



Cultivation of Asparagus and cut greens

Specialities of the production

- Many cut flowers have not decorative own foliage (*Strelizia, Convallaria*)
- Relatively low income
- Traditional species are „boring” → difficulties in marketing
- Search for new, economically cultivating species
- Great concurrence is the outdoor cultivated species and the import
- Traditional cultivation: secondary product grown on waste areas (eg. under tables)
- Today monoculture

Asparagus setaceus **(*A. plumosus*) Asparagaceae**

Origin, botany

- Juvenile shape: 'Nanus'
- South-Africa
- Bushy, evergreen, climbing with winding shoots
- Two shoot formation:
 - juvenile: doesn't climb, abundant, valuable
 - adult (developed in autumn): climbing, not valuable (cut-product)
- Small, white, fragrant flowers on the autumn developing reproductive shoots
- Fruit: dark red berry, 1 – 3 seeds

Culture conditions

- Temperature

- In winter without shadowing, min. 18 °C, 60 - 70 % rel. air vapour, at night 14 - 16 °C is enough
- Low temperature: dew formation – rotting
- Low temperature + dry kept: yellowing and drop of phyllocladia
- Base of economic cultivation is the soil heating: 20 - 22 °C, continuous growth and harvest
- In summer tolerates even 30 °C-ot
- Highest temperature demand from germination till two shoot stage

Culture conditions

- Light:
 - tropical creeper plant – vapour, shadow, warm
Shadowing in Summer (burn!)
- But: too low light intensity: second class product

Culture conditions

- Soil
 - Acid (6 – 6,5 pH), loose rich in nutrients
 - Traditionally compost, soil collected from forests and meadows – today outdated, collection is forbidden
 - 3 – 4 (10) years on its place
 - Loosing with fibrous peat
 - 30 cm deep loosing before planting
 - Deep manuring: if the plantage is kept longer than 3 years
 - Drainage against stagnating water

Culture conditions

- Nutrient demand
 - It grows continuously in its whole life → needs high N level
 - FYM (farmyard manure), not completely ripe can be used as well
 - High potassium demand as well N : P : K = 3:1:2
 - Low fertilizer concentration: 0,1 % solution

Culture conditions

- Water, irrigation

- Needs much water and vapour
- Subsoil and surface or drip irrigation
- Spray irrigation is forbidden (Botrytis)!
- Air vapouring in the morning (plants have to dry till evening)
- Dry, warm condition: drop of phyllocladium
- Sensitive to over irrigation – new shoots turn to yellow, shoot tips difficult to ripe
- Lack of water – deep green foliage, phyllocladium drop
- Warm irrigating water! (20 °C)

Cultivation technology

- Traditionally under the tables – lack of light and vapour in winter
- Later: family growers in old glasshouses, plastic tunnels
- Modern technology: in up-to-date block glasshouses

Propagation

- Seed sowing

- Storage: on 16-18 °C
- Before sowing: soak in 0,4-0,5 % salt solution in 34 °C, 24-36 hours
- Dressing → sowing the wet seeds
- High temperature: 26-27 °C, Vermiculit cover
- Germination after 4 weeks
- Sowing as soon as the seeds ripe (80→20 %)
- Aphid danger



Cultivation technology

- Poting

- 6-8 weeks after germination, two seedlings into one pot, substrat rich in nutrients
- **Planting deep!** – if the apical tip isn't covered with soil, it will harden
- Transplant with wet soil – sensitive to root damage
- Wintering in glasshouse on 14-16 °C



Cultivation technology

- Planting out
 - April – May → first harvest in Autumn
 - Planting in raised beds (30 cm high, 1.4 m wide)
 - 15 x 15, or 15 x 20 cm plant distance
 - Chemical weed control before planting!
 - Planting in autumn: danger of cold soil!



Well developed young plants ready for planting



Cultivation technology

- Treatments
 - Irrigation – subsoil irrigation with plastic tube expensive but advantageous
 - Fertilization – 0.1 – 0.15 %
 - Air humidification (morning)
 - Shadowing
 - Plant protection – mite, thrips, aphids
 - After harvest in autumn FYM, loosening of the soil

Cultivation technology

- Harvest
 - Ready to harvest stage: if the shoot finished its growth and the stem became woody
 - Highest handwork demand
 - Cut with scissors from the base – without damage of the new shoots
 - Can tear as well (planting deep)
 - Clear-cutting is not allowed – some shoots have to stay on the plant

Harvest, packing



Cultivation technology

- Classification

- Extra: from 70 cm
- I. class: 50 - 70 cm
- II. class: 30 - 50 cm
- III. class: till 30 cm
- 10 shoots to one knot, 5 knots to one truss (= 50 shoots/truss)
- Cardboard box (best) or plastic bag
- Cut shoots – grown with supporting system
- Kinked shoots = valueless













Asparagus densiflorus 'Sprengeri'



- Origin: South-Africa
- Also pot plant – big hanging basket, soliter
- Tubers on the root system – tolerates the periodic drying
- Tolerates alkaline soil
- Potassium demand, N:P:K = 2:1:3
- Less demanding, less water and air vapour
- 6-8 year cultivation
- Can be clear-cut
- Less yield







Sowing

- Pathogen-free, jó good dreanage soil, low starter nutrient level
- Wetting the soil before sowing
- Cover with Vermiculit
- Temperature: 26-27 °C
- Germination: 4-6 days

Seedlings:

- Decrease temperature to 22-24 °C
- Increase light intensity to 540-1100 lux
- As roots penetrate the soil → moderate irrigation, soil has to dry up between two irrigation
- Fertilization weekly with 50-75 ppm 14:0:14 NPK solution

Growing

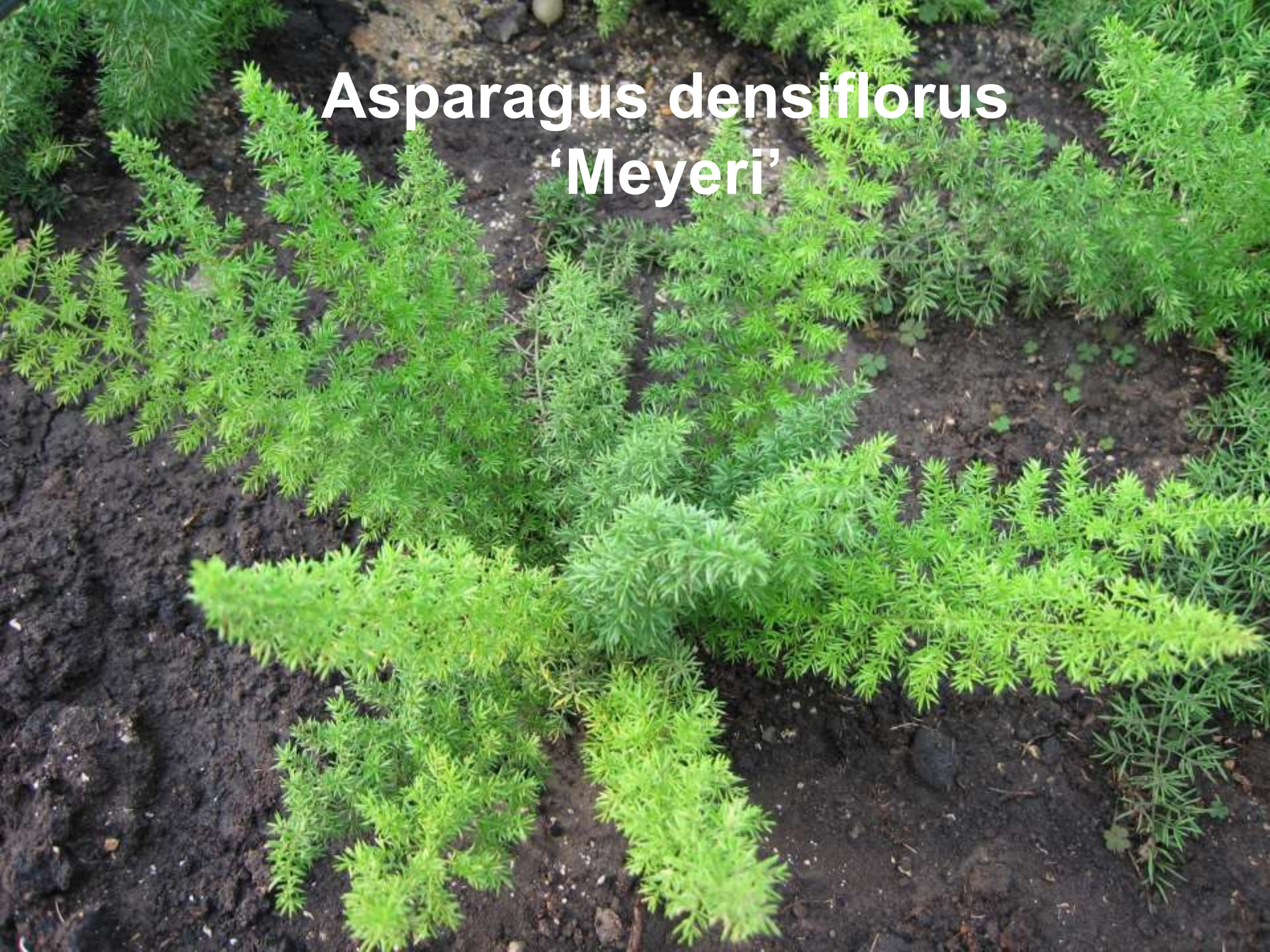
After 10-15 days:

- Temperature decrease to 20-22 °C
- Light intensity increase to 1600-2700 lux
- Fertilization with 100-150 ppm solution alternately 20:10:20 and 14:0:14 NPK

Hardening before planting into the bed:

- Temperature decrease to 18-20 °C
- Light intensity increase to 3200 → 4300 lux
- Dry up between two irrigation

**Asparagus densiflorus
'Meyeri'**





Asparagus falcatus







Asparagus falcatus plantation





**Asparagus
virgatus**







**Asparagus
myriocladus**







Outdated, tradicional cultivation







Other cut greens

- Eucalyptus species (*gunnii*, juvenile stage)
- Ferns (*Dryopteris* – is collected from forests)
- Palms (*Chamaerops*, *Chamaedorea* etc.)
- Araceae (*Anthurium andreanum*, *Dieffenbachia*, *Monstera deliciosa* 'Borsigiana', *Philodendron* species)
- *Cordyline terminalis* varieties
- *Codiaeum variegatum* varieties
- Collected greens (pine species, *Hedera*, lily of the valley)

Polystichum (Cyrtomium) falcatum





Polystichum falcatum

Eucalyptus gunnii

- Cultivated in Hungary
- Protection against frost
- pruning!
 - many forest fire in the nature: thickened root neck
 - with pruning many shoots from the root neck, juvenile shape
- Very long vase life
- Painted



Rumohra adiantiformis

Origin: S-America,
Caribbean-Islands, S-
Africa, E-India, New-
Zeeland, Australia

Collected in Brasil



Anthurium andreanum leaf



Other cut greens



Aspidistra elatior



Fatsia japonica



Monstera deliciosa



Chamaedorea elegans



Cordyline terminalis



Liwistona sp.

Thank you for your attention!