

Specifying your filter

The reason why feed rates are so important

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Introduction

Too many companies advertise their filters quoting the maximum pond water capacity (For example – “This filter is adequate for up to 3000 gallons”). This is important but there is more to a filter than just maximum pond size. The pond water capacity and flow rates must be considered in conjunction with the maximum feed rates a filter can accept.

Flow rates

Flow rates are important for a few reasons. Firstly, it would be normal advice to filter the complete capacity of a pond around every 2 hours. This means a 4000 gallon pond (circa 18,000 litres) would need an actual hourly flow rate of around 2000 gallons (circa 9000 litres) per hour. This is the specification of the pump you are looking for. You will need a pump of around that flow rate after losses due to bends etc. Why is this important? It is simple and has two basic answers.

Firstly the flow rate has a major effect on the biological capacity of the filter. These filters work using naturally grown nitrifying bacteria which help change noxious ammonia (liquid fish waste) into noxious nitrites, and finally into harmless nitrates (Please see section on how a filter works). The filter includes some sort of media which in simple terms is a home/breeding bed for these friendly bacteria. They live on and within this media and feed on the ammonia passing through and around them. If the flow rate is too high, the contact time between the ammonia/nitrite rich water and the bacteria is not enough. As a result, the biological cleaning (ammonia/nitrite removal) is ineffective and the water becomes polluted. Unfortunately, both ammonia and nitrite are invisible, so the water may look crystal clear but be deadly. It is imperative the filter's maximum flow rate not be exceeded if the biological capacity of the filter is not to be over stretched.

Secondly, the flow rate is important for overall pond clarity. The water must pass through the main filters and an Ultra Violet Clarifier around every 2 hours. If this is not the case the water will become biologically dirty, green and the mechanical cleaning (removal of particles and leaves) may not be of a standard that you require. It is also very important that the UVC be large enough to cope with the volume of pond water.

Feed rates

When looking at filters, we must be interested in the feed rates the filters can accept (the biological capacity). As long as the filters can handle the flow rate needed to filter all the pond water within the recommended 2-3 hours, we must give greater consideration to the feed rates.

This may sound strange, but here is the reason why. A 2-tonne shark swimming in a body of water can produce only as much waste as the food it intakes. It will produce waste comparative to one grain of rice per day if this is all we feed it. Some pond and koi keepers feed large amounts of food a day. I know one Koi keeper who has a large pond and is feeding over 0.55 lb (1/4 kg) of food per day. Not many filters would be able to keep this pond biologically clean. He is definitely a man who is more interested in feed rates and the capacity the filters can cope with, than the overall pond size.

Good filter manufacturers will stipulate maximum feed rates per day for their filters, as well as maximum flow rates.

Conclusion

Once you have calculated your pond capacity in litres or gallons (including the filters) you can then calculate your desired flow rate to filter all the water within the 2-3 hour time frame required. However, when searching for filters, find out exactly what feed rates your desired filters can accept. The number of fish and your feeding activities will have a major effect on the pond water conditions if you do not specify the correct filter.

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