

Rope System Trellis For climbing plants



Figure 1: Rope system used as a climbing aid with plant trough

Key Data

- LOCATION: Outdoor
- TYPE OF GREENING: Vertical greening, trellis
- VEGETATION: Climbing plants
- CONSTRUCTION: Spacer with steel cable
- IRRIGATION: Automated irrigation or manual watering

Content

Key Data.....	1
Location Selection	3
Material	3
Rope System.....	3
Planting	4
Tools	4
Step-by-Step	5
Step 1: Planning Sketch and Measurements	5
Step 2: Mounting the Wall Spacers	5
Step 3: Installing the Ropes.....	6
Step 4: Planting	6
Plant Care and Maintenance	7

Location Selection

- Define the area and height of the installation site
- Determine the maximum dimensions (L/W/H) of the wall surface
→ **For the maximum size of the trellis/green wall** (keep ~20 cm distance from windows)
- Decide on ground connection or planter box for climbing plants
- Assess the exposure and light conditions (e.g. shading)
→ **Important for plant selection**
- Irrigation:
 - Ensure availability of personnel for manual watering (including during holidays)
 - Water connection (required for automated irrigation)
 - Power connection (required for automated irrigation)

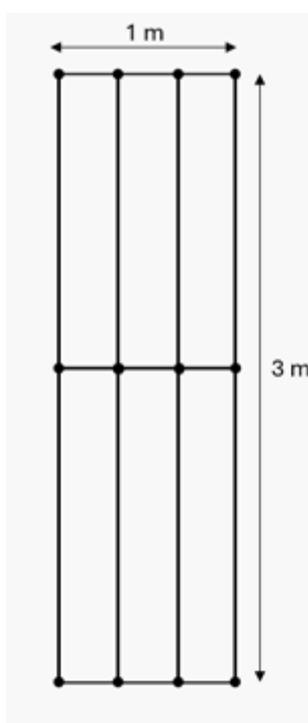


Figure 2: Rope System – 1 x 3 m

Material

The following materials are required for a rope system as a climbing aid approx. **1 x 3 m**.

Rope System

The materials can be purchased at hardware stores or from specialized online suppliers.

- **Wall spacers + wall plugs, 12 pcs.**
→ Suitable for the given wall construction (minimum wall distance: 6 cm)
- Alternatively: **threaded rods/screws + nuts, 12 pcs.**
- **Steel cable, ~4 mm [diameter], approx. 16 linear meters total**
 - 4 pcs. @ ~310 cm (vertical cables)
 - 3 pcs. @ ~110 cm (horizontal cables)

- **Cable clamps, 14 pcs.** (unless already integrated into the wall spacers)
- **Optional: cable end sleeves or heat-shrink tubing, 14 pcs.**
- **Optional: chemical anchor/mortar** (for borehole mounting or wall repair)

Planting

- **Outdoor:** climbing plants – framework climbers such as twining climbers, tendril climbers, scramblers, or espalier fruit trees
- → **Pay attention to site exposure** and **growth type** – do not use self-clinging species!
- **Binding wire** for attaching climbing plants to the cable system
- **Compost soil** or **planting substrate** (in case of soil replacement)
- **Mulch material** for surface coverage

Tools

- Tape measure, folding ruler
- Marking square
- Spirit level
- Pencil
- Hammer drill + drill bits (for wall plugs)
- Vacuum cleaner (for drilling dust)
- Cordless drill/driver + bit set
- Wrench (possibly Allen key/hex key) for spacers and cable clamps
- Optional: caulking gun (for chemical anchor/mortar)
- Cable cutter
- Ladder
- Watering can or garden hose

Step-by-Step

Once all materials have been procured, preparations and installation can begin.

Step 1: Planning Sketch and Measurements

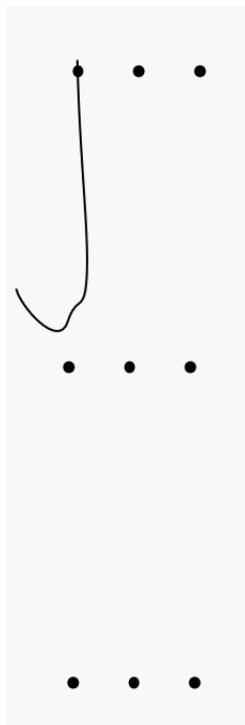


Figure 3: Spacer and the first rope

Based on the defined overall dimensions, a planning sketch can be created and the exact component lengths determined.

The outer dimensions of this trellis system are approximately 1 x 3 meters. The spacing between the vertical cables should be 30 to 50 cm. The spacing between the wall spacers should not exceed ~1.50 meters (or as recommended by the construction type and manufacturer's specifications).

Step 2: Mounting the Wall Spacers

The spacers can either be specifically designed for cable systems or alternatively made from threaded rods/screws combined with appropriate wall plugs or installed using chemical anchors.

1. Mark the positions of the **spacers** on the wall using a spirit level and measuring tape
2. Drill the **wall holes** for the spacer plugs
 - Use a vacuum cleaner to collect brick/concrete dust during drilling
3. Clean the **drill holes** and install the spacers with plugs
 - If a hole breaks out or a plug does not hold properly, it can be fixed using chemical anchor mortar

Step 3: Installing the Ropes

The ropes are installed between the spacers and tensioned by hand.

1. At the upper **spacer**, fix one **end of the rope**, leaving approx. 5 cm of extra length
2. Thread the rope through the middle and lower spacers, pull tight by hand at the bottom, and fix it in place
3. Leave another 5 cm of extra length at the bottom and trim the rope using a cable cutter
4. Slide **end sleeves** onto both ends of the cable and crimp them tightly, or use a piece of **heat-shrink tubing** to protect the cable from fraying and sharp ends.
 - ➔ Repeat these steps for all remaining vertical and horizontal cables. If a cable later becomes too tight, the extra length left at the top and bottom can be used to adjust and relieve tension.



Figure 4: Spacers with vertical ropes between two windows

Step 4: Planting

1. Dig a **planting hole** at least twice the size of the root ball
2. If the existing soil is poor, dig a larger hole and fill it with substrate as a soil replacement
3. Remove the **root ball** from its pot and lightly score the bottom of the roots (this promotes better rooting)
4. Place the plant and fill the hole with **substrate** or **compost soil**
5. Firmly press down the substrate by hand all around and continue filling
6. Apply approx. 3 cm of **mulch material** on top of the root ball
7. Attach the **climbing plant** to the trellis using suitable binding material
8. Water thoroughly – the substrate absorbs a lot of water initially



Figure 5: Planting and watering

Plant Care and Maintenance

- Daily visual inspection → Are the plants healthy? Is the irrigation system functioning?
- Establishment Care:
 - Watering: Initially daily, then reduce to approx. 3 times per week
→ Automated irrigation with drip lines is recommended
After good root establishment: reduce to 1–3 times per week
 - Training and tying shoots to the trellis
 - → For vigorous twining climbers (e.g. *Wisteria*), tie shoots parallel to the support structure (later on, untwist and re-train new young shoots as needed)
- Pruning and Replanting
 - Prune overgrown shoots or clear windows as needed
 - Cut back unwanted growth (e.g. around gutters)
 - In case of plant loss, remove the entire root ball and replace
- Fertilizing (if needed)
 - E.g. Apply fresh compost in spring as a natural fertilizer
- Trellis Tension Maintenance
 - Inspect the trellis cables once per year and adjust tension if needed (tighten or loosen if the cables are too loose or too tight)
 - If necessary, release the top or bottom fixing point and adjust using the extra cable length ("overlap")



Figure 6: Plant care

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