Lecture 6

Hatchery location and descriptions


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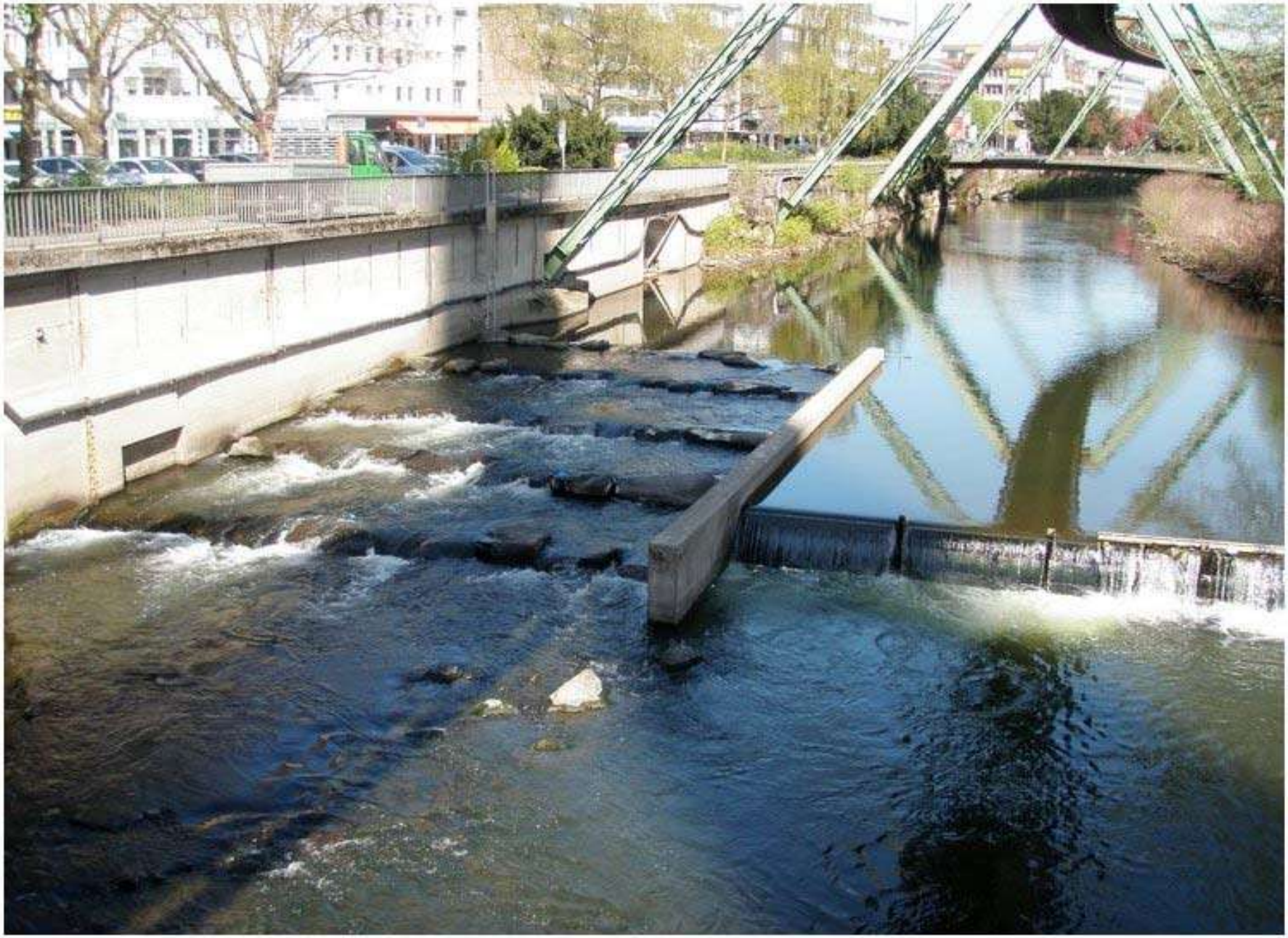


Hatchery location and descriptions

Sites which enable easy fulfillment (achievement) of the following objectives, naturally or in expensively, qualify (requirement) for locating a carp hatchery:

1. Ponds excavated (digging) at the site should provide a water retentive (preserve) soil base, exposed by digging or transfer of top soil of the site to pond bottom and embankments (dam سدّ).
2. The soil should possess (have) basic mineral nutrients and respond readily (easily) to organic and inorganic fertilization.

3. There should be a dependable source of perennially (progressed in age) available water in adequate (efficient) quantity for the size of the proposed hatchery;
4. Self-draining ponds should be used or, sloping sites.

5. The physical and chemical properties of the water are within acceptable limits, such that water quality can be further manipulated (treated) by chemical treatment to suit aqua cultural needs.
6. The site is easily accessible (approachable) by rail (horizontal bar) and/or road and air.

7. There is a market in the vicinity (nearby).
8. Fertilizers and raw (not processed) material for feeds required for aquaculture operations and building material for constructing the hatchery are available near the site.
9. There is no industrial, domestic or pesticide pollution at the site.


16-20

10. There are reasonable educational and medical facilities available in the vicinity of the site.
11. There may be scope (specialty) for integration of aquaculture with agriculture, horticulture or floriculture at the site.

SOIL QUALITY

The biological productivity (producing) of a natural pond mainly depends on the quality of its soil base. A satisfactory pond bottom soil, apart from being:

1- Impervious to water.
2- Permits rapid mineralization of organic matter.
3- Absorbs nutrients loosely (easily) bound and releases them slowly over a long period.

4- Silty clays, clay-loams (fertilized), loams, etc., generally make **good quality soils** for a fish pond.

5- Rocky outcrops, shale (mud rocky), ledges (under water) rocks, sand, gravel and limestone areas must be avoided.

If, however, a measure of soil **porosity** becomes unavoidable, then pond bottom may be treated with bentonite (impure clay minerals), clay or other soil sealants (prevent a passage of fluid).

Sprayed-on asphalt liners and plastic film liners can also be used to reduce or prevent seepage (دزەکردن) but any such treatment apart from being expensive, in effect, seals off the soil-water interface with an inert substance and prevents soil-water exchange of minerals and nutrients, which is detrimental (harmful) to biological productivity.

Fertilization, especially organic manure over a period of time, automatically reduces the rate of **seepage** by sealing soil pores. It also reduces **water turbidity** caused by suspended silt and colloids.

Algae, in the presence of electrolytes, aid in the latter process by flocculation (soil become a fragile structure). If a liner is to be installed to prevent seepage, it is desirable to put it about **200 cm** below the pond bottom so that there exists a thick substratum (under layer) of water-soaked soil at the bottom of the pond.

The minerals and nutrients required for securing biological productivity for. The ponds have basically to be drawn into the pond water from the pond soil. The pond has to be enriched artificially for sustenance of its productivity once its inherent fertility is used up. Economic considerations in aquaculture demand that the barest minimum of fertilization be done artificially.

This brings to the fore the extreme (final) importance of pond soil chemistry and its intimate (deeply) direct relationship with pond fertilization. Well-polarized, thought in N-P-K fertilization exist in the literature in aquaculture.

While considerable scientific knowledge has been amassed (collected) on agricultural soils in relation to fertilization and cereal or horticultural production, little is known on water-submerged (sink in water) soils of ponds in relation to pond fertilization. This is one area in which further research in aqua culture will pay rich dividends in economizing aquaculture.

WATER QUALITY

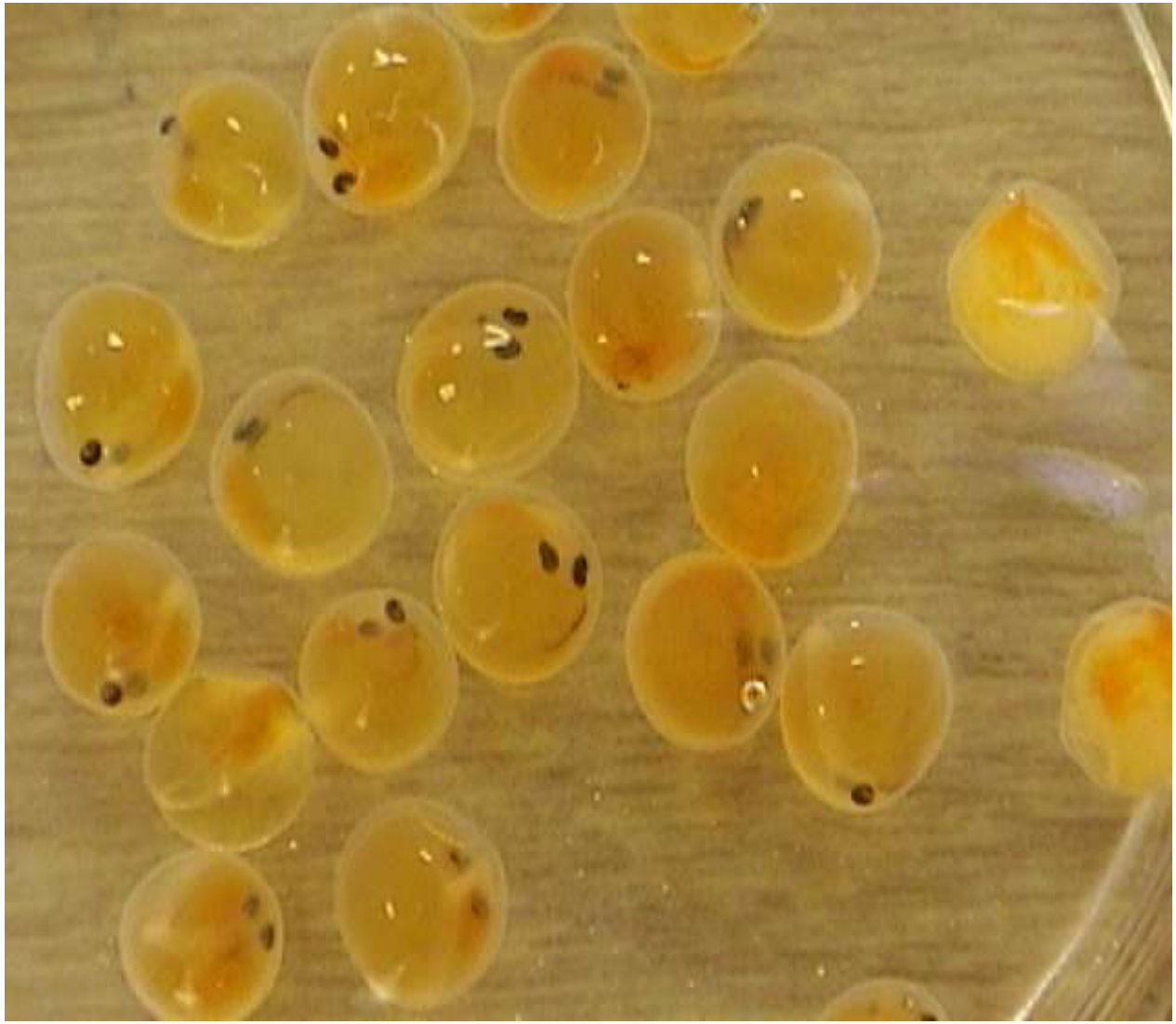
Water of desirable (suitable) quality and quantity is perhaps the most important requirement of a carp hatchery. The usual (normal) sources of water for a carp hatchery are rain water, reservoirs (water store in) tanks, rivers and streams, springs, irrigation canals, surface run-off, open wells, tube wells and artesian wells أرتوازي.

Water from rivers, canals and surface run-off sources, apart from being prone to flooding (floods are often destructive or destroyed), more often than not carry a heavy 'load of silt which is very undesirable, especially in the hatchery proper.

In the hatchery proper, silt smothers eggs, hampering their development; in ponds, it leads to siltation reducing pond volume, obstructs penetration of sunlight and adversely affects pond productivity. Water from underground sources is generally free from biota and in that respect is the safest, but often suffers from the serious drawback (preventer) of deficiency in dissolved oxygen.

Water with high dissolved oxygen content (6-9 ppm) at required temperature is the most essential requirement of a hatchery proper. Dissolved oxygen level in the water is made good by installing aeration devices (دانانی ئامێری اوکسجین تیکەڵ کردن) before its entry into the hatchery proper.

- Trout Sac Fry
- Eyed eggs
- 22 days old



Trout Sac Fry
35 days old

Trout Sac Fry

In late development
44days

Trout Fry
55 day


NEVADA DIVISION
OF WILDLIFE
MASON VALLEY HATCHERY