## Bundh Breeding:

Bundh is a type of perennial and seasonal tank or impoundment where riverine conditions are simulated and where major carps are known to breed. After a heavy shower, the bundhs receive large quantity of rain water with washings from their catchment areas and provide large shallow areas that serve as spawning grounds for the fishes.

The first bundh (dry bundh) was set up in Madhya Pradesh at Sonar Talliya in 1958. After this, persistent expansion of bundhs had taken place due to its simplicity of operation and high rate of success.

**Types of Bundh:**

**Bundhs are generally of three types:**

(A) Wet Bundhs and

(B) Dry Bundhs.

(C) Bangla Bundh

**A. Wet Bundhs:**

1. Wet bundhs are perennial ponds situated in the slope of an undulating terrain. It provides a vast catchment area and facilitates quick filling even with a short spell of rain.
2. It has proper embankments with an inlet towards the high catchment area and an outlet at the opposite lower end (Fig. 6.13).
3. The deeper portion of the bundh during summer, retain water containing major carp breeders.
4. During monsoon, after a heavy shower, water from the catchment area rushes into the bundh.
5. The major portion of the bundh gets submerged and the excess water passes out through the outlet. The shallow areas of the bundh is called moans where the breeders actually spawn.
6. The outlet is protected by a bamboo fencing called chheva.
7. The outflow of the water through the chheva can be controlled by blocking the spaces in it with straw and mud.
8. Fine meshed nylon cloth is placed in the outlet to stop the hatchlings from escaping. Similar nylon cloth is placed i n the inlet to stop the entry of unwanted fishes.

**B. Dry Bundhs:**

1. Dry bundh is a seasonal one, which remains more or less dry during greater part of the year.
2. It is a shallow depression enclosed on three sides by an earthen embankment.
3. During the monsoon season it imports fresh rain-water from the catchment area.
4. In modern constructions, the embankment is a pucca stone masonry with a small sluice gate in the deepest portion of the bundh for complete drainage and one or two waste weirs for overflow of excess water.
5. A dry bundh unit (apart from the bundh) also consists of storage ponds for stocking breeders, an observation post with arrangement for storing necessary equipment and a set of cemented hatcheries (2.4 m x 1.2 m x 0.3 m) along with overhead tank and regular supply of water for handling large number of eggs at a time (Fig. 6.14).
6. In dry bundhs, selected numbers of female and male (in the ratio 1:2) breeders of major carps are introduced.

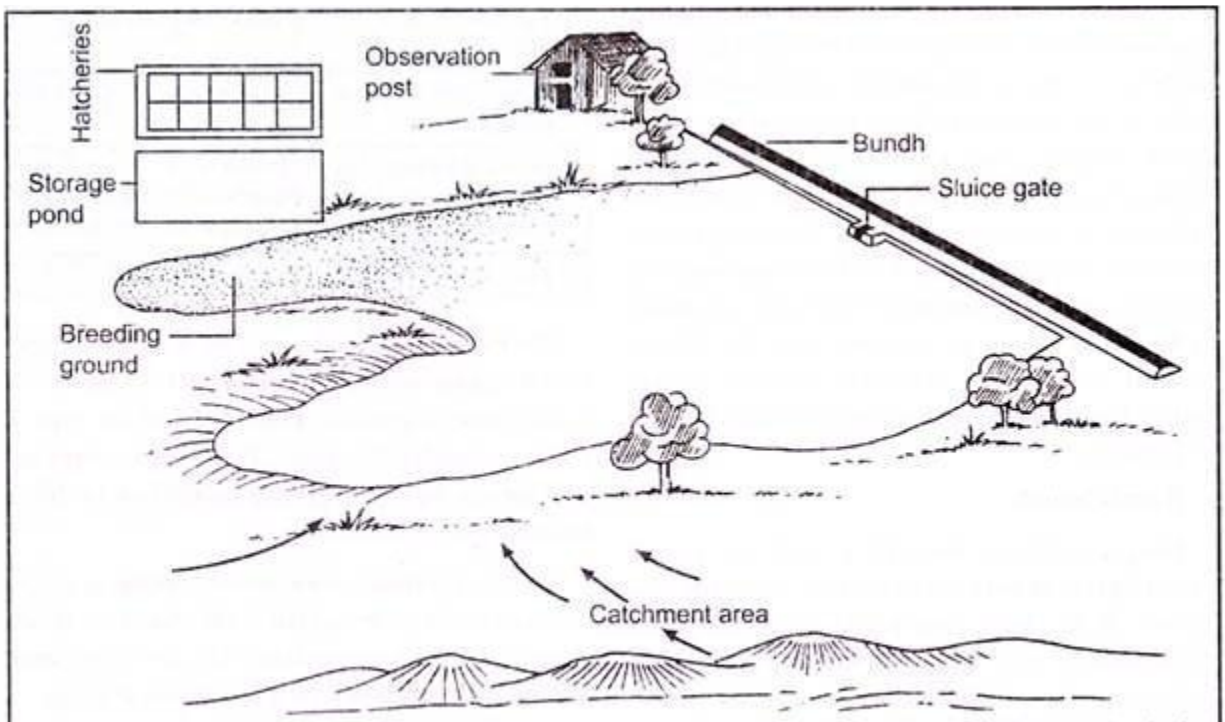


**Fig. 6.14.** A schematic representation of a farm with dry bundh and having provisions for observation post, hatcheries and storage pond

- Though major carps breed at any spot in the bundh, it is advantageous to prepare 'spawning grounds' at different levels which could get flooded at different water levels.
- It has been stated that the water depth where sex play/courtship behaviour and spawning take place, varies between 8 cm and 1.2 m.
- In both wet and dry bundhs, spawning usually occurs after a large quantity of rain water fills up the bundh during continuous heavy showers of the monsoon period.

- It has been seen that at first smaller sized mature fishes (rohu, mrigal) get stimulated to breed and in order to spawn, migrate either to the shallow areas of the bundh or to those adjoining it.
- Bigger fishes, like catla, spawn next in the same area. Spawning occurs on hard or sandy soil and on rocky embankment.
- In one year (spawning season of 30-40 days) as much as five crops could be obtained in a dry bundh, whereas only one or two crops possible in wet bundh.
- The difference between wet and dry bundh is listed in Table 6.3

**Table 6.3 : Differences between wet and dry bundhs**

| Wet bundh | Dry bundh |
|---|---|
| 1. Perennial impoundment, may be either small or large, having suitable topography for breeding. It is situated in the slope of a vast catchment area of undulating terrain with proper embankments having inlet towards the high catchment area and an outlet at the opposiie lower end. | Seasonal, small, shallow pond/tank, enclosed on three sides by an earthen embankment. During the monsoon season it imports fresh rain water from the catchment area. |
| 2. No storage ponds, hatcheries and observation post present. | It may consist of storage ponds, hatcheries and an observation post. |
| 3. The deeper portions retain water even during summer and contains major carp breeders. | Breeders are kept in storage ponds. |
| 4. It is difficult to manage. | It can be easily managed. |
| 5. Egg collection is difficult. | Egg collection is easy. |
| 6. Mixed type of egg is produced. | Desired quality of egg can be produced. |
| 7. In one spawning season only one or two crops can be obtained. | In one spawning season as much as five crops can be obtained. |
| 8. Less economical. | More economical. |

**Prerequisites of Bundh Breeding:**

**For successful bundh breeding the prerequisites are:**

(1) Heavy showers during the monsoon season.

(2) Flow of water from up-land to bundhs and then through outlet, makes some sort of water current.

(3) Inlet and outlet of the bundhs are to be kept closed after the water level reaches brim point.

(4) Sudden fall of temperature.

(5) No definite depth for breeding, as breeding can take place even in paddy fields having a depth of 31-35 cm.

(6) Smaller fishes first get inducement to breed and the bigger ones are attracted later.

**Drawbacks of Bundh Breeding:**

(1) Indiscriminate killing of brood fishes particularly milters during dry months, result in improper sex ratio.

(2) It is not possible to hygienically maintain mud hatching pits.

(3) Large scale mortality of spawn takes place as they are not transported before the 3rd day.

(4) Other limiting factors for successful spawning are:

(a) Presence of excessive numbers of copepods (Cyclops, Diaptomus, etc.) that accumulate in the water of the bundh.

(b) Large scale deposition of alluvium in the breeding grounds.

## 3. Induced Breeding:

1. Many cultural species of fin fishes (particularly the major corps) under farm culture conditions do not get the required environmental impetus for spontaneous maturation.
2. This has led to the development and standardization of a technique, called induced breeding or hypophysation.
3. Here, through the injection of pituitary homogenates or extracts, the natural gonadotropin surge is stimulated, disregarding the environmental impetus.
4. Thus, it has not only made the major carps and other fin fishes to breed in confined water under farm conditions but it also has the added advantage of regulating the time of spawning.

5. Induced spawnings first trial was carried out in the 1930's in South America (Brazil), where pituitary hormones obtained from cattle and sheep were used to induce spawn mrigala.
6. In India, the first experiment in induced breeding was made by Hamid Khan (1937) who tried in vain to induce breed mrigala by the injection of mammalian pituitary gland.
7. The first successful attempt was made by Hiralal Chaudhuri in 1955, who succeeded to induce spawning Esomus dauricus (minor carp) by injecting pituitary gland of catla. Later in 1957, H. Chaudhuri and K.H. Alikunhi succeeded to induce breeding of Indian major carps at the Central Inland Fisheries Research Sub-station, Cuttack.

**Advantages of Induced Breeding:**

**Induced breeding has manifold advantages as under:**

(1) Pure and disease-free spawn of a desired variety of fish under cultivation can be obtained through induced breeding.

(2) Induced breeding ensures availability of seeds for fish culture at any time (except during the winter months) and do not have to depend upon the monsoon season only for its collection, like that of natural sources.

(3) The demand for any specified quality of pure fish seed of a particular species can be met through induced breeding.

(4) The same fish can be made to breed twice in one year.

(5) The technique of induced breeding is very simple and can be easily handled by a layman without much training.

(6) The cost incurred for production of a spawn from induced breeding is comparatively lower than that of obtaining from natural sources.