

## **TENSIONERS**

The fixing of wires to the vertical supports and their retirement play a major role in the stability of the vertical espalier and for the organization of the pruning operations.

The solutions proposed during the time were numerous and range from two simple crossed sticks to rotary devices made of different materials, from small pulleys already known in the past to threaded pole tensioners, not very popular, because they become useless by early rust. Devices in aluminum alloys, galvanized iron or anodized aluminum, stainless steel and plastic are more popular, which allow also to rotate only a fraction of a turn and remain fixed with its hooks or with transverse stops. The tensioner can be placed near the head pole, at one end or at both ends for a very long row. The result is improved by positioning it at mid row, but retirement is not practical.

There are many types available: from simple, consisting of Z-shaped iron rods, to tube pieces rotated to wrap the wire and then prevented from turning by a big stud stuck in the transversal holes, to the specific accessories in alloy or stainless steel. They are quite used in France and Germany and they are now being distributed in Italy, the chains in galvanized iron or stainless steel tied at the end of the wire.

Periodically, the wires shall be tightened, depending on the material, because they are subject to elongation. Fixed tensioners are used for medium and small wires, while for large wires (used in the single curtain, GDC growing systems, etc) it is possible to use mobile tensioners.