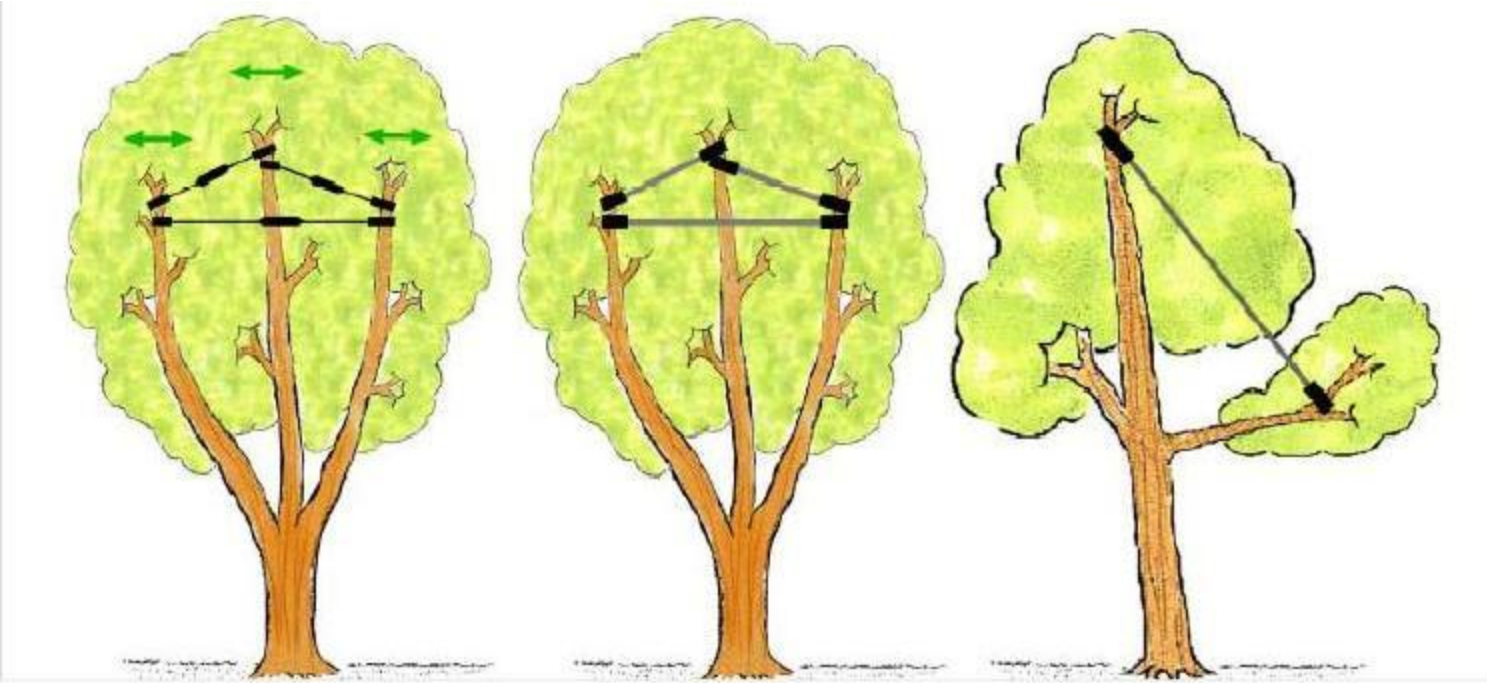
3 TIPI DI CONSOLIDAMENTO DINAMICO:

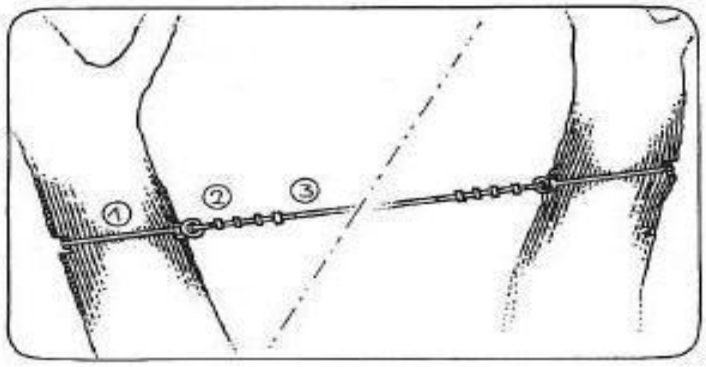


1.a Consolidamento dinamico *orizzontale*

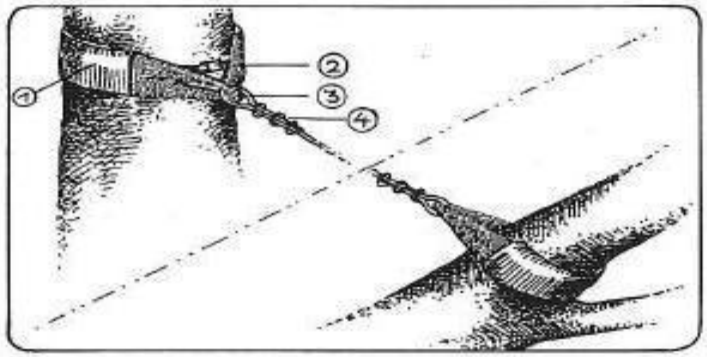
1.b Consolidamento statico *orizzontale*

2. Consolidamento di tenuta *± verticale*

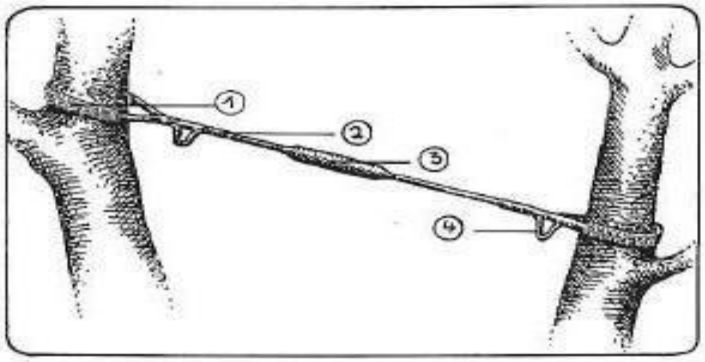
TIPI E MATERIALI PER IL CONSOLIDAMENTO AEREO:



A



B



C

A **I Steel Rope Bracing**

① Steel Bolt ② Thimble/connectors
③ Steel Rope

I Tirante con cavo in acciaio

① perno in acciaio ② morsetti
③ cavo in acciaio

I Cableado con cable de acero

① Perno metálico ② Unión al cable ③ Cable de acero

B **I Belt Support**

① Branch Protection ② Belt
③ Thimble ④ Connector

I Tirante con fasce

① protezione del ramo ② fascia
③ redancia ④ morsetti

I Soporte con anillos

① Protección de la rama
② Cinturón ③ Unión al cable
④ Material de conexion (perrillos)

C **I Hollow Rope Cabling**

① Rope Spreader and Protection
② Hollow Rope ③ Shock Absorber
④ Adjustment Loop

I Tirante sintetico tubolare rinfilato

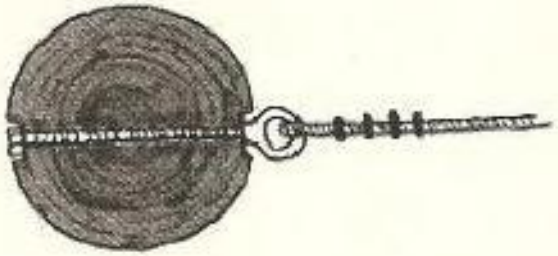
① fascia di protezione ② tirante tubolare ③ ammortizzatore ④ anello di regolazione

I Cuerda hueca

① Cinturón protector de cuerda
② Cuerda hueca ③ Amortiguador
④ Lazo de reserva

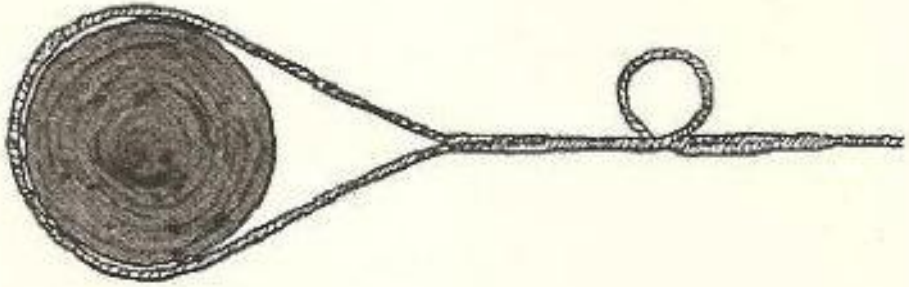
Illustration of Crown Securing Systems

(Figures and parts of the text in support of the German rules and regulations for tree care methods - volume 2001 – "ZTV-Baumpflege- Ausgabe 2001"-)

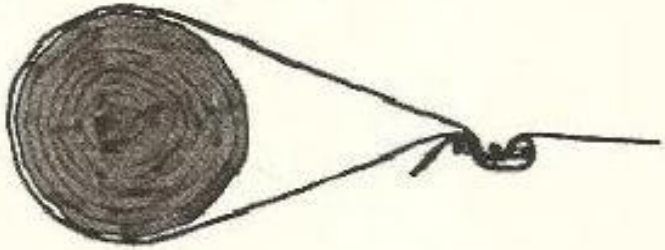


Crown Anchoring System: Made of threaded bolts, steel cable, and fastening material. NONE-injury free installation.

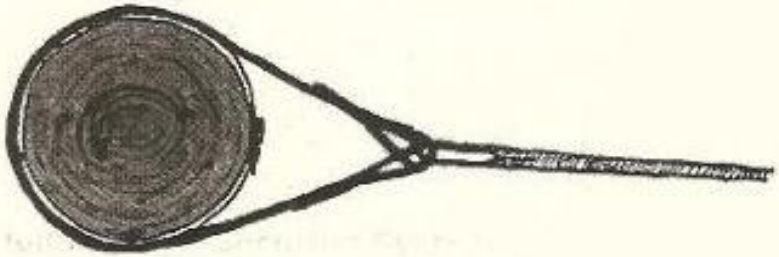
The extent of injury caused by the installation of crown anchoring systems is so great that this system should not be used in the future



Hollow Rope Securing Systems: Made of braided synthetic fibre. The rope is spliced back through the hollow rope and is fixed by tension. Therefore, no additional fastening elements are necessary (Single Component Securing System). **Injury free installation.** (Vetter & Wessolly, 1994)



Band Securing System (Gurtbandsicherung): Made of woven synthetic fibres, and slung around those parts of the tree crown which are to be secured. The belt is locked with a buckle (Single Component Securing System). **Injury free installation.** (SINN, 1989)



Multi Component Securing System (Double Belt Securing System): Made of separate belts, with a loop on each end. Most of these products consist of a strong, outer holding belt and a second inner fastening belt, which includes a stretch element in some cases. The connecting elements (e.g. synthetic hollow ropes, steel cable) are pulled through the end loops. **Injury free installation.** (SCHRÖDER, 1993)

MATERIALI E NOMENCLATURA:

- **POLIPROPILENE – PP**: elasticità ca. 3% + 20cm
- **POLIESTERE – PES**: meno elastico
- **POLIAMIDE – PA**: più elastico

PP

PP

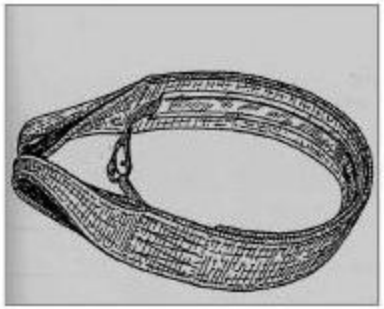
PA e PES

PA e PES

Tirante tessile tubolare con fascia asolata

(sistemi a 2 componenti)

1) Tiranti sintetici tubolari in combinazione con **2a** oppure **2b**



2a) Fascia asolata
(ev. con cinturino elastico di posizionamento)

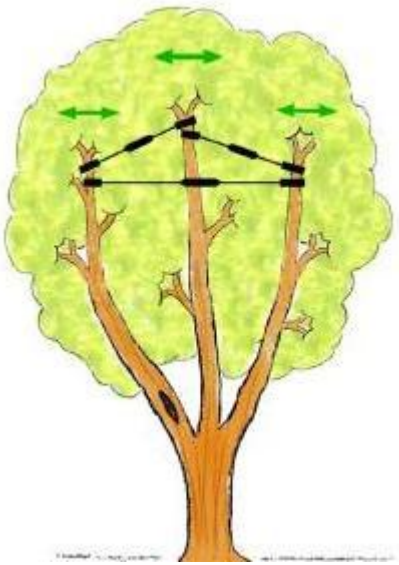
2b) Guaina di protezione
per. es.. GEFAprotect

Tirante tessile tubolare

(sistemi a 1 componente)

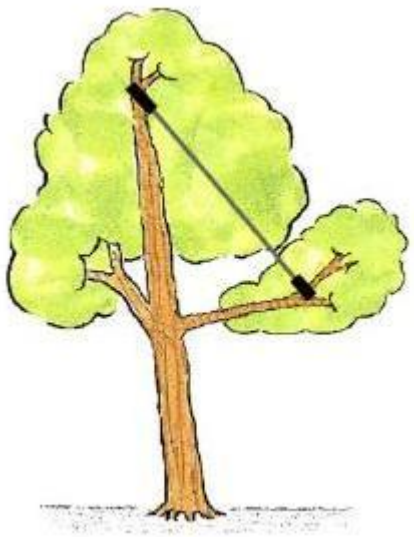
Tirante sintetico tubolare con ammortizzatore

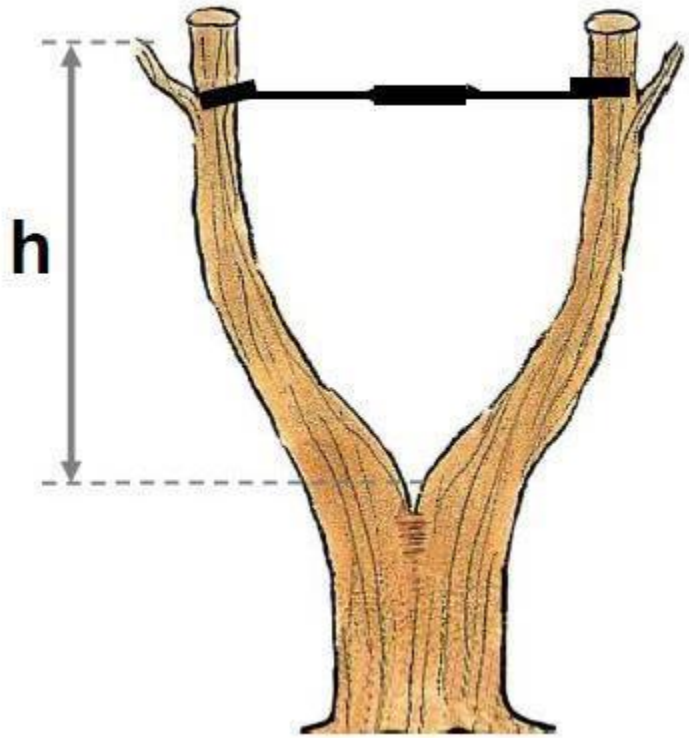
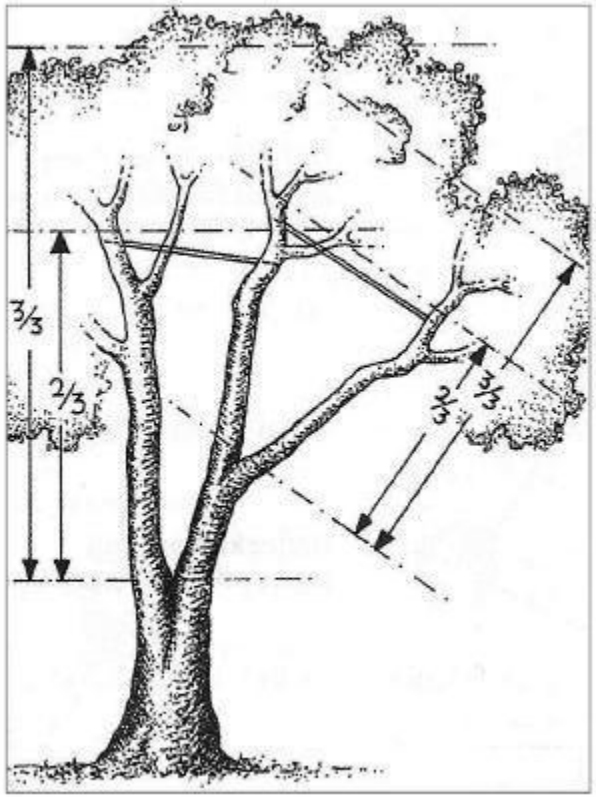
DIMENSIONAMENTO TIRANTI:



CONSOLIDAMENTO DINAMICO Diametro alla base del fusto:	CARICO DI ROTTURA MINIMO:
Fino a 40 cm	2 tonnellate
Da 40 a 60 cm	4 tonnellate
Da 60 cm a 80 cm	8 tonnellate
Oltre 80 cm valutare singolarmente	
In caso di consolidamento statico: carico di rottura x2.	

DIMENSIONAMENTO TIRANTI:



CONSOLIDAMENTO DINAMICO Diametro alla base del fusto:	CARICO DI ROTTURA MINIMO:
Fino a 30 cm	2 tonnellate
Da 30 a 40 cm	4 tonnellate
Da 40 cm a 60 cm	8 tonnellate
Da 60 cm a 80 cm	16 tonnellate
Oltre 80 cm valutare singolarmente	

I tiranti in chioma devono essere posizionati a 2/3 della lunghezza dei rami/fusti da ancorare: