing uses seed drills pulled by tractors, which sow seeds uniformly at the correct depth and spacing.

Nursery and Transplanting

Some plants like paddy are first grown in nurseries and then transplanted to fields. Proper spacing is maintained to avoid overcrowding and ensure adequate sunlight and nutrients.

Fig. 1.2 (a) : Traditional method of sowing

Solved Examples

Practice Set

- **Level 1:** Why are damaged seeds discarded before sowing?
- **Level 2:** What is the advantage of using a seed drill?
- **Level 3:** Explain the importance of spacing between plants.

Answer Key

- **Level 1:** Damaged seeds are hollow and lighter, so they float and do not germinate well.
- **Level 2:** Seed drills sow seeds uniformly at the correct depth and spacing, saving time and labor.
- **Level 3:** Proper spacing prevents overcrowding, ensuring plants get enough sunlight, water, and nutrients.

Manure and Fertilisers

Need for Nutrients

Continuous cropping depletes soil nutrients. Manure and fertilisers replenish these nutrients to support healthy plant growth.

Manure

Manure is organic matter from decomposed plant and animal waste. It improves soil texture, water retention, and adds humus.

Fertilisers

Fertilisers are chemical substances rich in nutrients like nitrogen, phosphorus, and potassium. They provide quick nutrient supply but do not add humus.

Comparison

Manure is organic and improves soil health, while fertilisers are synthetic and nutrient-rich. Excessive fertiliser use can harm soil and water quality.

Table 1.1 : Differences between Fertiliser and Manure

S. No.	Fertiliser	Manure
1.	Fertiliser is a man-made inorganic salt.	Manure is a natural substance obtained by the decomposition of cattle dung and plant residues.
2.	Fertiliser is prepared in factories.	Manure can be prepared in the fields.
3.	Fertiliser does not provide any humus to the soil.	Manure provides a lot of humus to the soil.
4.	Fertilisers are very rich in plant nutrients like nitrogen, phosphorus and potassium.	Manure is relatively less rich in plant nutrients.

Solved Examples

Practice Set

- **Level 1:** What is manure?
- **Level 2:** List two advantages of manure over fertilisers.
- **Level 3:** Why should fertiliser use be controlled?

Answer Key

- **Level 1:** Manure is organic matter from decomposed plant and animal waste used to enrich soil.
- **Level 2:** Manure improves soil texture and water retention; it adds humus to the soil.
- **Level 3:** Excessive fertiliser use can reduce soil fertility and cause water pollution.

Irrigation

Importance of Water

Water is essential for seed germination, nutrient transport, and protecting crops from extreme temperatures.

Sources of Irrigation

Water for irrigation comes from wells, tubewells, ponds, lakes, rivers, dams, and canals.

Traditional Methods

Traditional irrigation uses manual or animal labor with devices like moat (pulley), chain pump, dhekli (lever), and rahat (animal-driven water wheel).

Modern Methods

Modern irrigation includes sprinkler systems that spray water like rain and drip systems that deliver water drop by drop near roots, conserving water.

Fig. 1.4 (a) : Moat

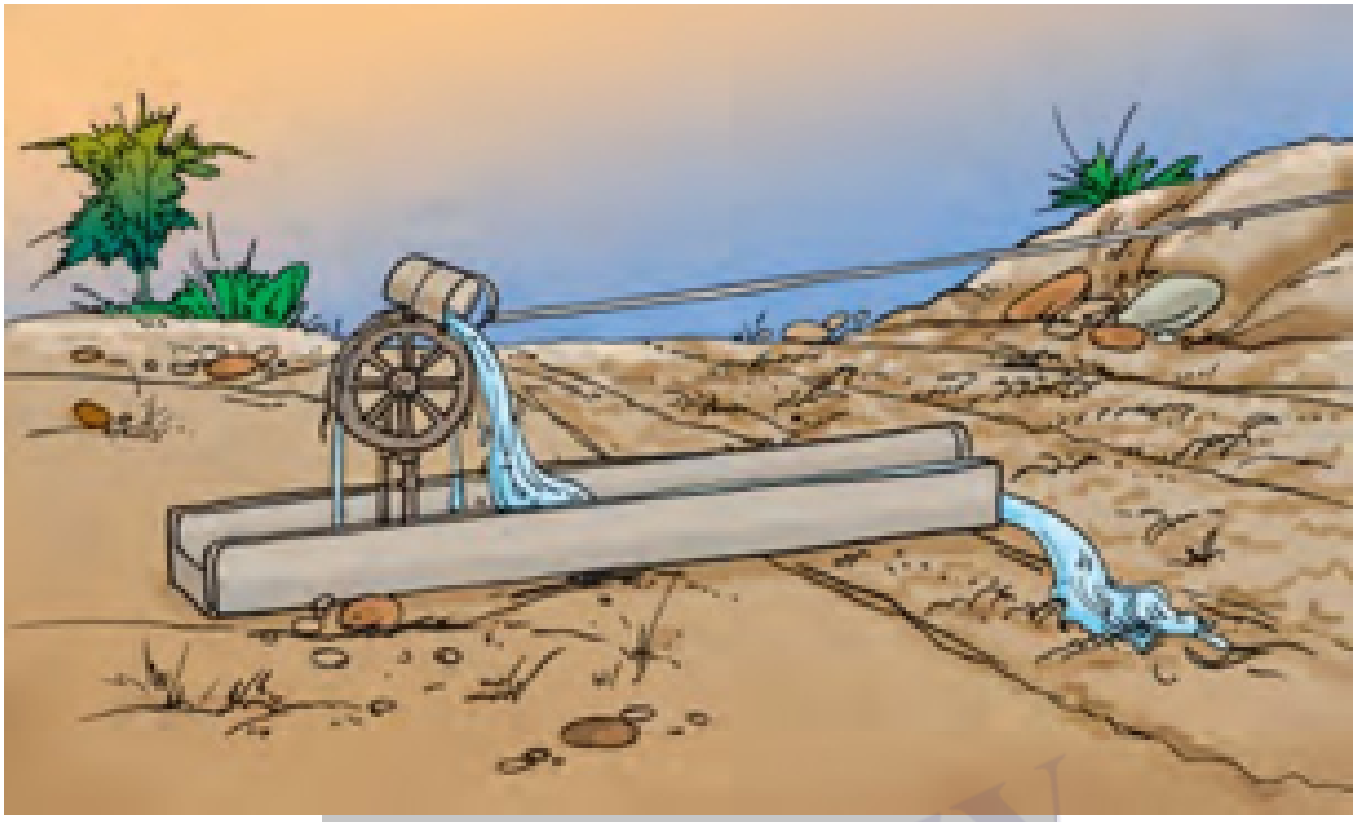

Fig. 1.4 (b) : Chain pump

Fig. 1.4 (c) : Dhekli

Fig. 1.4 (d) : Rahat

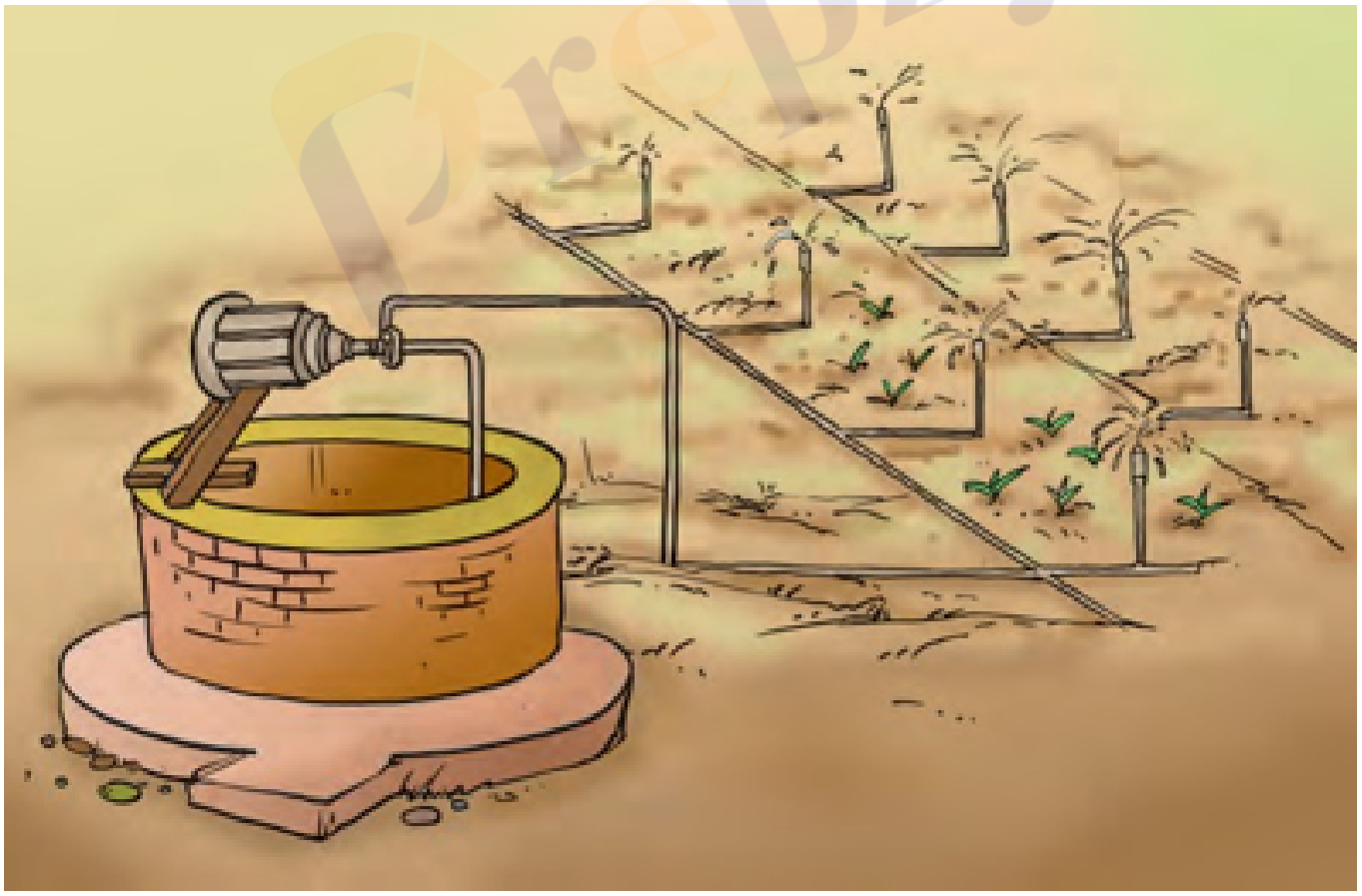

Fig. 1.5 (a) : Sprinkler system

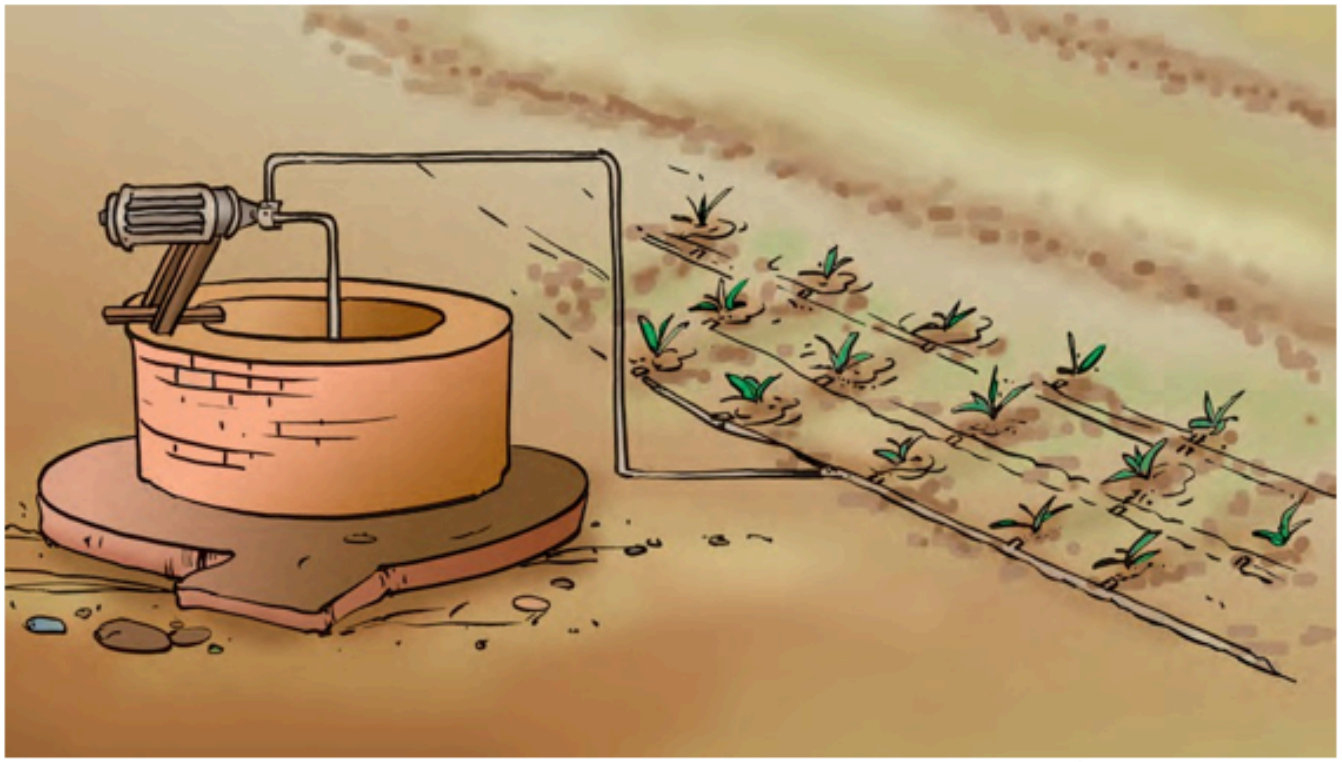

Fig. 1.5 (b) : Drip System

Solved Examples

Practice Set

- **Level 1:** Why is irrigation necessary?
- **Level 2:** Name two traditional and two modern irrigation methods.
- **Level 3:** Explain how drip irrigation conserves water.

Answer Key

- **Level 1:** Irrigation supplies water to crops to support growth and development.
- **Level 2:** Traditional: moat, chain pump; Modern: sprinkler, drip system.
- **Level 3:** Drip irrigation delivers water directly to roots drop by drop, reducing evaporation and wastage.

Weed Control

What are Weeds?

Weeds are unwanted plants that grow along with crops and compete for water, nutrients, space, and light.

Weeding Methods

Weeding involves removing weeds manually using tools like khurpi or mechanically with seed drills. Chemicals called weedicides are also used to kill weeds without harming crops.

Safety Precautions

Farmers should wear protective cloths over nose and mouth while spraying weedicides to avoid health hazards.

Fig. 1.6 : Spraying weedicide

Solved Examples

Practice Set

- **Level 1:** What are weeds?
- **Level 2:** Name two methods of weed control.
- **Level 3:** Why should farmers take precautions while using weedicides?

Answer Key

- **Level 1:** Weeds are unwanted plants that grow with crops and compete for resources.
- **Level 2:** Manual removal with tools and chemical weedicides.
- **Level 3:** Weedicides can harm human health; protective measures prevent inhalation of chemicals.

Harvesting

Harvesting Process

Harvesting is cutting mature crops manually with sickles or using machines like harvesters.

Threshing and Winnowing

Threshing separates grains from stalks using machines called combines. Winnowing separates grains from chaff using wind or machines.

Harvest Festivals

Harvest time is celebrated with festivals like Pongal, Baisakhi, Holi, Diwali, Nabanya, and Bihu.

Fig. 1.7 : Sickle

Fig. 1.8 : Combine

Fig. 1.9 : Winnowing machine

Solved Examples

Practice Set

- **Level 1:** What is harvesting?
- **Level 2:** Name two tools or machines used in harvesting.
- **Level 3:** Explain the process of threshing.

Answer Key

- **Level 1:** Harvesting is cutting mature crops for collection.
- **Level 2:** Sickle and combine harvester.
- **Level 3:** Threshing separates grains from stalks by beating or using machines.

Storage

Importance of Storage

Proper storage protects harvested grains from moisture, insects, rats, and microorganisms.

Storage Methods

Grains are dried before storage. They are stored in gunny bags, silos, or granaries. Neem leaves are used to protect grains from pests.

Fig. 1.10 (a) : *Silos for storage of grains*

Fig. 1.10 (b) : Storage of grains in gunny bags in granaries

Solved Examples

Practice Set

- **Level 1:** Why are grains dried before storage?
- **Level 2:** Name two storage structures for grains.
- **Level 3:** How do neem leaves help in grain storage?

Answer Key

- **Level 1:** Drying reduces moisture to prevent spoilage by pests and microorganisms.
- **Level 2:** Silos and granaries.
- **Level 3:** Neem leaves repel insects and protect grains from pests.

Food from Animals

Animal Sources of Food

Animals provide food such as milk, eggs, meat, and honey. Animal husbandry is the practice of rearing animals for food and other products.

Activity 1.3

Make the following Table in your note book and complete it.

S.No.	Food	Sources
1.	Milk	Cow, Buffalo, She-goat, She-camel . . .
2.		
3.		
4.		

Solved Examples

Practice Set

- **Level 1:** Name two foods obtained from animals.
- **Level 2:** What is animal husbandry?
- **Level 3:** Why is fish considered good for health?

Answer Key

- **Level 1:** Milk and eggs.
- **Level 2:** Animal husbandry is rearing animals for food and other products.
- **Level 3:** Fish provides cod liver oil, rich in vitamin D, beneficial for health.

Quick Reference Table

Common Mistakes and Misconceptions

Glossary