ITEG MEETING MILAN 17-18 OCTOBER 2015

TSE method applied to difficult road works. A case study.

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Two extra large Cedrus deodara

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Scheda di analisi albero

Dendrotec

PROGETTO: 00 677 11

Giudizio complessivo

Classe	B
Valori strum.	Normali
T/R	1
Data di analisi	25/3/2011
Cod. rilevatori	n.d.

Ambito:	Asso
AREA	(non definita)

Dati anagrafici albero

Cartellino	1
Specie	*Cedrus deodara*
Diametro (cm)	163
Altezza(m)	23
Diam. Chioma	0
Tipo impianto	Gruppo puro
Zona	da definire
Pavimentazione	Copertura vegetale

Analisi visiva

Chioma	- sbrancamento/i L
Fusto	- ferita/e aperta L- inclinato L
Colletto	- allargato L- ferita cicatrizzata L
Verifiche strumentali	Base

Commento alle analisi

Scheda di analisi albero

Dendrotec

PROGETTO: 00 677 11

Ambito:

Ambito:	Asso
AREA	(non definita)

Dati anagrafici albero

Cartellino	2
Specie	*Cedrus deodara*
Diametro (cm)	135
Altezza(m)	23
Diam. Chioma	0
Tipo impianto	Gruppo puro
Zona	da definire
Pavimentazione	Copertura vegetale

Giudizio complessivo

Classe	B
Valori strum.	Normali
T/R	1
Data di analisi	25/3/2011
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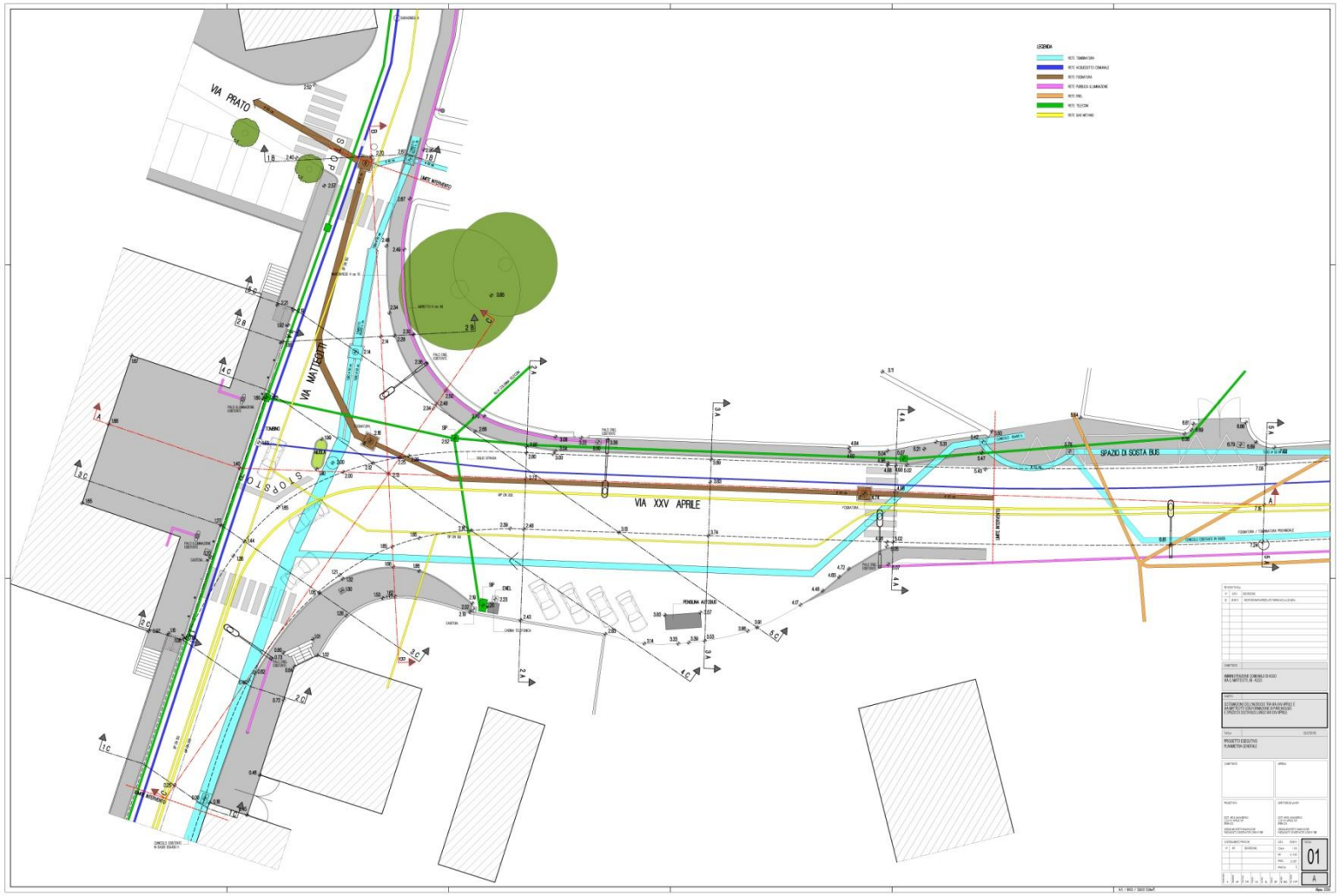
Analisi visiva

Chioma	- ramificazioni secche S- sbilanciata S- tagli di potature L
Fusto	
Colletto	- allargato L- cordone di reazione L- ferita cicatrizzata L

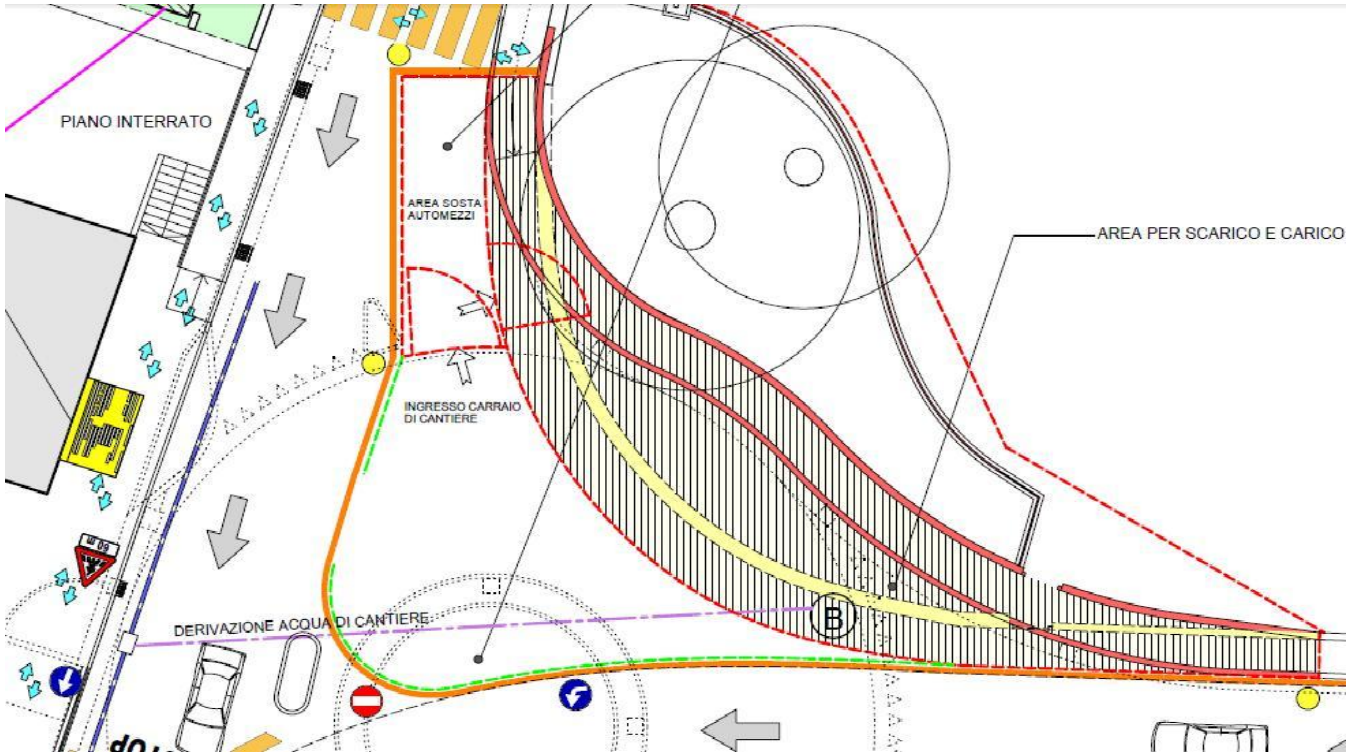
Verifiche strumentali: Base

Commento alle analisi:

Existing situation



Roundabout Project



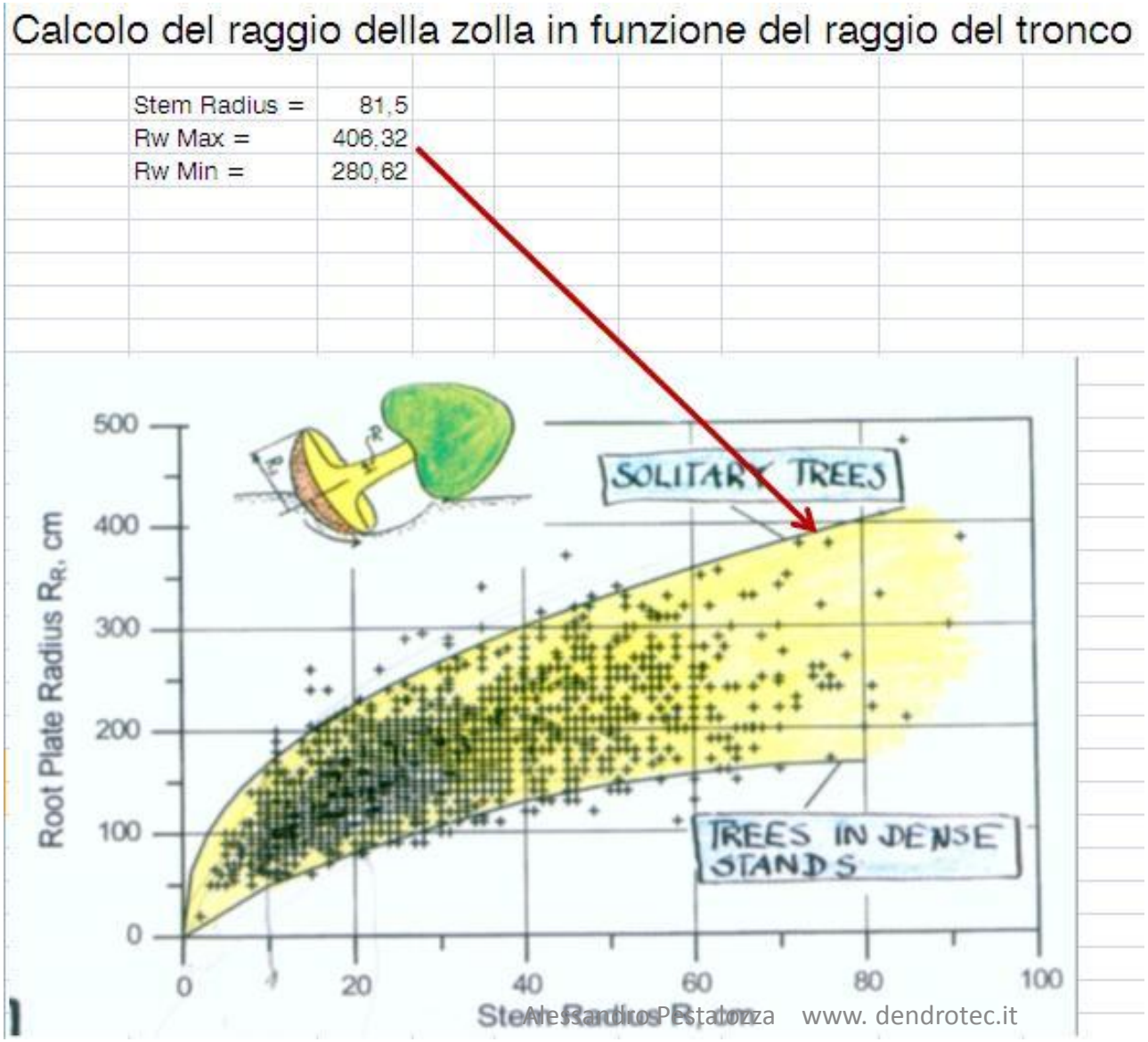
It was necessary to set a tree management plan to:

- evaluate the possibility of the excavations
- study an tree management plan to protect the roots
- The digging action of the first tree It would be reduced from 4 to 2.4 meters the root ball dimension in the road side

Tree Management Plan

- Tree static/stability evaluation ante operam by VTA and pulling test
- Root inspection and root distribution: evaluation by Arboradix
- No dig soil removal plan
- Tree static/stability evaluation post operam by pulling test

How large must a root ball be ?



From C. Mattheck

Studies carried out by Wessolly are summarized below by the following formula:

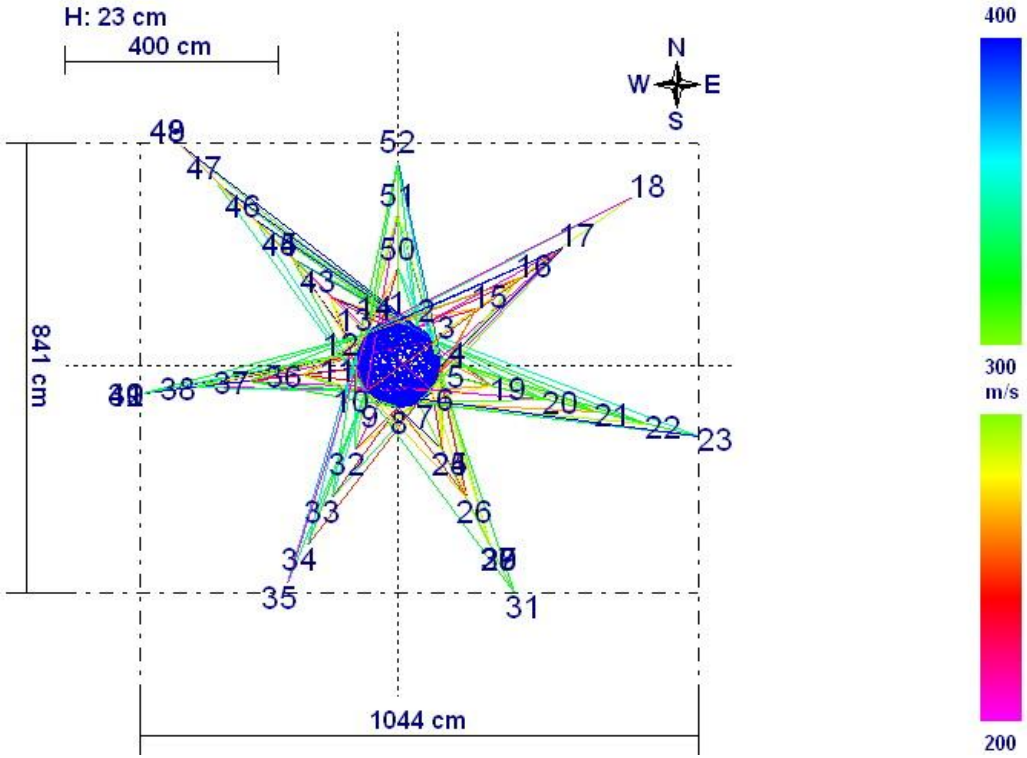
- Rw = 1.5 * 2R
- where:
- Rw = radius of the root ball
- R = radius of the trunk to 130 cm from the ground
- In our case we will have:
- R = 81.5 cm
- Rw = 244.5 cm

The excavation at the distance of the project was considered viable and not particularly damaging to the roots

Arboradix test

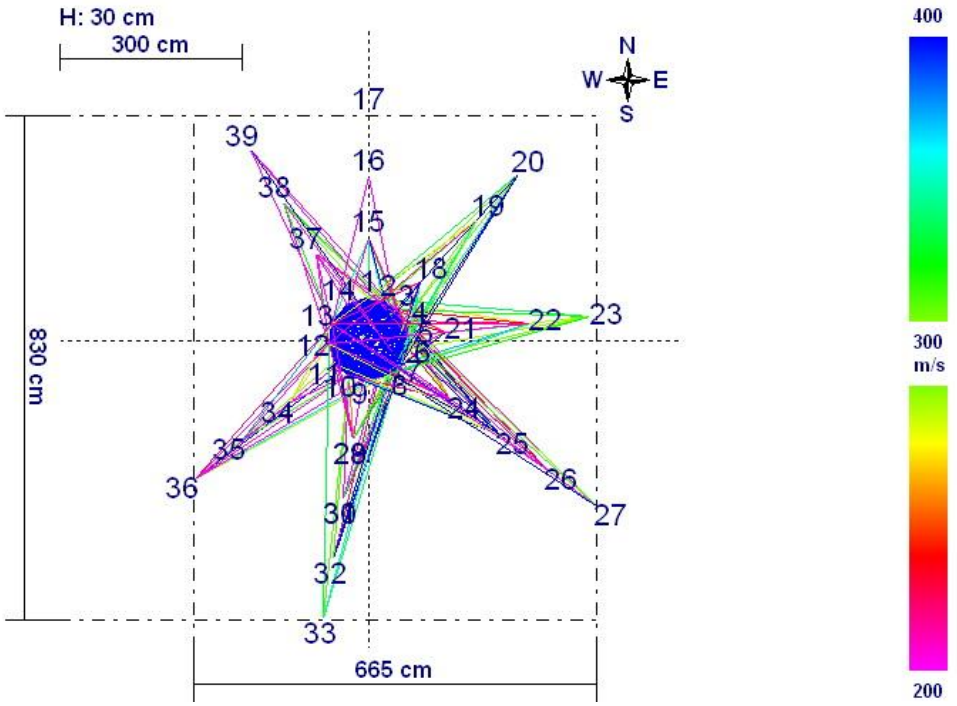
Was performed to have idea abt root distribution in the subsoil nearby the digging area

Cedrus deodara nr 1



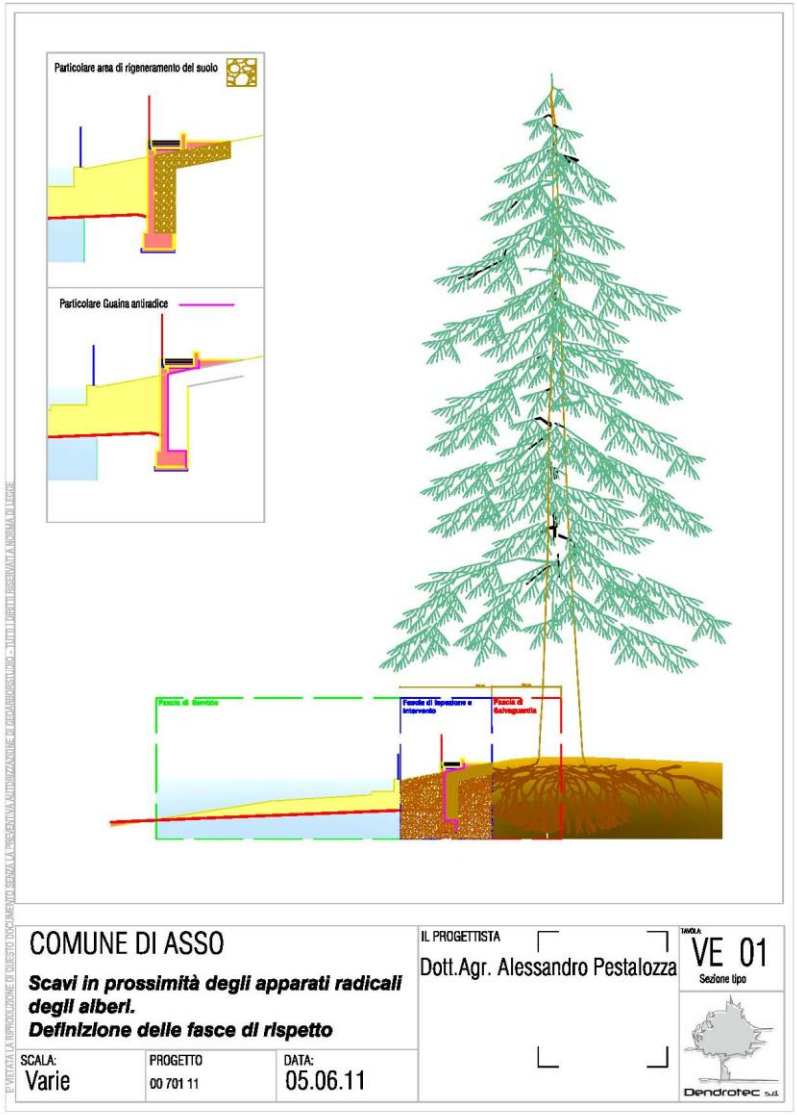
The Arboradix has identified the root of the cedar, which grows mainly in NW - SE. The richest portion of roots is to the North West where root development has no human limitations. The area in which instead ended up being a poor response to the stress wave is the portion of the North East and South, where there is the sidewalk at a distance of 3.9 m.

Cedrus deodara nr 2

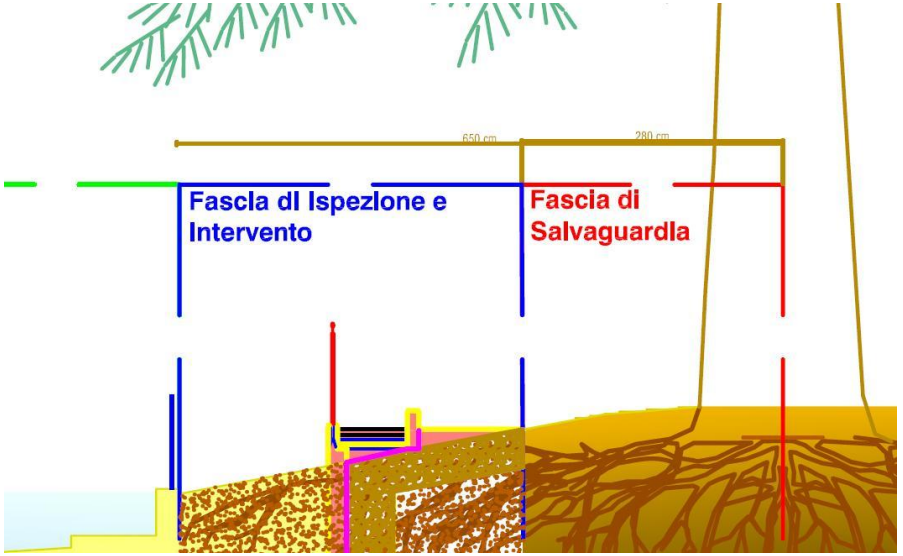


Arboradix revealed a root grows mainly in North - East and and the South direction, that is the area in which the subject is further away from man-made artifacts. Areas where it was found a poor response to the stimulus are quadrants of North - South and South - East, where the distance from the paving is also less than one meter

(no) Digging Plan

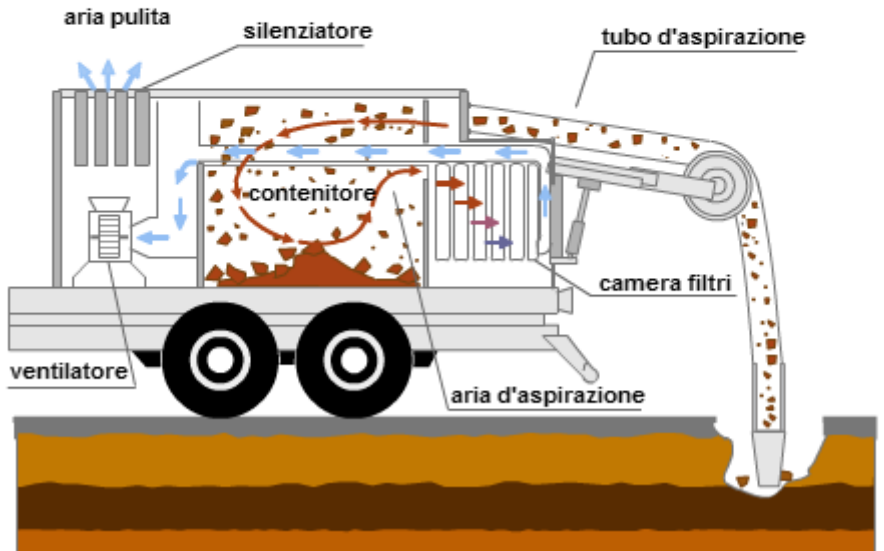


- Green Area: service
- Blu Area: Mechanical and air excavation
- Red Area: Protected



No dig excavation or better soil removal

- Ideale per aspirare qualsiasi materiale: liquido, secco, solido, melmoso, polveri
- Altissima potenza d'aspirazione costante
- Tecnica innovativa ecocompatibile
- Notevole riduzione d'impatto ambientale
- Impiego continuo senza dispendio di pulizia
- Emissione d'aria esausta nell'ambiente senza polveri
- Emissione acustica < 82 dB



SCHEDA TECNICA	
DATI DI POTENZA	
Profondità d'aspirazione	**max. 30 m**
Distanza d'aspirazione	**max. 150 m**
DATI TECNICI	
Contenitore	
Volume 8 m³	
VENTILATORI	
	Tecnica di ventilazione multipla
	Ventilatore doppio - DINO 2 - 4 MEGA
Portata aria	**36.000 m³ /h (10 m³ sec)**
Sotto vuoto	**34.000 Pa**
Potenza motrice richiesta	**2x 110 kW**
Potenza d'aspirazione	Regolazione graduale
PORTA TUBO E D'ASPIRAZIONE	
Porta tubo	a) Braccio di forza MTS (idraulico) fino a **8 m**
Tubo d'aspirazione	**Ø 250 mm**
Compressore d'aria	
Potenza d'aria	**4,5 m³/min a 8 bar**
Sistema di filtrazione per la polvere	
	3 fasi autopulente Basato sul principio ciclonico con separatore grosso, separatore fine e filtraggio fine a cartucce
Insonorizzazione	**82 dB**
VEICOLO	
Peso totale	**32 t**
Marca	Iveco Trakker 4 assi

Root inspection

Soil removing With air flow

Key words: incomprimible flow - macroporosity

Naked roots transplanting.
All soil was removed with AirSpade

Milano – via D'Averio
Cliente: **Società Umanitaria** (MI)

Parma – piazza Dalla Chiesa
Cliente: **STU spa** (PARMA)

With Airspade and Vacuum suction The Gingko rootball was significantly
lightened in order to avoid the use of a even bigger crane

Combined Air Spade and Suction Systems

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Roots : 2,5 m from stem base

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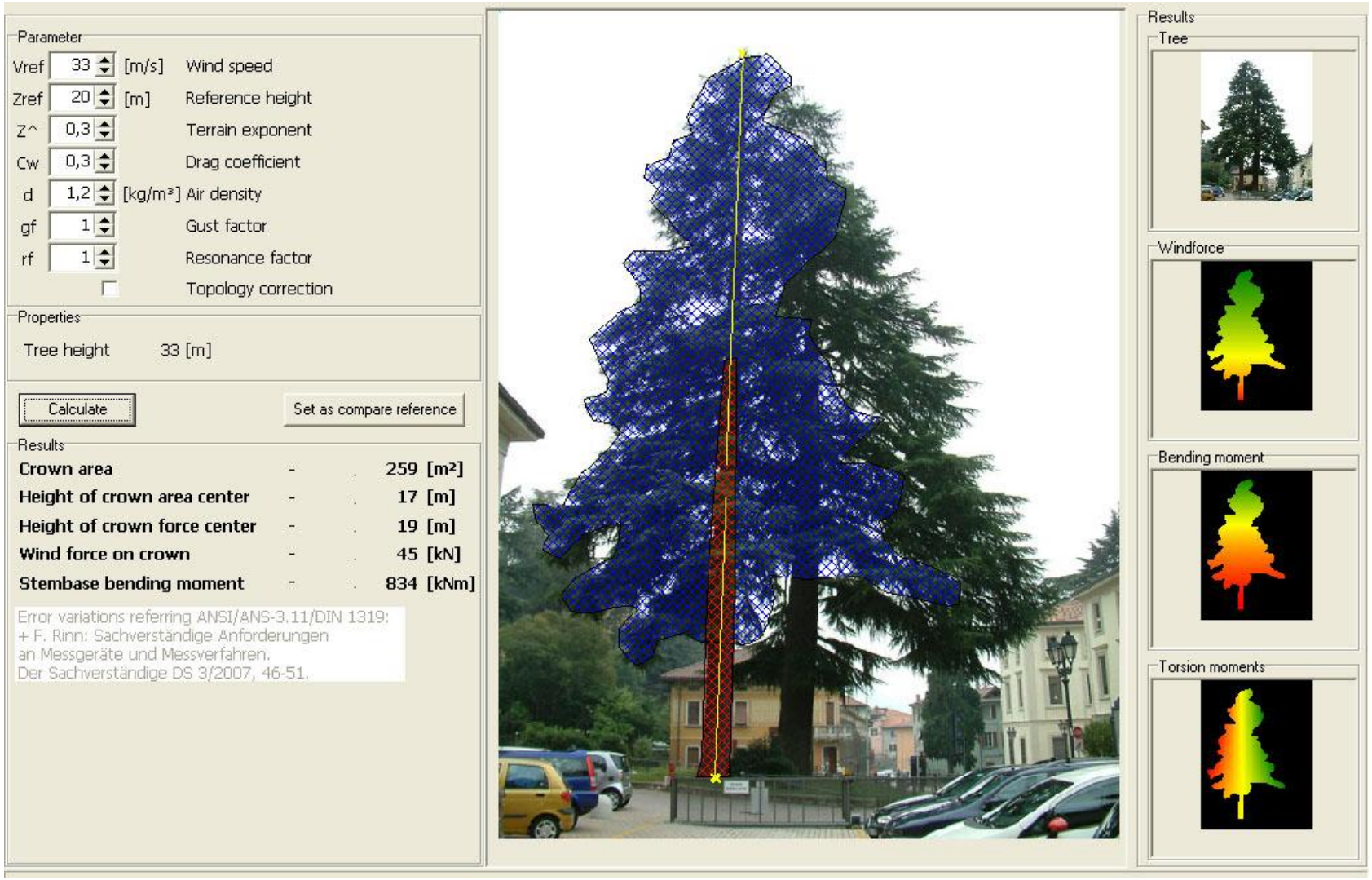
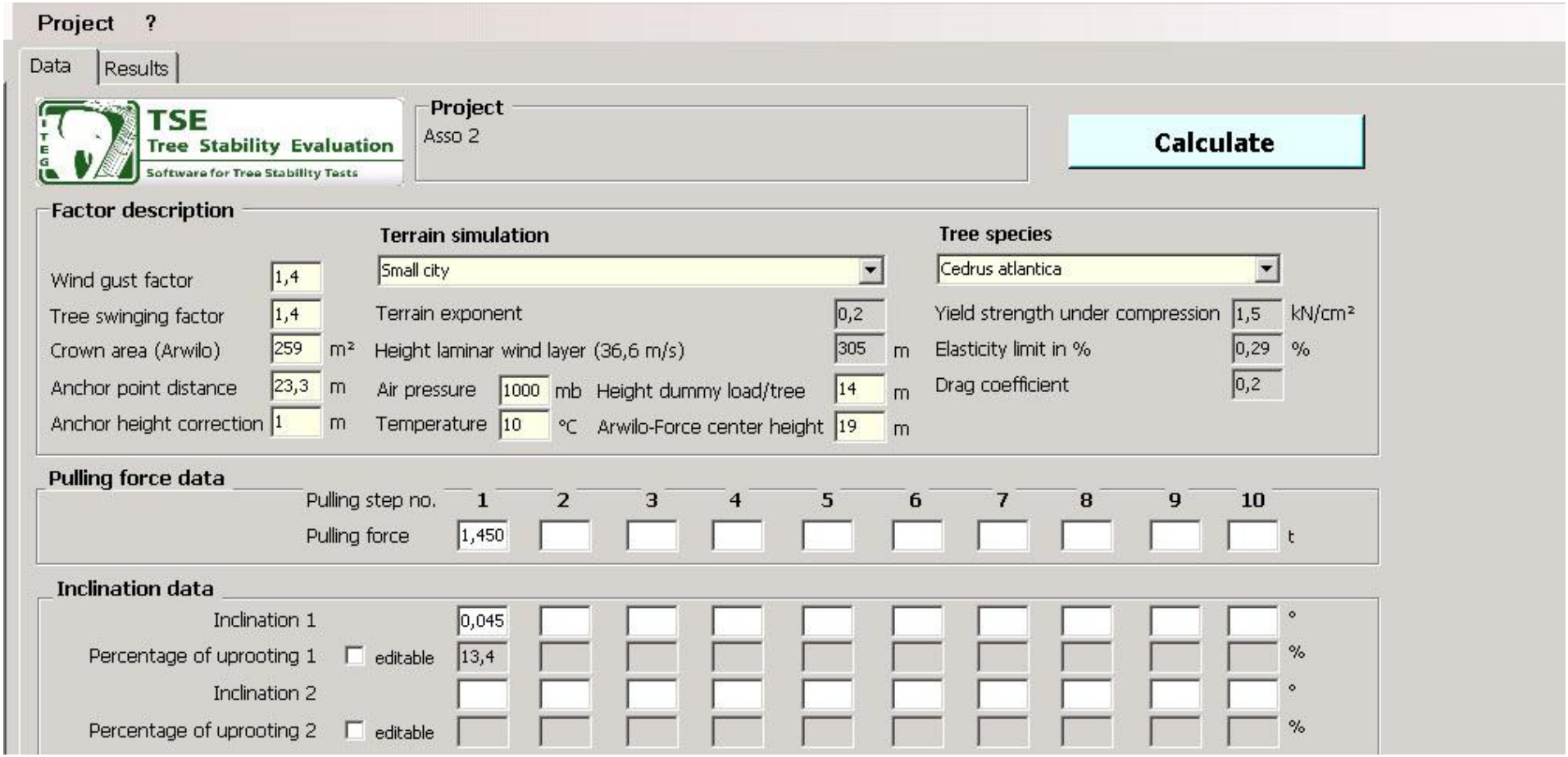
Root covering and protection

Side walk construction

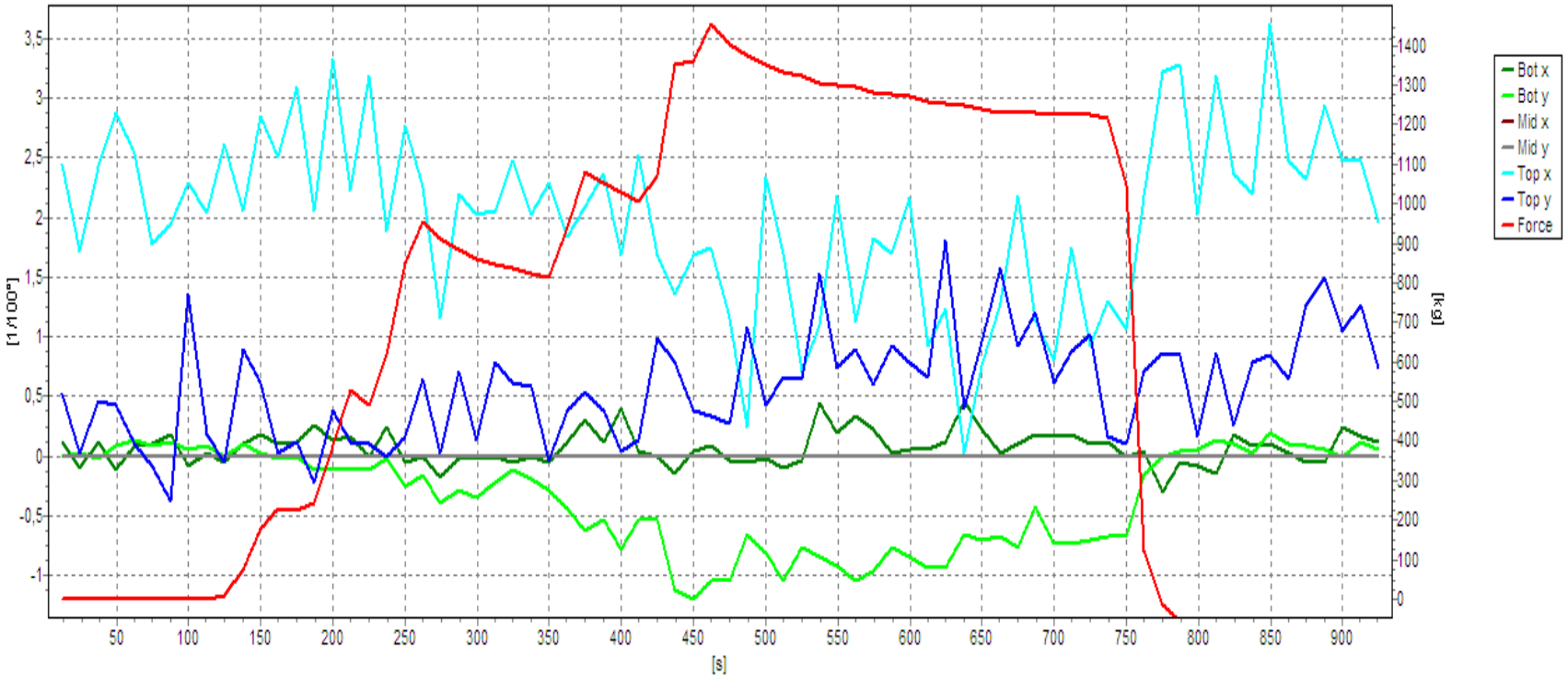
Static evaluation WLA



Static evaluation Pulling Test: data



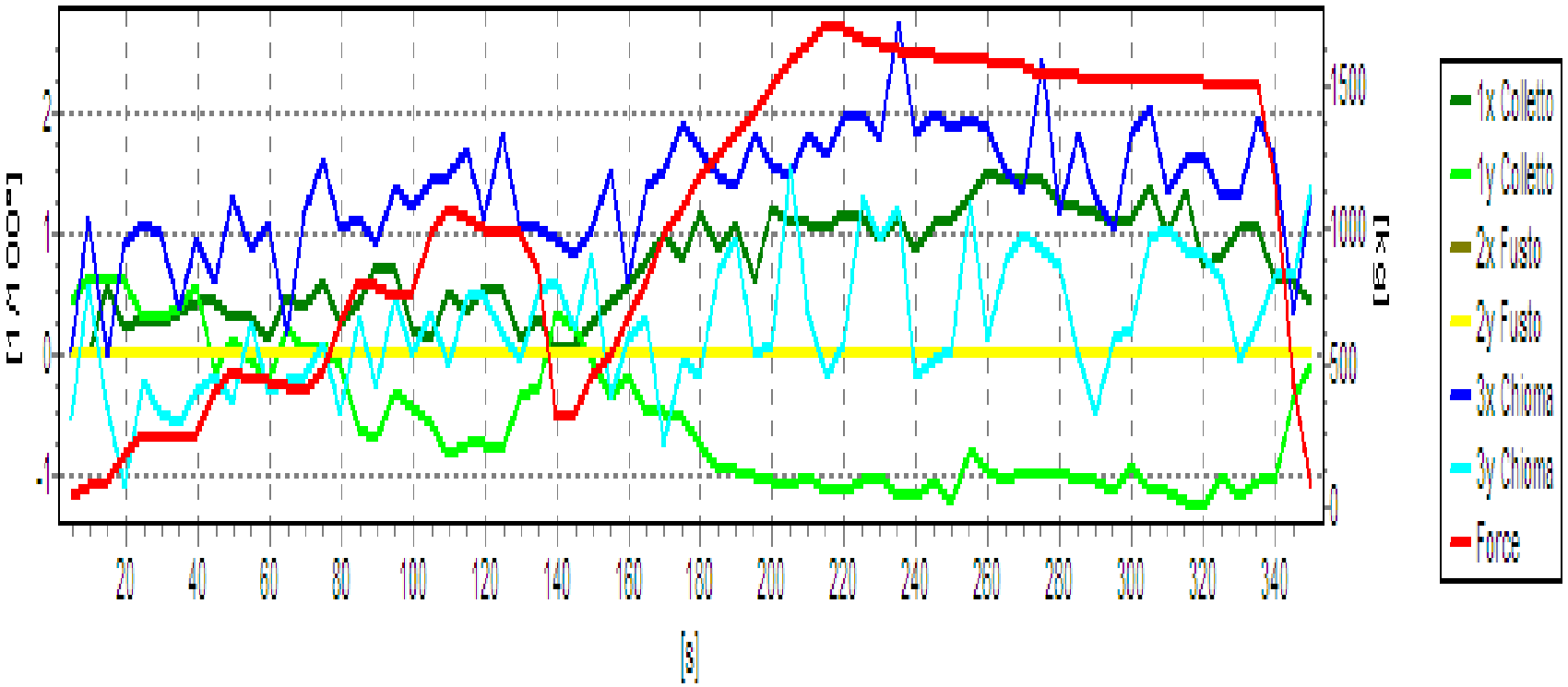
Dynatim data



Pulling test result Ante Operam

SAFETY FACTOR UPROOTING = 1,27

Dynatim data



Pulling test result Post Operam

SAFETY FACTOR UPROOTING = 1,33

Conclusion

- The combined digging system realized a good job
- The cutted roots was just a small amount and small size
- No loss of stability was observed
- No problems as far nutritional or physiolological aspects is regarding