



What an olive branch bears



Olive trees thrive in hot, dry environments. One reason for their success in these challenging conditions is their highly adapted leaves.

The coloured scanning electron micrograph below shows the underside of an olive leaf, magnified 650 times. The scale-like structures are the spreading tops of specialised hairs that cover the surface. The base of each hair is embedded deep within the leaf. You might therefore expect that each hair would act like a wick — pulling water out of the leaf as it dries in the hot sun. But far from it.

As each hair matures, the stalk becomes completely cutinised — covered with a cuticle, which is a thick layer of impermeable waxes. This means that no water can travel into it. The hairs thus form a protective barrier to water loss from the leaf, which is punctuated

only by tiny areas free from coverage. In each of these is a single stoma — a pore that allows gas exchange between the leaf and the atmosphere. In this micrograph the guard cells, which can close the stoma (and thus limit water loss), are coloured grey.

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