Taxonomy

- **<u>3. Genus Vitis</u>**

- **3.1. Muscadinia**
- **3.2. Euvitis**

Features of the Euvitis sub-Genus

(2n = 38)

→ Fibrous cortex, detaching at maturity

→ Nodes with a diaphram

→ Double tendrils

→ Long bunches

→ Berries stay on rachis at maturity

→ Pear-like seeds

V. labrusca

V. eastivalis

V. riparia

V. rupestris

V. berlandieri

V. cinerea

V. cordifolia

V. candicans

V. amurensis

V. longii

V. champini

V. monticola

V. caribea

Vitis labrusca

→ continous tendrils

→ big, round, thick and fat leaves

→ hairy buds

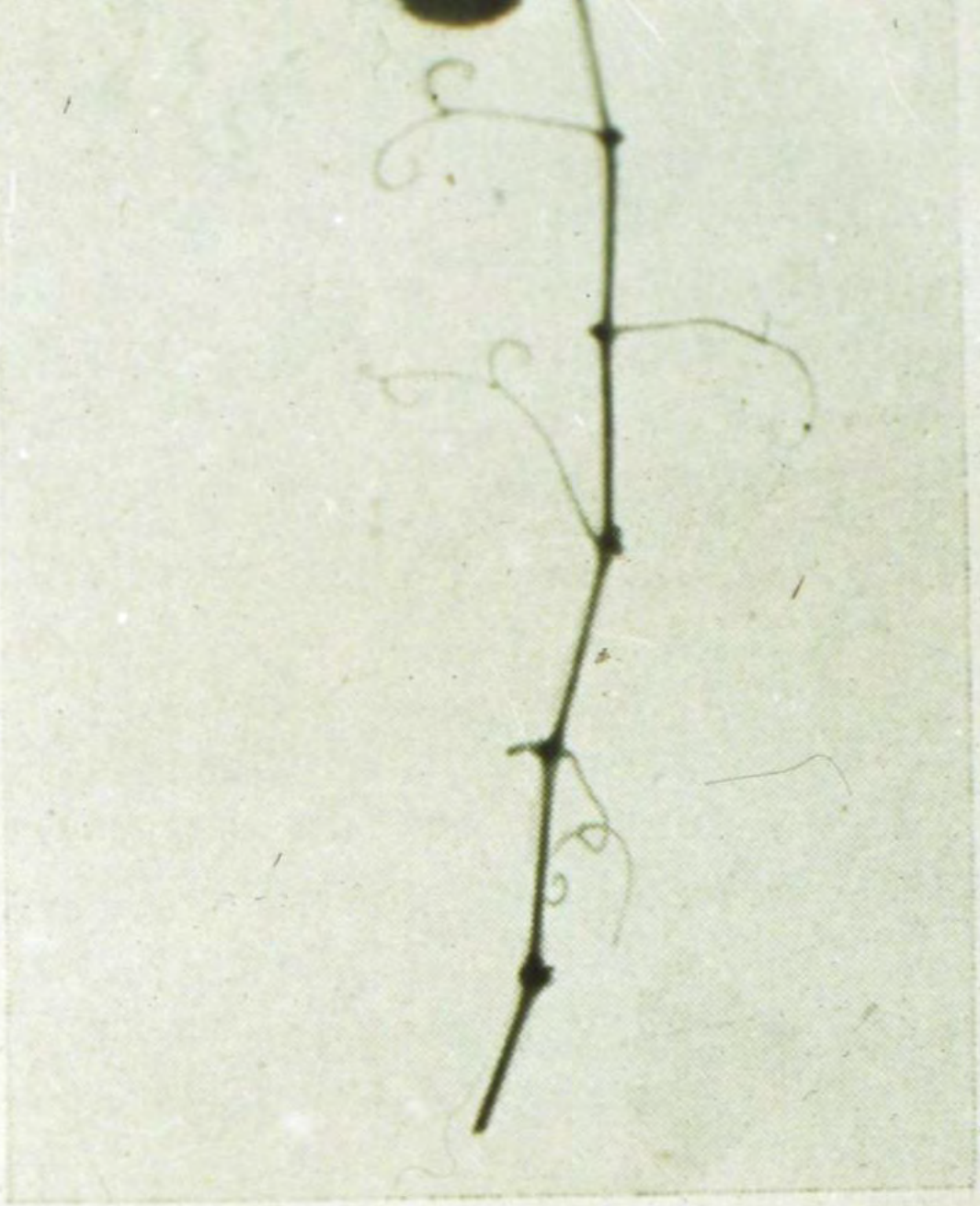
→ female or perfect flowers

→ big violet berries, very easy to come off

→ “foxy” taste

→ cold resistant, phylloxera (4/20), PM and botrytis (19/20), DM (11/20).

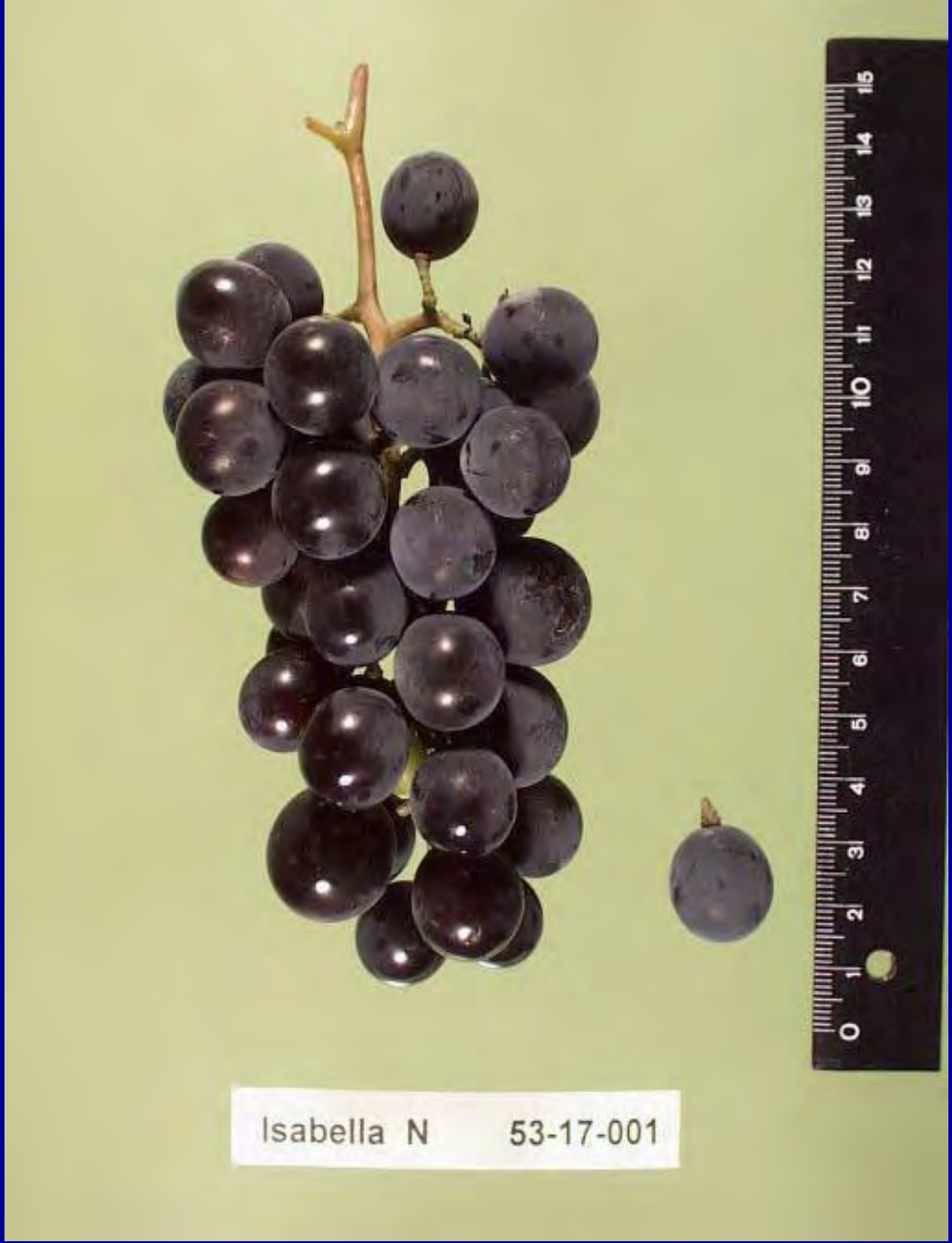
→ susceptible to lime and easy rooting.



position des vrilles

à droite : vrilles continues


Isabella N 53-17-001 1995


Isabella N 53-17-001

Vitis riparia

Vitis riparia

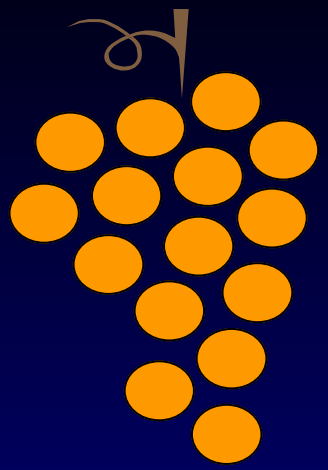
Rupestris du Lot

Vitis berlandieri

Taxonomy

- **4. Vitis vinifera**

- **4.1. silvestris**
- **4.2. sativa**



Vine organs

- ☞ **Roots**
- ☞ **Trunk, old wood and canes**
- ☞ **Shoots and buds**
- ☞ **Inflorescences and berries**

Grapevine root system

❶ Anatomy and morphology

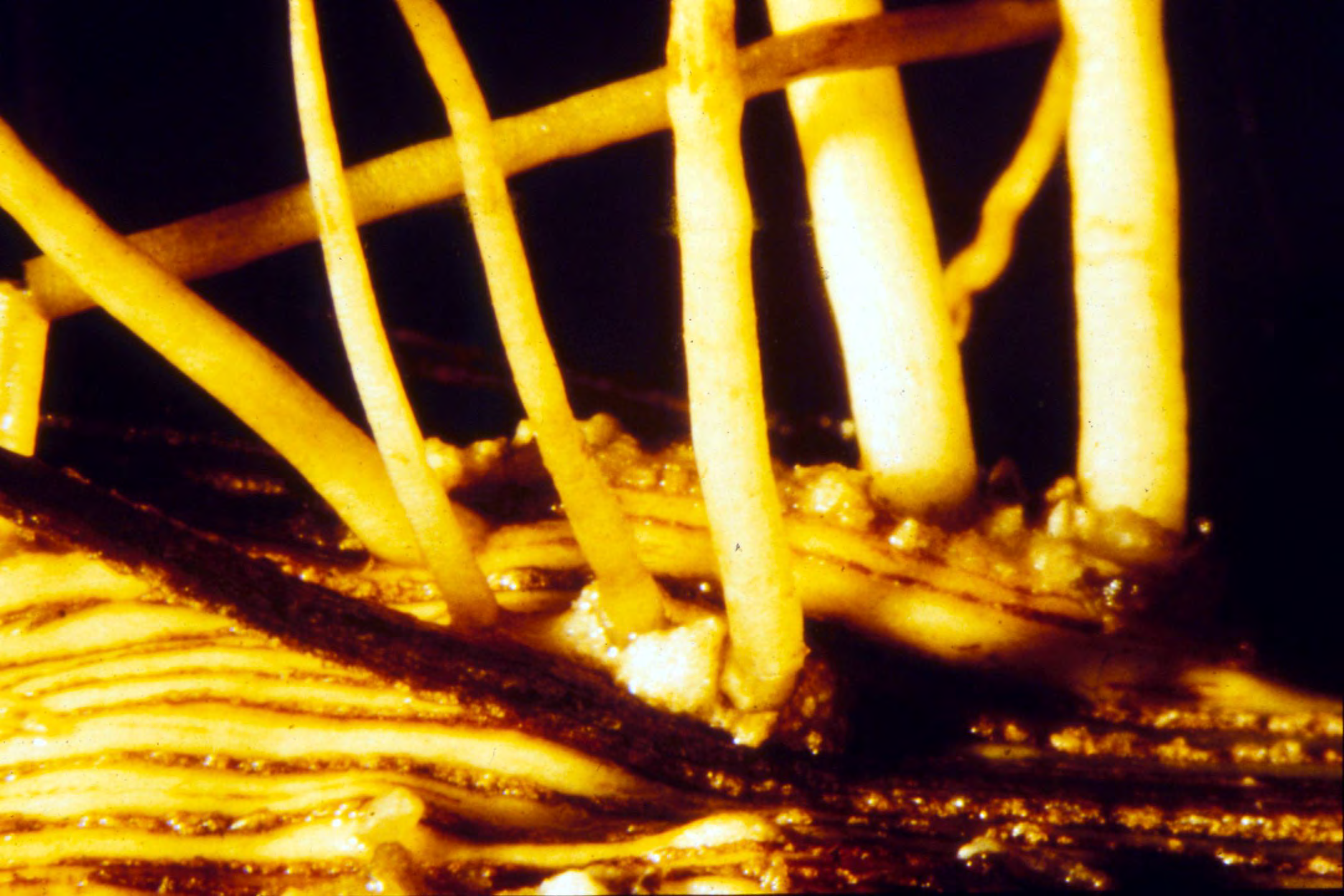
❷ Development

❸ Distribution

❹ Soil factors affecting growth

❺ Functions

❻ Interaction with the aerial part



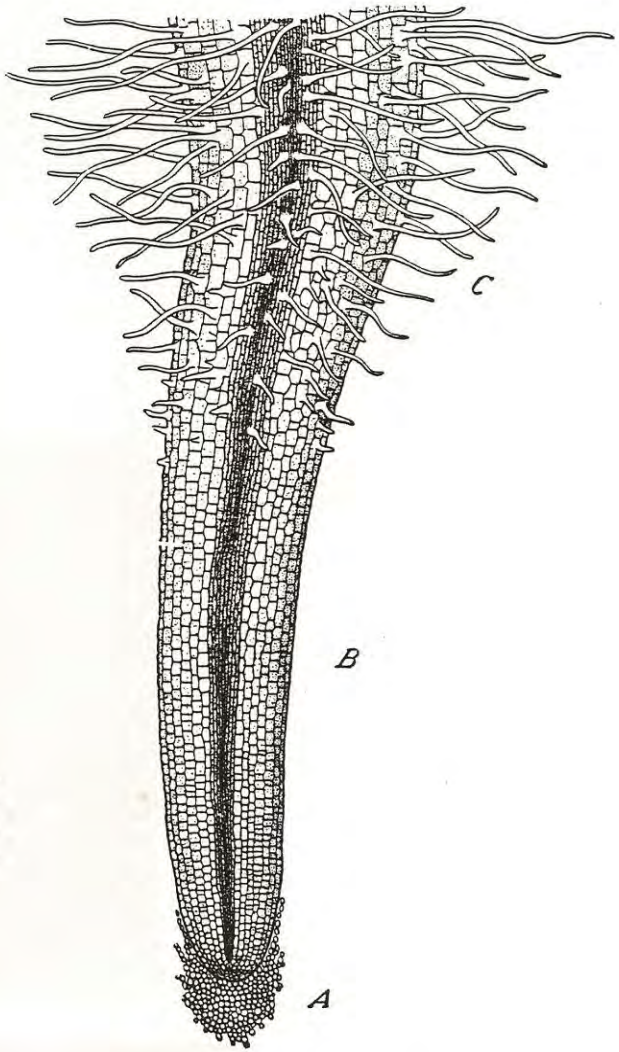
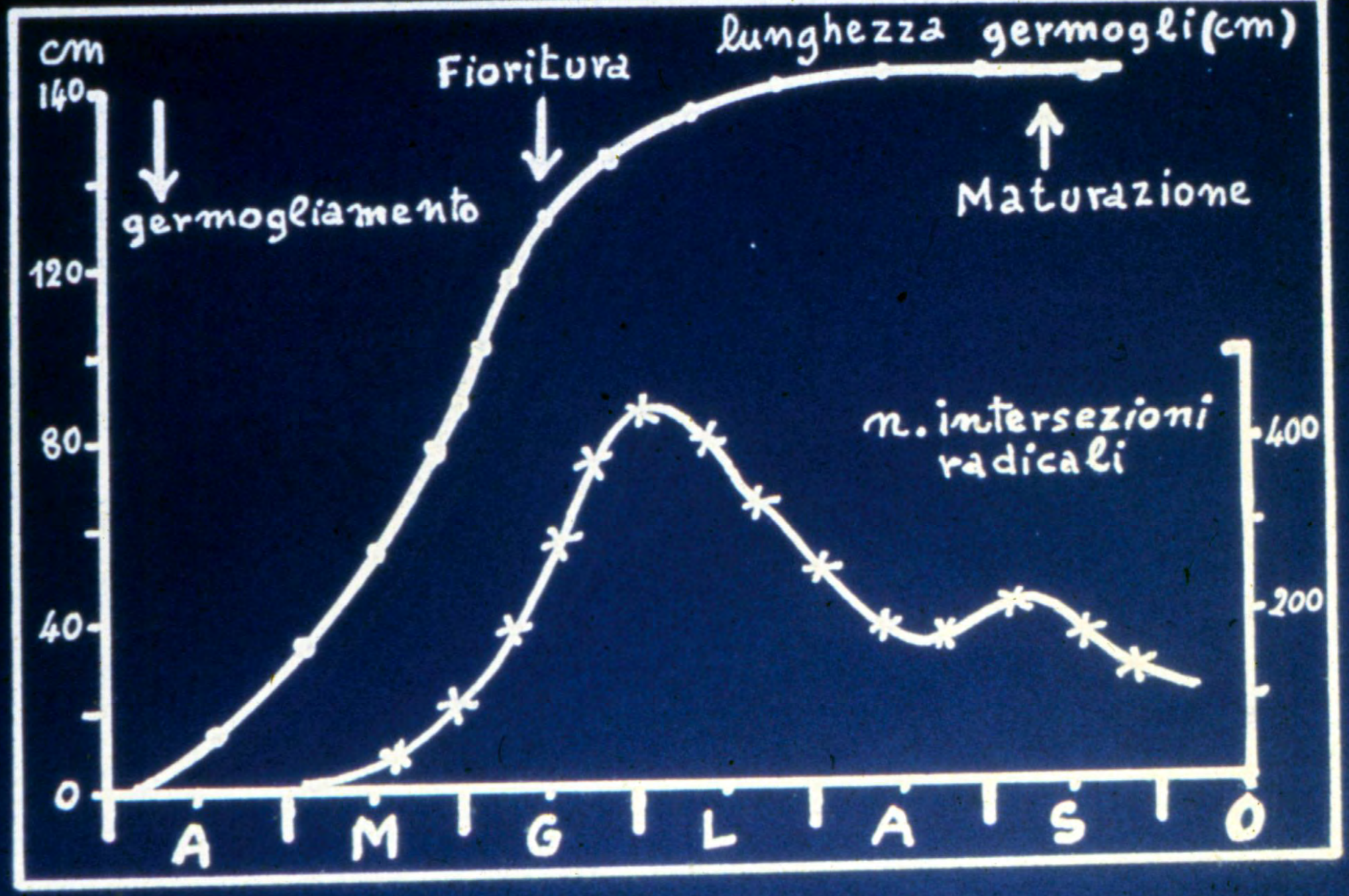


Fig. 6.3 – Schema della porzione terminale di una radice. Sono chiaramente riconoscibili la cuffia (*A*), la zona liscia (*B*) e la zona pilifera (*C*) (da SINNOTT, secondo TONZIG e MARRÉ).

Fig. 9 — Sviluppo d'una vite da seme.

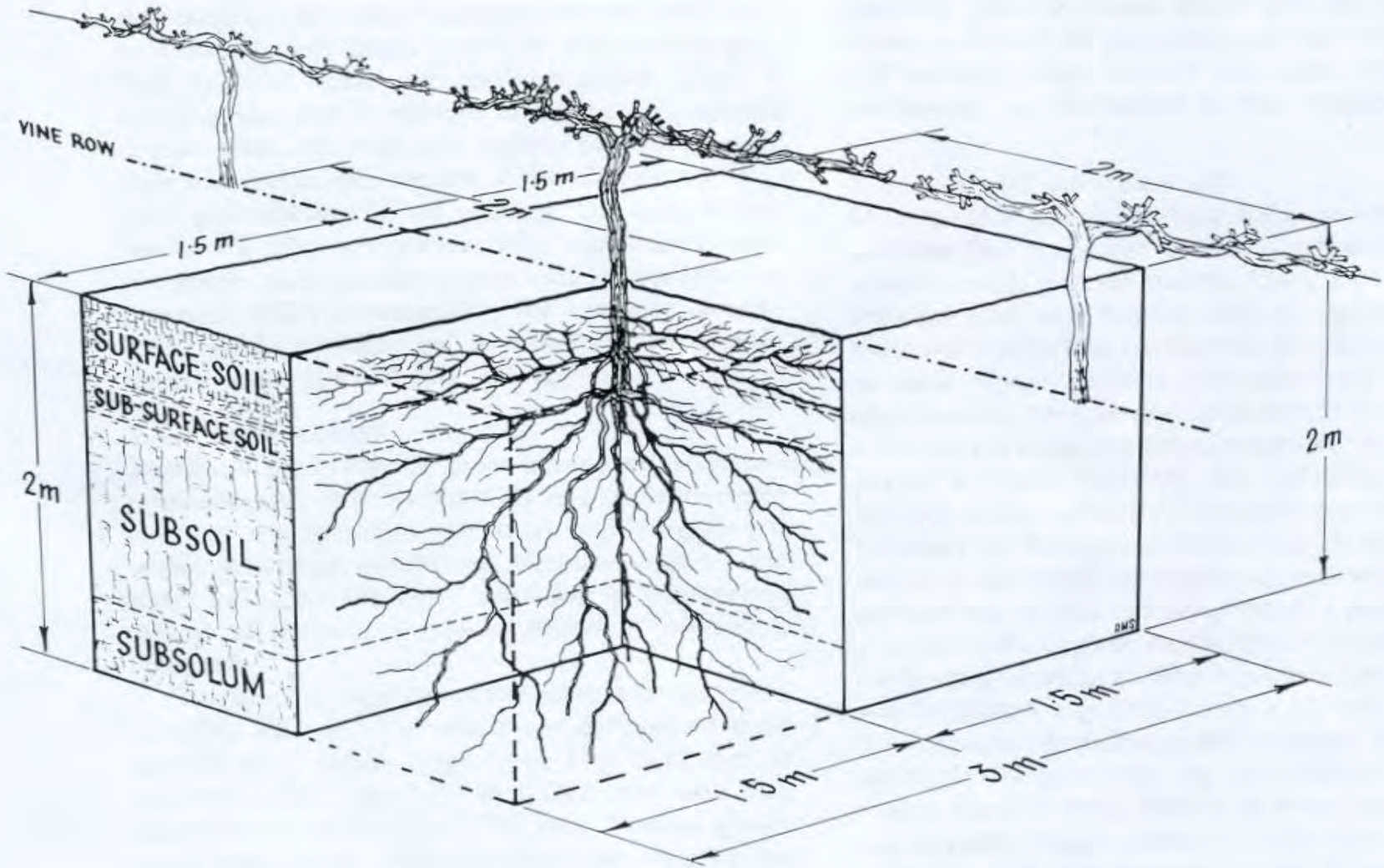
Root development

- Growth patterns
- Death and rigeneration
- Permanent roots

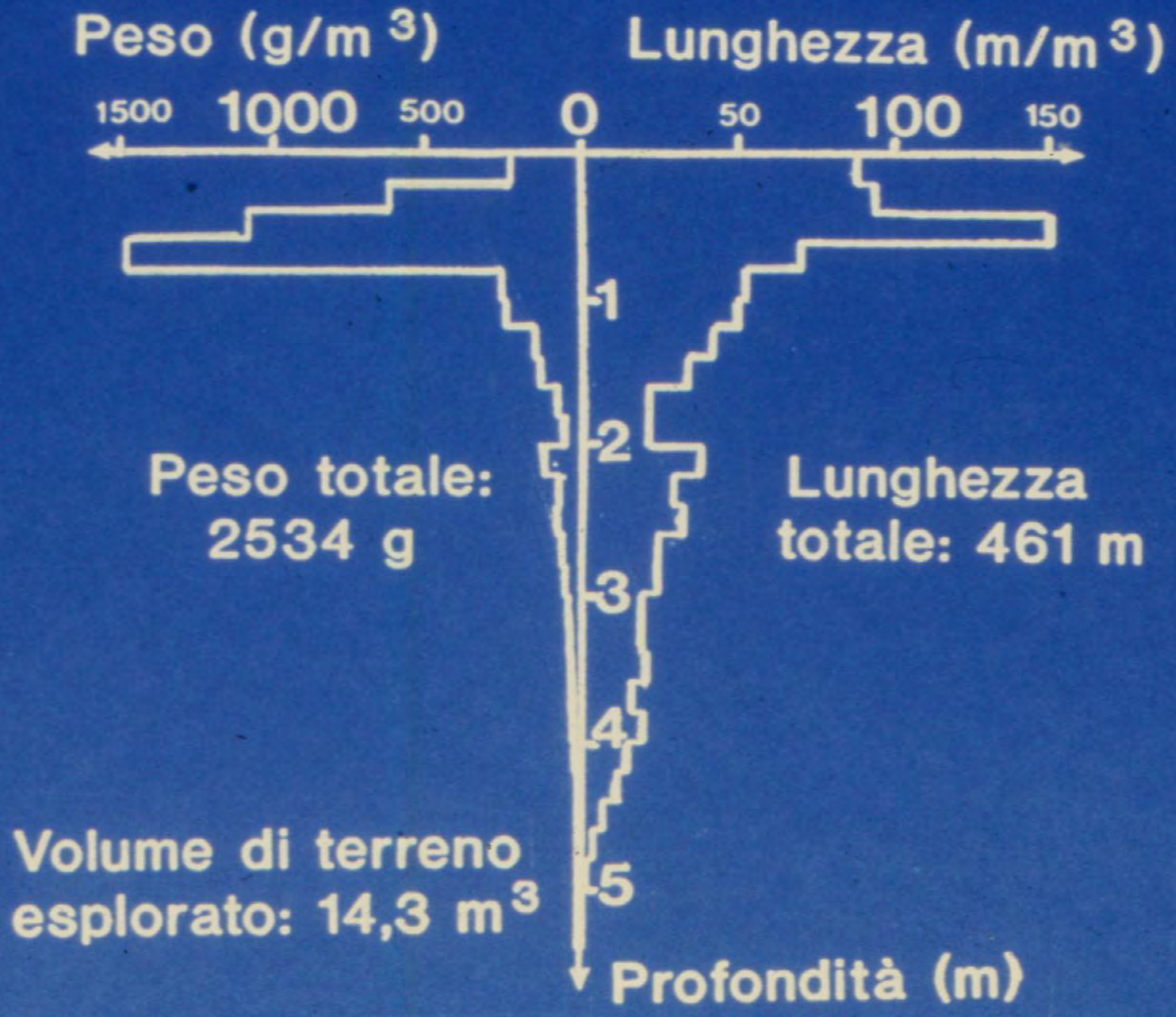

cm
140
120
80
40
0
lunghezza germogli (cm)
Fioritura
germogliamento
Maturazione
n. intersezioni radicali
400
200
A
M
G
L
A
S
O

Root distribution

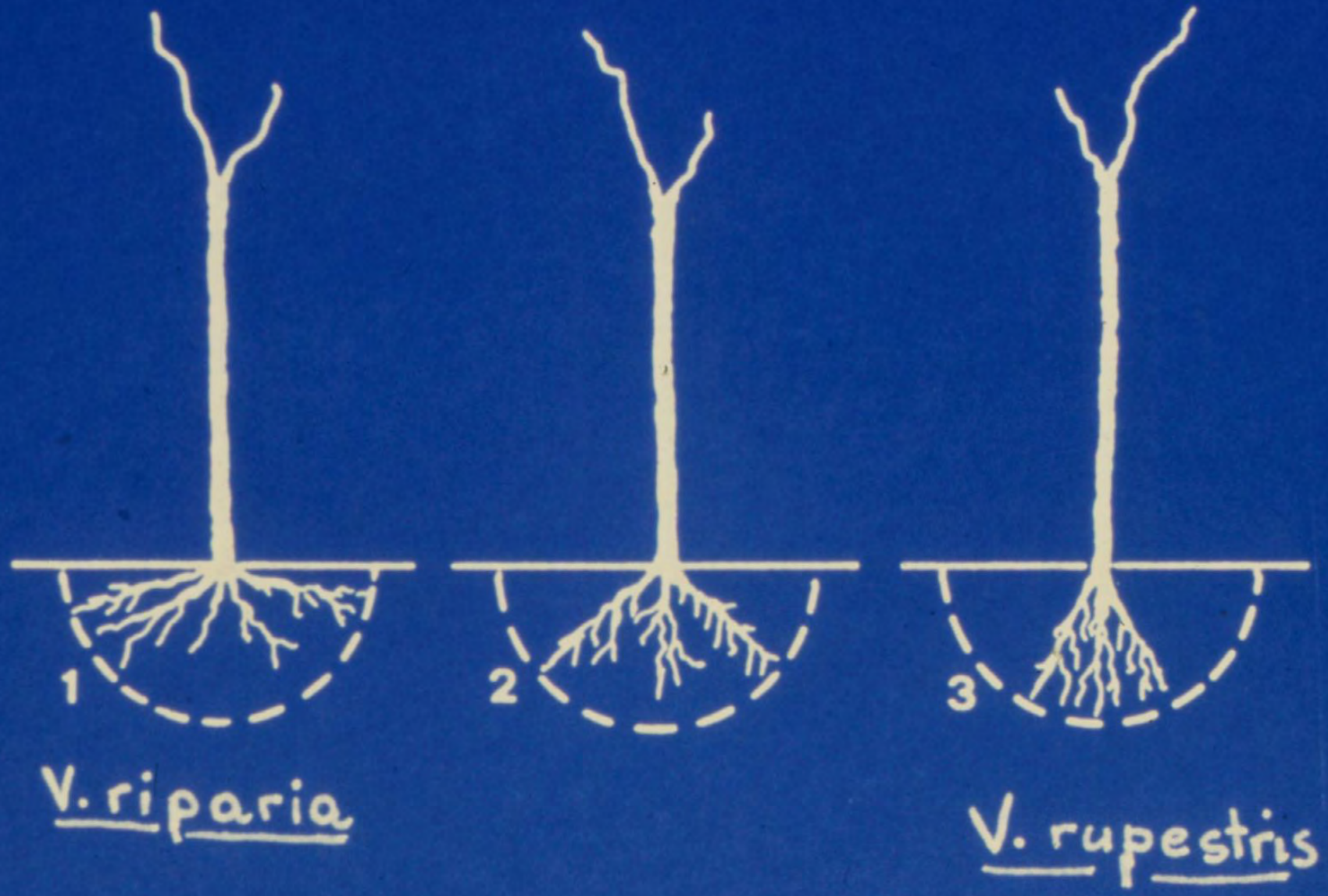
- Vertical and horizontal
- Function of vine density
- Soil management
- Mulching
- Water supply

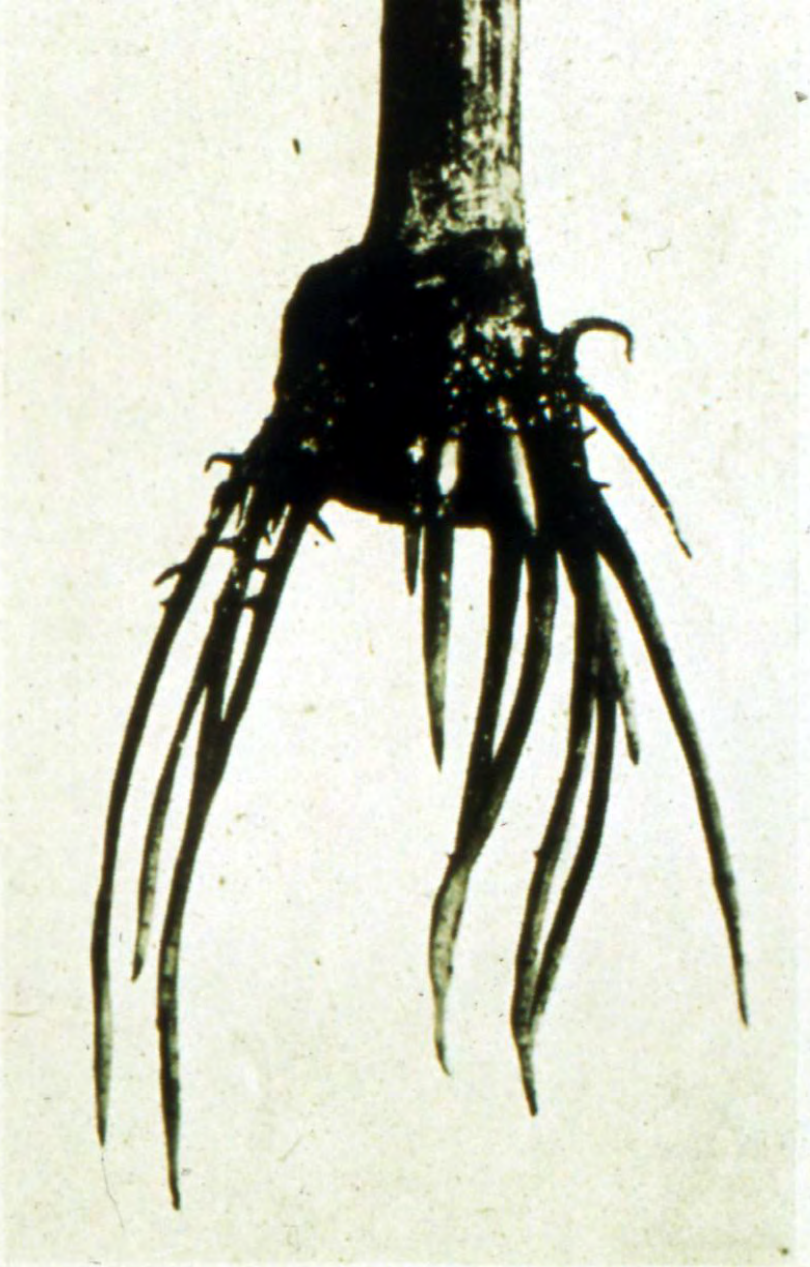

VINE ROW
1·5 m
2m
1·5 m
2m
SURFACE SOIL
SUB-SURFACE SOIL
SUBSOIL
SUBSOLUM
2m
2m
1·5 m
1·5 m
3 m

Densità radicale



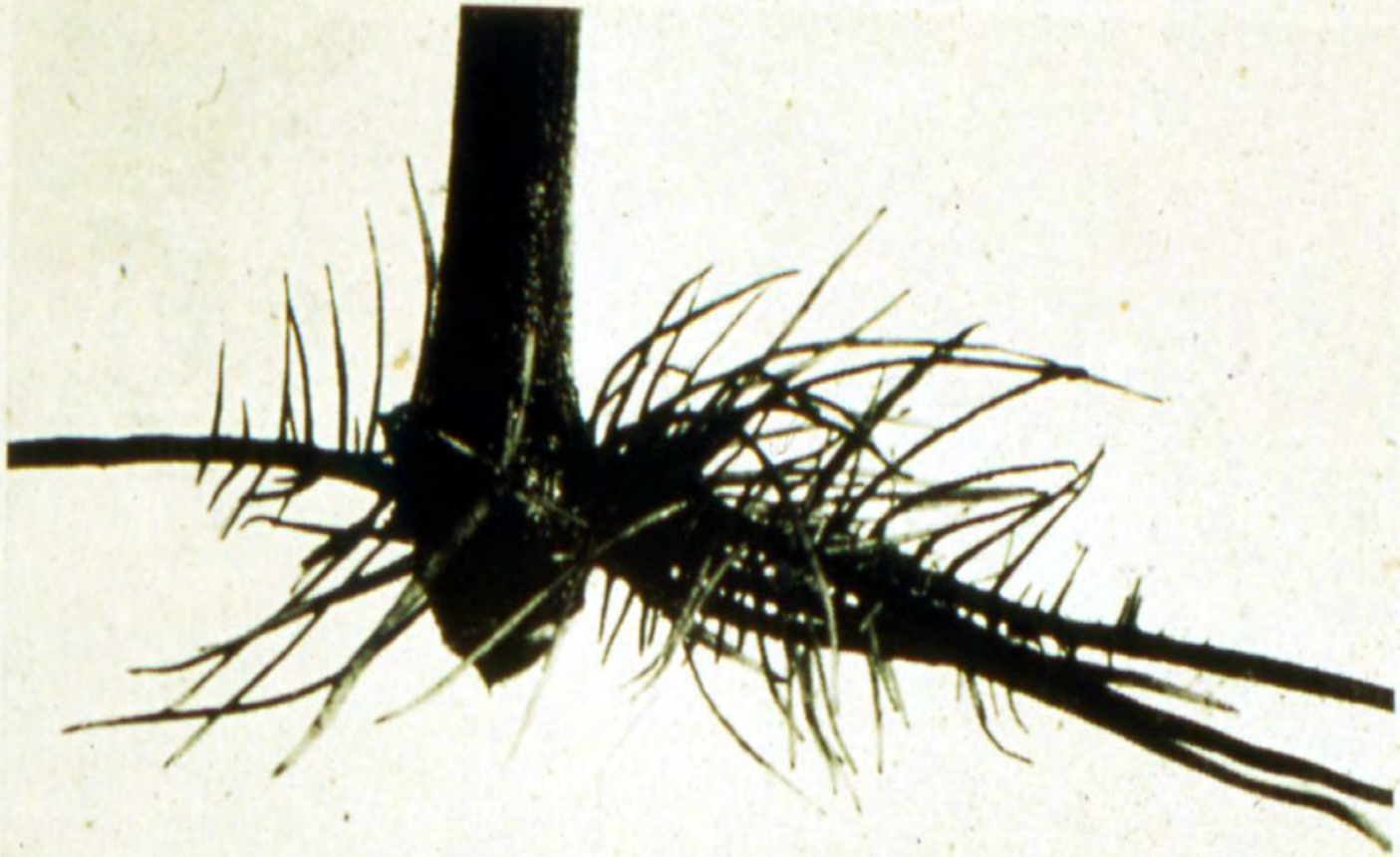
da Garcia e Gil, 1982


1
2
3
V. riparia
V. rupestris



(neg. L. Manzoni)

Fig. 10. — Radici quasi **verticali** uscenti da una talea di *Rupestris du Lot* tenuta **sospesa** nell'acqua. Grandezza naturale.

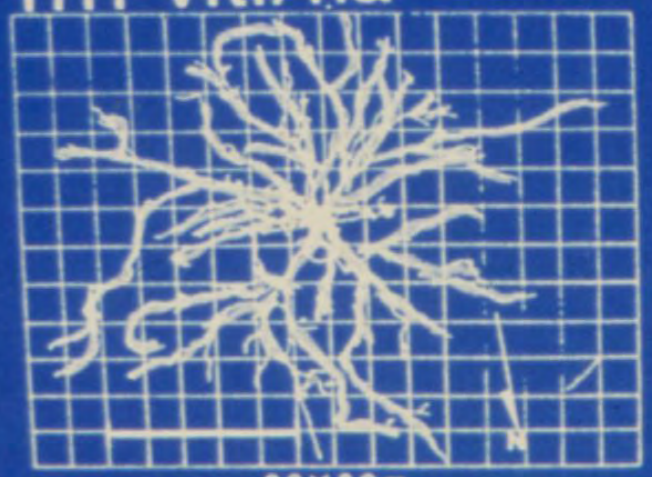


(neg. L. Manzoni)

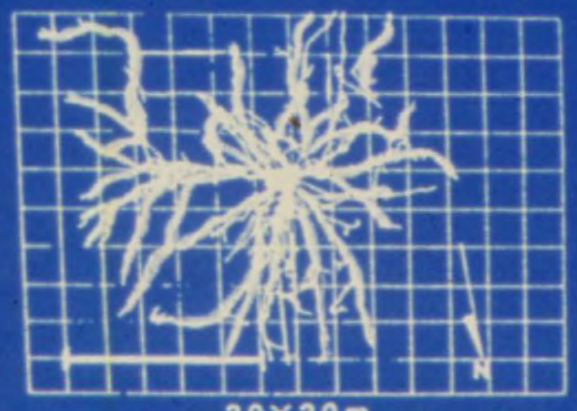
Fig. 11. — Radici quasi orizzontali uscenti da una talea di *Riparia Gloire* tenuta sospesa nell'acqua. Un po' impicciolita.

Effetti della densità di impianto sulla distribuzione dell'apparato radicale

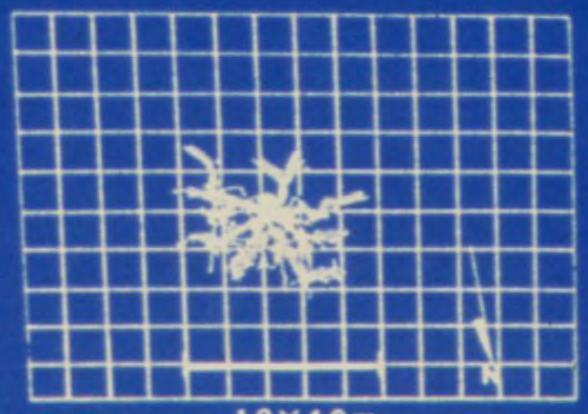
1111 viti/ha



2500 viti/ha



10000 viti/ha

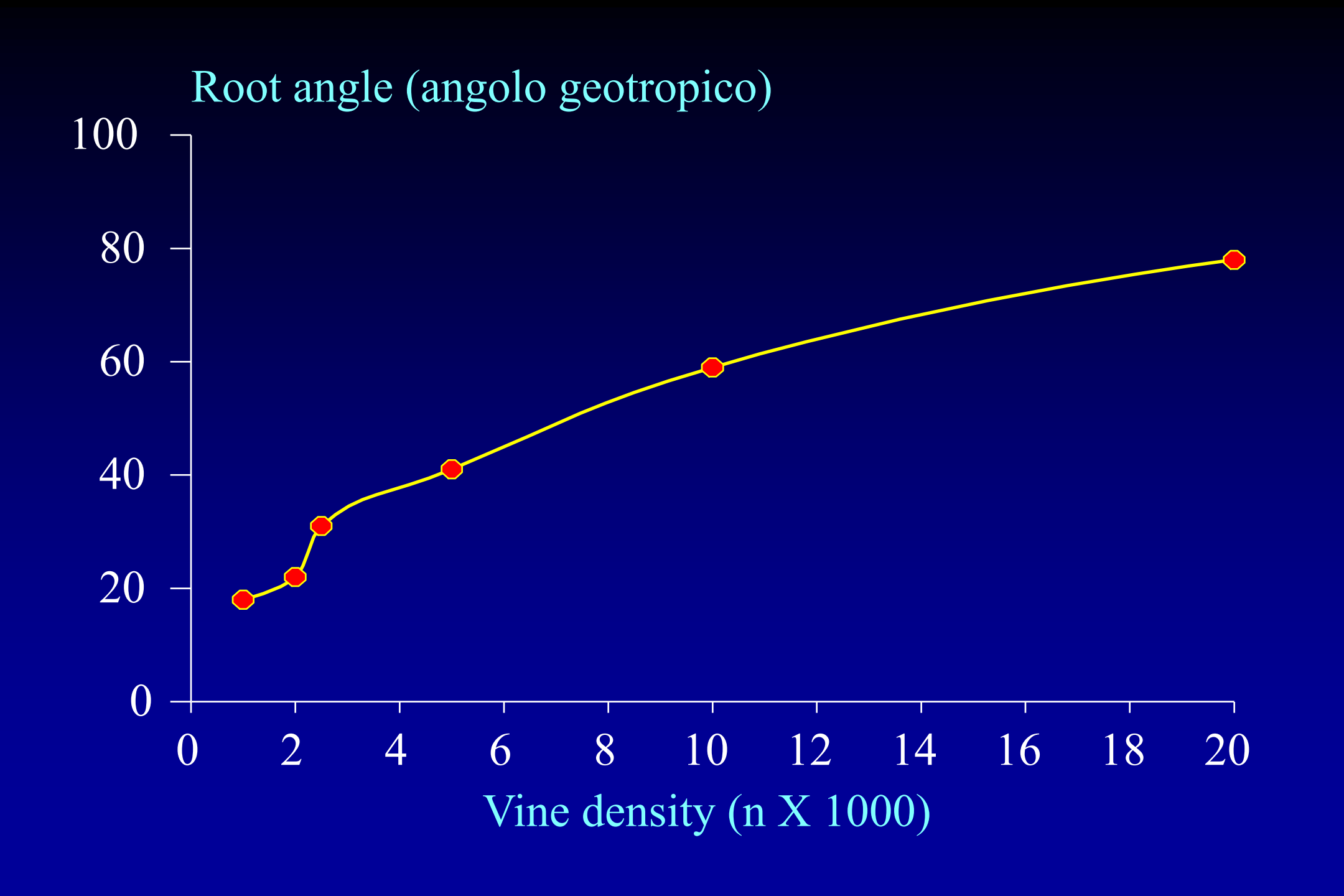


9 m^2/vite

4 m^2/vite

1 m^2/vite

da Archer e Strauss, 1985


Root angle (angolo geotropico)
100
80
60
40
20
0
0
2
4
6
8
10
12
14
16
18
20
Vine density (n X 1000)

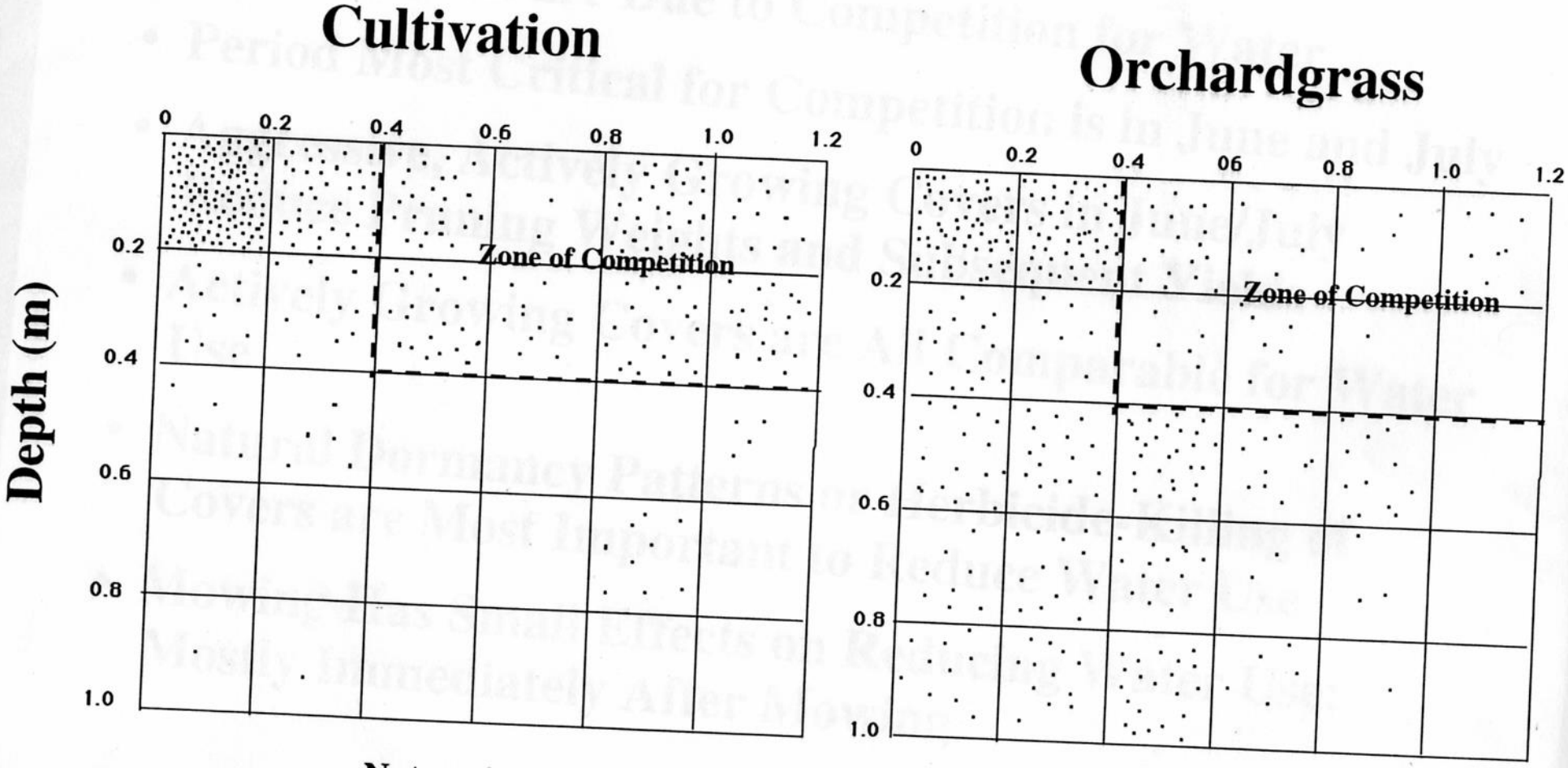

9.3.2001


9.3.2001

Cover crops: choice of species!!

		Water availability		
		High	Medium	Low
Nutrient availability	High	Lolium o F. arundinacea	Lolium + Poa + F. ovina o F.arundinacea	Lolium + Poa + F. ovina o Trif. subt.
	Medium	Lolium o F. arundinacea	F. ovina o Trif. repens	F. ovina o Trif. subt.
	Low	F.ovina + F. r. commutata o F.ovina + T. repens	F. ovina + Trif. repens o Trif. subt.	F. ovina o Trif. sub.

Distribution of 'Concord' Vine Roots Related to Alley Treatment after 5 years

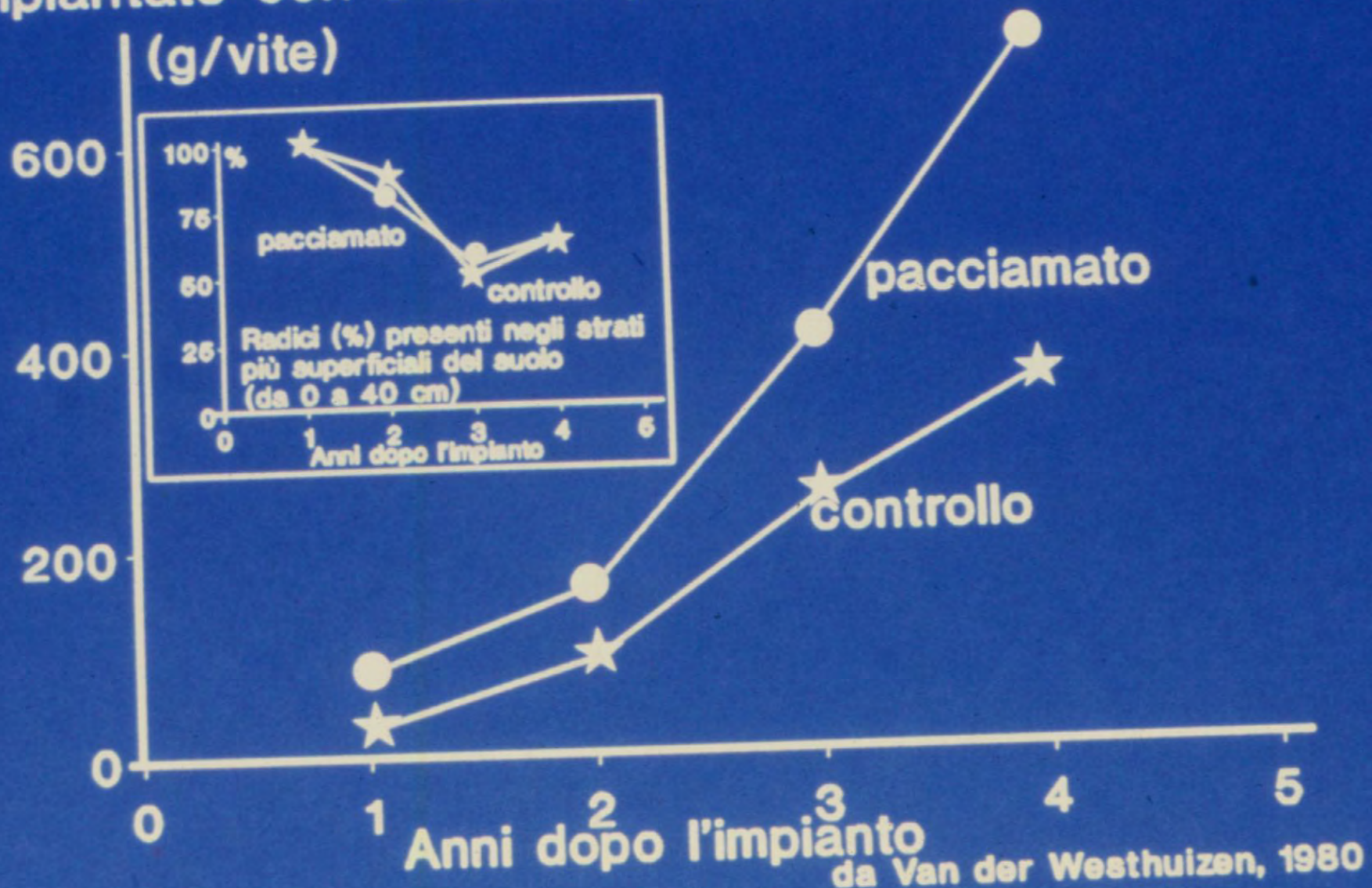


Note redistribution deeper and under vine in orchardgrass treatment

Ripreso da Lopes et al., 2004. Geisenheim, Germania

Specie	18h Σ 8h (1 m^{-2} LA)	LAI (m^2 m^{-2})	Trasp. (mm gg^{-1})
Medicago lupolina	1.94	1.28	2.48
Festuca rubra	0.60	1.18	0.71
Chenopodium album	2.93	0.76	2.21
Cirsium arvense	1.74	1.22	2.12
Malva neglecta	4.79	0.93	4.45
Taraxacum officinale	2.08	1.38	2.48
Vite	0.46	2.31	0.89

Accrescimento dell'apparato radicale di viti impiantate con e senza pacciamatura (controllo)



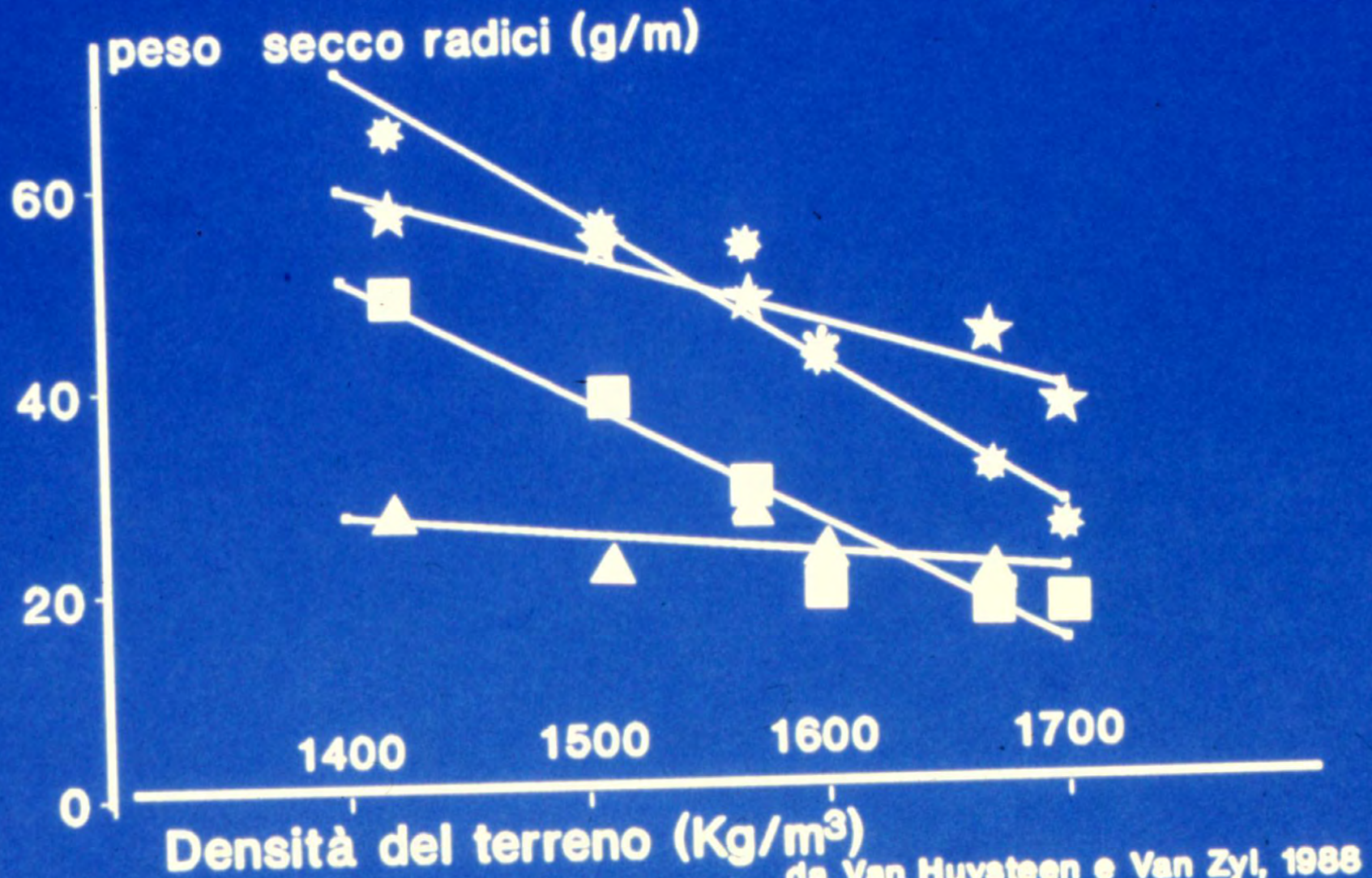
da Van der Westhuizen, 1980

Soil environment and root growth

- Temperature
- Nutrients
- Moisture
- Mechanical resistance and compactness
- Porosity


Question: will you ever plant a vineyard here?

Relazione tra compattezza del terreno e sviluppo dell'apparato radicale



da Van Huysteen e Van Zyl, 1988

Root functions

- Support
- Storage
- Uptake and translocation

  Micorrhyzae, root hairs, suberification

- Hormones

  Citokinins and gibberellins