The vivarium roof will impact on the lighting

Using mesh-topped vivariums

Please advise me about how to maximise light penetration through mesh-topped vivariums. Are they really suitable?

The development of 'off the shelf' glass enclosures and associated products was without doubt one of the most important changes seen to date in the reptile keeping world. Such units opened up reptile keeping to the masses! As with all technology though, there can be built-in design limitations, but this does not mean that the whole product group should be avoided - instead, it is a question of recognising these limitations.

As an industry, we must seek to provide solutions and provide an answer to emerging problems. There is no reason why for the right species, a mesh-topped vivarium cannot be used. The mesh certainly helps with ventilation and the glass design serves to maintain the lower temperatures required by some forest species.

One of the limitations, though, is the mesh itself. Its typically dark grey colour is certainly not great in terms of transmitting light into the enclosure. The size of the mesh is also so fine that this too stops a great deal of light getting through the mesh to the vivarium's occupants. If you restrict the light availability, so you will also have inhibited the passage of ultra-violet (UV) light too, with potentially serious consequences.

In an underpowered system, the mesh would be another factor reducing the UV index and the LUX (light) available to the animal. It is safe to say that out of the box, a new mesh lid would decrease your light transmission by around 30%. This is actually not too significant, but the real decrease occurs over time.

As dust builds up in the spaces between the wires and moisture from the vivarium starts to corrode the top, so the gaps present in the mesh decrease in size, reducing the amount of light that can push through the spaces even more. At its worst, I have measured an 80% reduction in light provision through mesh of this type that had been in use for a few years.

Power and cleanliness

This is clearly worrying, but what can be done to offset the problem and protect the vivarium occupants, to ensure that they receive adequate UV? Start by choosing a power of lamp that is strong enough to take into consideration the limitations of the mesh. Use the information about the wild animals to choose the right UV index, and match this with the output of the lamp.

Then you need to add power so that this energy is available after the light has travelled through the mesh. In most cases where a 6% lamp is required for a species, then a 12% lamp would need to be used to ensure that the same relative index is provided after the light has travelled through the mesh.

Choose a reflector that is efficient at forcing light through the holes in the mesh. With this in mind, Arcadia produced their T5 canopy. Its multifaceted, reflective surface has been specially designed to ensure the light becomes reflected from side to side and down through the mesh. The use of high output T5 lamps has also greatly improved the useable amount of UV inside mesh-topped vivarium.

Once you have chosen the right lamp, simple housekeeping will take care of the rest. Be sure to change your lamps as directed. In the case of Arcadia lamps, this is once a year. Clean the mesh regularly every month as well. This is very easy - simply remove the mesh top, ensuring that the occupants cannot escape.

Then wash the mesh top with plain water to remove any loose dust and debris. Use a stiff, clean toothbrush to brush off any rust or calcium build-up from between the wires, and rinse it thoroughly with clean water. You must then dry the mesh thoroughly, before putting it back in place, and blasting it with hot air from a hairdryer is very effective for this purpose.

If the mesh is visibly worn and corroded, simply order a replacement lid. It may be a good idea to replace the mesh annually as part of your yearly maintenance as a matter of course. This is the only way of being sure that as much light as possible is being pushed through the mesh and down into the living space where it is needed.

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