

TERMS OF REFERENCE

Project number: TF/ROM/02/001

Supply of equipment to phase-out methyl bromide in horticulture sector in Romania

1. GENERAL INFORMATION:

These terms of reference shall be used for the preparation of bid for the supply of the following equipment required to phase-out methyl bromide in Romania:

- 1.1 Full-equipped hot water heating plant fit for 1.440 m² nursery for grafted vegetable seedling production as for plan attached (see Annex I).

The Government of Romania will authorize a free customs clearance.

2. THE PROJECT:

The project aim is to phase out 156.5 tones of methyl bromide (MB) used in the protected horticulture sector in Romania. The main crops are: tomatoes, cucumber and pepper. The alternatives chosen are: grafting, metam sodium, dazomet and soil solarization, alone or combined among them. These technologies are largely used in several countries, and are seen as the most technically and economically feasible in Romania.

3. SCOPE OF SUPPLY:

The Contractor shall supply the following equipment:

- 3.1 Full-equipped hot water heating plant fit for 1.440 m² nursery for grafted vegetable seedling production as for plan attached (see Annex I).
- 3.2 Manuals.
- 3.3 The final user will provide the installation service and all civil engineering works.

4. DELIVERY SCHEDULE AND DELIVERY SITE:

The contractor shall deliver and install the equipment no later than 30 December 2004.

Project site:

Institutul de Cercetare-Dezvoltare Pentru Industrializarea si Marketingul Produselor Horticole

Intrarea Binelui, 1A,

78614 - Bucharest

Romania

Phone: +40 21 46 10 706

Fax +40 21 634 26 34

E-mail: horting@xnet.ro

5. CONTRACTOR GENERAL RESPONSIBILITY:

- 5.1 The contractor shall assume overall responsibility for the quality and timeless supply of the equipment and services related to this contract.
- 5.2 The contractor shall be responsible for applying best international procedures, including safety aspects in the equipment supplied.
- 5.3 The contractor is responsible for securing that all equipment supplied is new.
- 5.4 The contractor shall be responsible for the control of all the work, services and supplies that might be executed by local subcontractors.
- 5.5 The contractor shall be responsible for the quality and completeness of its technical services.
- 5.6 The contractor shall be responsible for the insurance and social benefits, if any, of all the contractor's personnel working in Romania.

6. CONTRACTOR QUALIFICATIONS:

- 6.1 The contractor shall have experience in greenhouse heating plant.

7. TERMS OF GUARANTEES:

- 7.1 The contractor shall guarantee the quality and completeness of his work, equipment, supplies and services contracted.
- 7.2 All mobile equipment shall be guaranteed for at least one year including parts and manpower.
- 7.3 All fixed equipment shall include a 5 years corrosion guarantee.

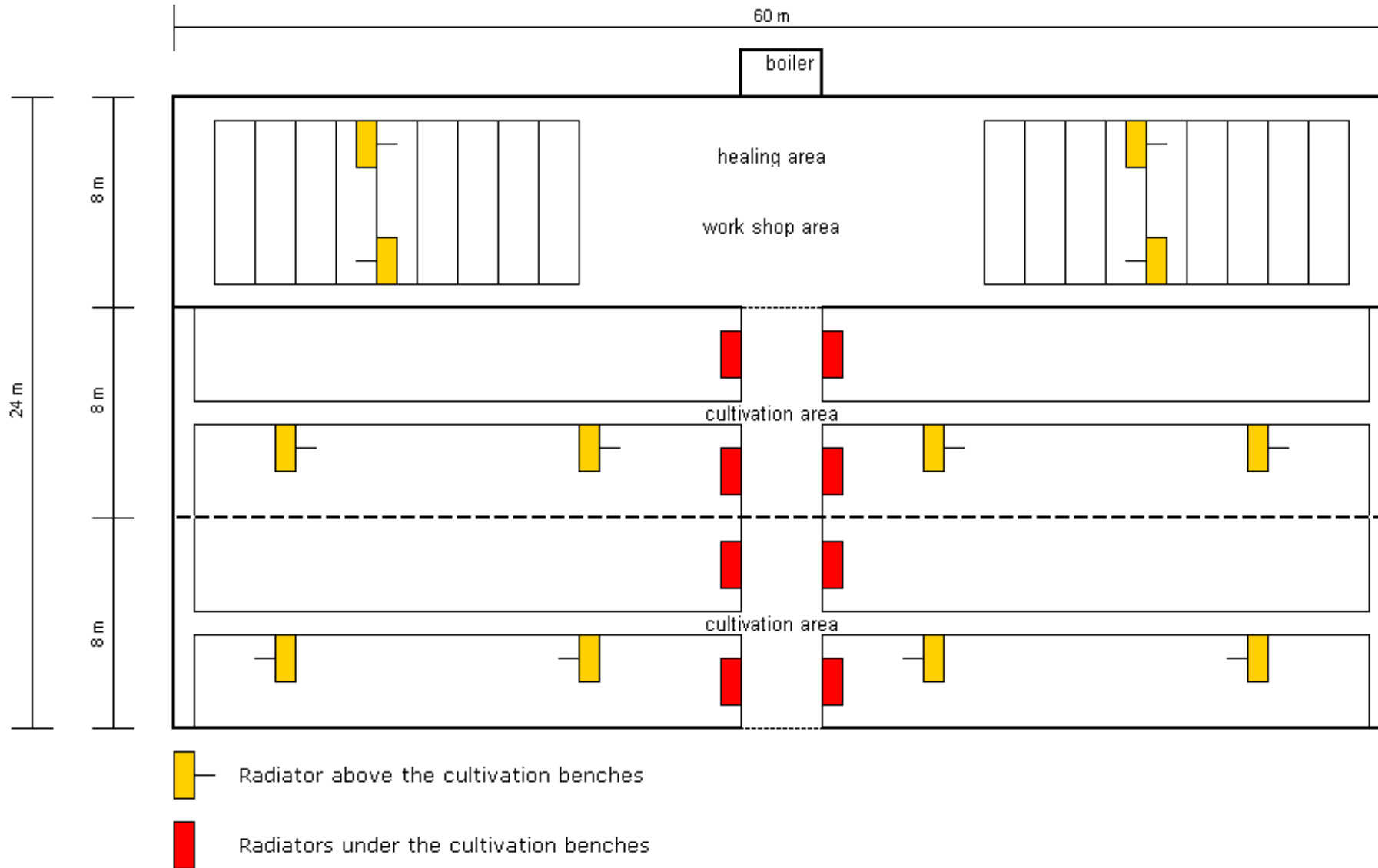
8. LANGUAGE OF THE PROPOSAL:

All proposals shall be written in English.

9 INSTITUTION CERTIFYING QUALITY AND DELIVERY:

- 9.1 The contractor shall request UNIDO's project counterpart (Hortig Institute) to issue a statement certifying the number and quality of the equipments delivered. UN rep in Romania and Hortig Institute will be in the commission certifying the compliance with the contract specifications.
- 9.2 UNIDO will verify the exactitude of the certificates issued.

ANNEX I



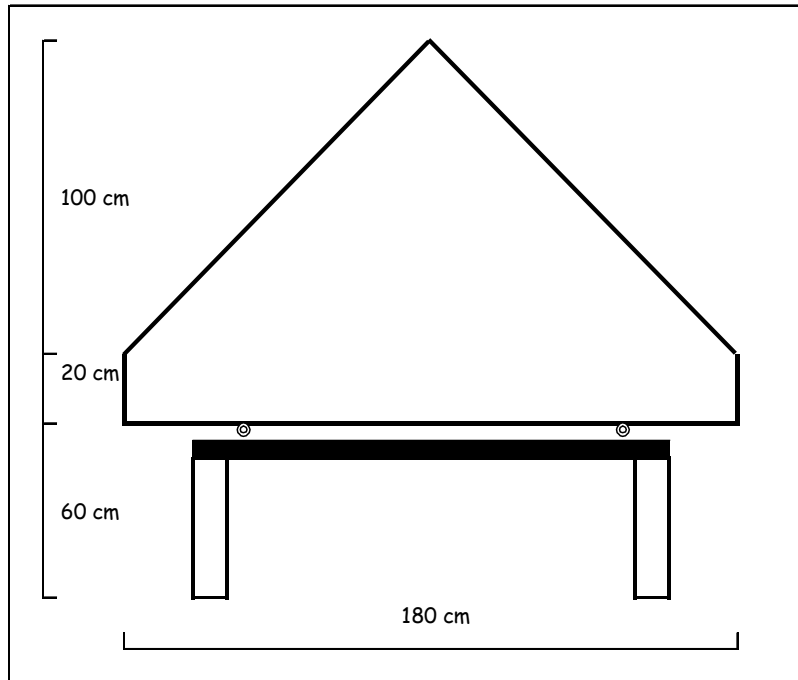
ANNEX II**CULTIVATION UNIT - GREENHOUSE SPECIFICATIONS**

1. Number of spans: 2.
2. Span wide: 8.00 m (total wide 16 m).
3. Span length: 60 m.
4. Gutter height: 4.50 m.
5. Cover specifications, roof, sidewall and front wall: double polystyrene thermal film.
6. Retractable thermal screen system: roof, sidewall and front wall.

ANNEX III**HEALING GRAFTED PLANTS AREA**

1. Number of spans: 1
2. Span length: 60 m.
3. Cover specifications, roof, sidewall and front wall: double polystyrene thermal film.
4. Retractable thermal screen system: roof, sidewall and front wall.
5. Rolling benches:
 - a. Are surmounted by micro tunnel frames, see annex V for micro tunnel design.
 - b. Are equipped with heater element, micro pipes carpets.
 - c. Micro pipes carpets specification:
 - i. Total area: 200 m².
 - ii. Water capacity: 3.6 liters/m².
 - iii. Water flow: 35 liters/h/m².
 - iv. Water temperature: maximum 40°C.

ANNEX IV
MICROTUNNEL FRAME FOR ROLLING BENCHES



ANNEX V
HEATING PLANT SPECIFICATION

1. Air heating plant:
 - 1.1 Cultivation area: it has to ensure an inside temperature of 20°C, maximum Δt 40°C (Minimum external temperature -20°C).
 - 1.2 Healing and workshop area: it has to ensure an inside temperature of 23°C, maximum Δt 43°C (Minimum external temperature -20°C).
 - 1.3 It has to consist of:
 - 1.3.1 Above the cultivation and healing benches: 12 ventilated radiators, see drawing, yellow.
 - 1.3.2 Under the cultivation benches: 8 ventilated radiators, see drawing, red.
2. Rolling healing benches heating plant:
 - 2.1 It has to ensure, inside the micro tunnels (see annex IV), a temperature of 28°C with a Δt of 10°C (green house temperature minimum 18°C).
 - 2.2 The heater elements, micro pipes carpets, are in place do not quote.
 - 2.3 The heater element (carpet) has one in and one out pipe, provide No. 36 ½" valves (in and out).
3. Water boiler:
 - 3.1 Power: to be calculated, fitting the specification above.
 - 3.2 Combustible: methane gas.
 - 3.3 Circulating pumps:
 - 3.3.1 Radiators healing and workshop area: 1 pump.
 - 3.3.2 Radiators cultivation area: 2 pumps, one for the radiators above the cultivation benches, one for the radiators below the cultivation benches.
 - 3.3.3 Micro pipes carpets: 1 pump, equipped with three-way valve.
 - 3.4 Temperature sensor: one for each pump.
 - 3.5 Electric control panel and all cabling.
 - 3.6 Power supply: 220 V, 50 Hz, mono phase; 380 V, 50 Hz, three phase.
4. Assembling:

The boilers and the electric panel must be pre-assembled.
5. Installation:

The installation is not included in the present requisition, it will be provided by experienced local team.