

The need for transport and transport in plants

Why can a unicellular organism rely on diffusion?

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Why do multicellular organisms need a transport system?

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What is the formula for surface area : volume ratio?

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What does the xylem transport?

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What does the phloem transport?

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How is xylem adapted for its function?

Small surface area : volume ratio and long diffusion distances, so diffusion alone is too slow.

It has a large surface area compared with its volume, so substances only have a short distance to diffuse.

Water and mineral ions from the roots to other parts of the plant.

Surface area $\div$ volume. A cube with 3 cm sides has $54 \text{ cm}^2 \div 27 \text{ cm}^3 = 2 : 1$.

Dead cells with no end walls form hollow tubes; lignin strengthens the walls.

Sucrose and amino acids between the leaves and other parts of the plant.