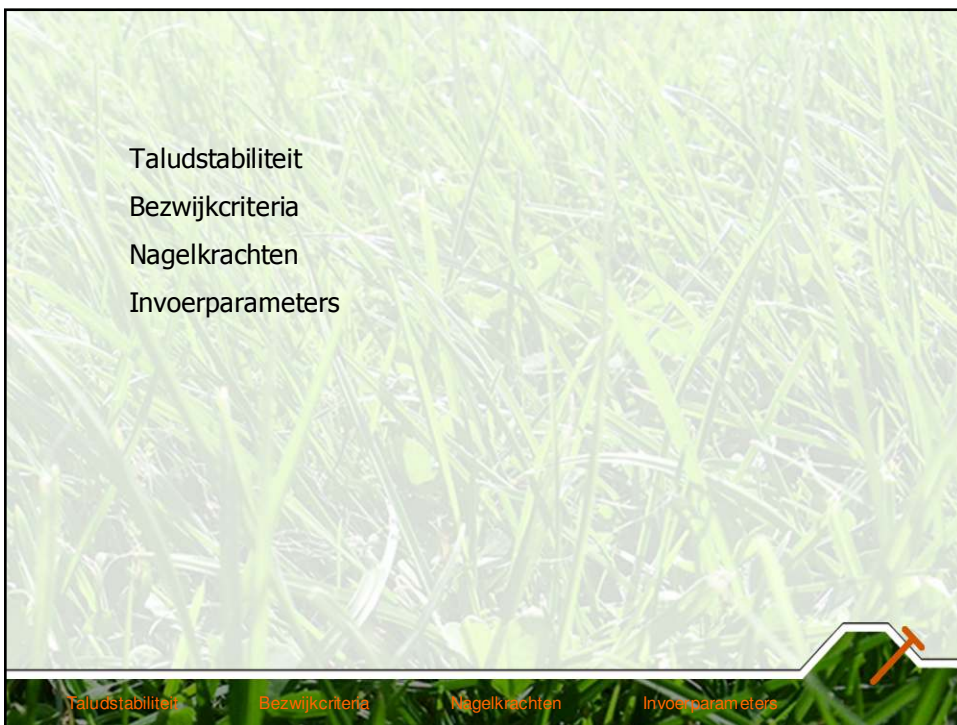




ir. B. de Boer, 5 september 2006



Taludstabiliteit
Bezwijkcriteria
Nagelkrachten
Invoerparameters

Taludstabiliteit Bezwijkcriteria Nagelkrachten Invoerparameters

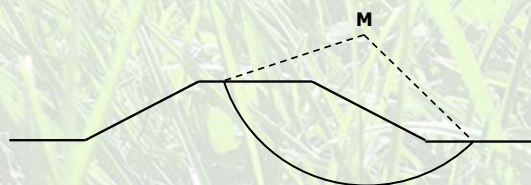
Taludstabiliteit



Stabiliteitsfactor: SF

$$SF = \frac{M_{w,t}}{M_{a,t}}$$

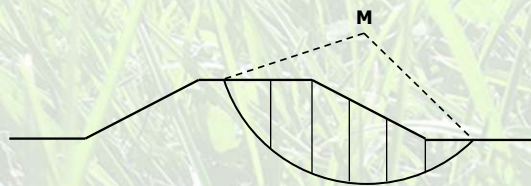
$M_{w,t}$ totale weerstandbiedend moment
 $M_{a,t}$ totale aandrijvend moment



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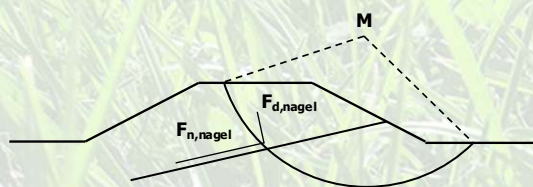
Stabiliteitsfactor: SF

$$SF = \frac{M_{w,t}}{M_{a,t}}$$

$M_{w,t}$ totale weerstandbiedend moment
 $M_{a,t}$ totale aandrijvend moment



Stabiliteit vernageld talud



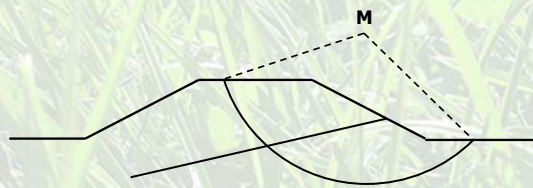
Stabiliteit vernageld talud

$$SF = \frac{M_{w,t} + M_{nagel}}{M_{a,t}}$$

$M_{w,t}$ totale weerstandbiedend moment

$M_{a,t}$ totale aandrijvend moment

M_{nagel} moment tgv. nagelkrachten



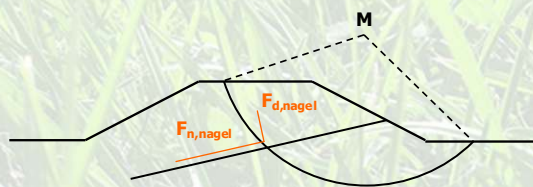
Stabiliteit vernageld talud

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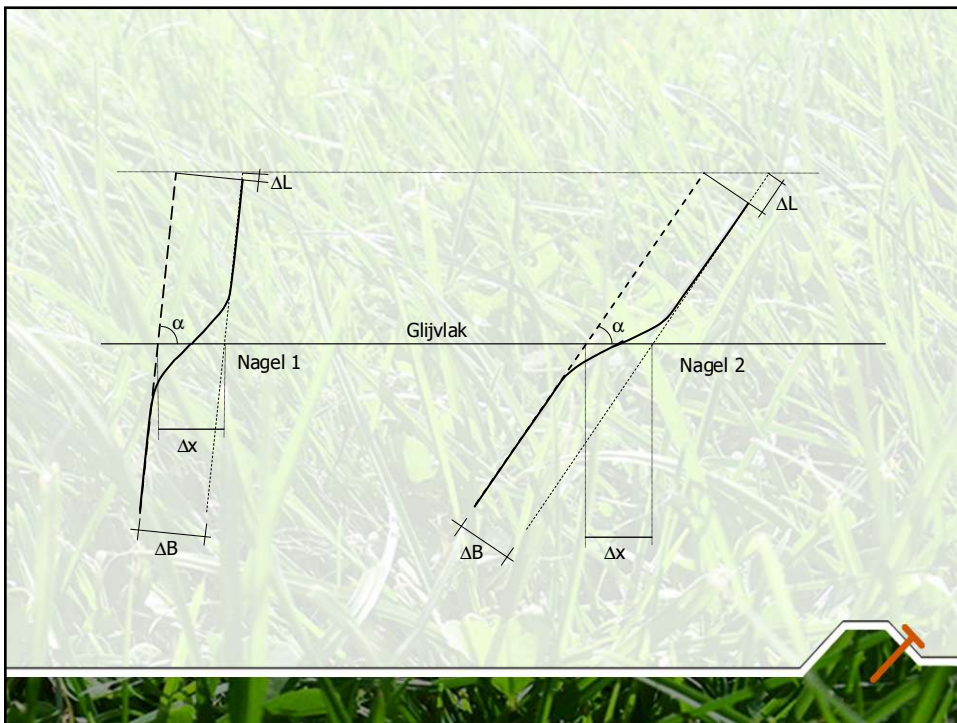
$M_{w,t}$ totale weerstandbiedend moment

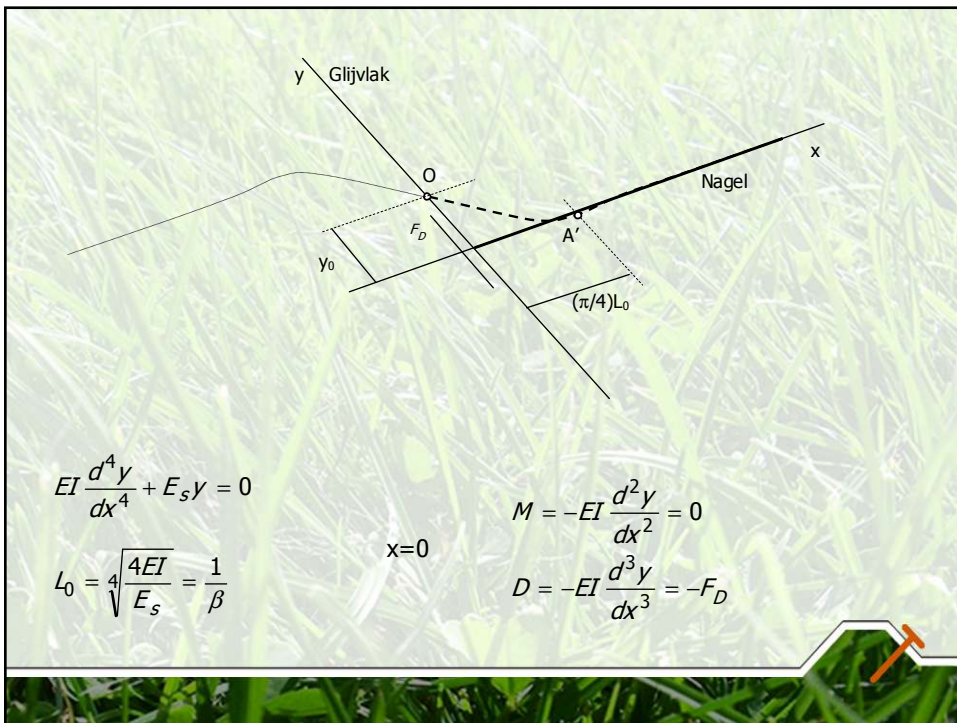
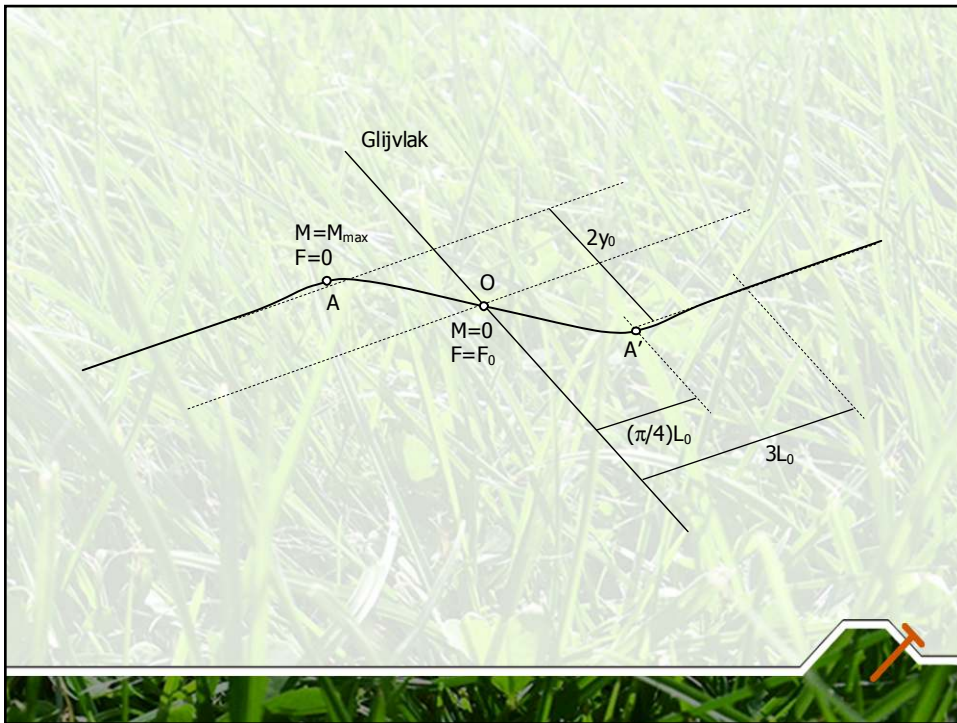
$M_{a,t}$ totale aandrijvend moment

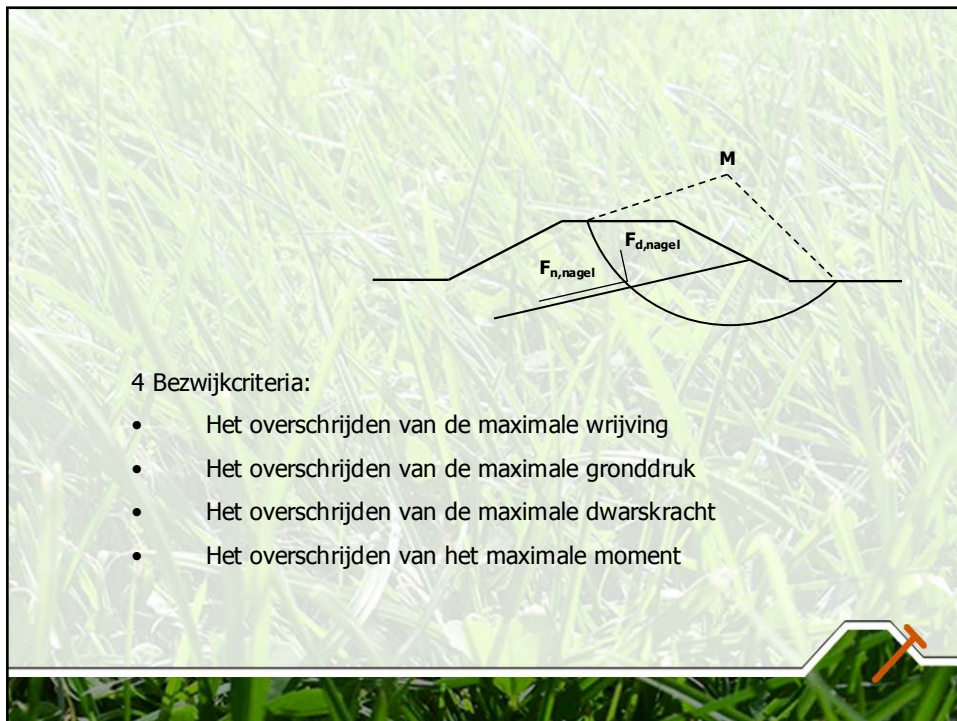
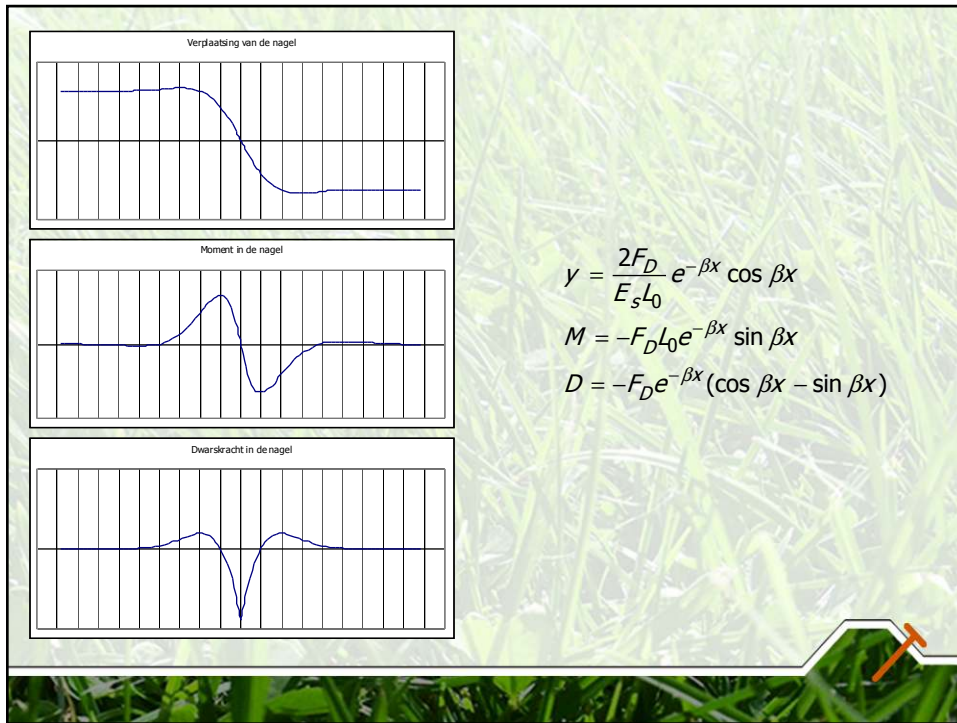
M_{nagel} moment tgv. nagelkrachten

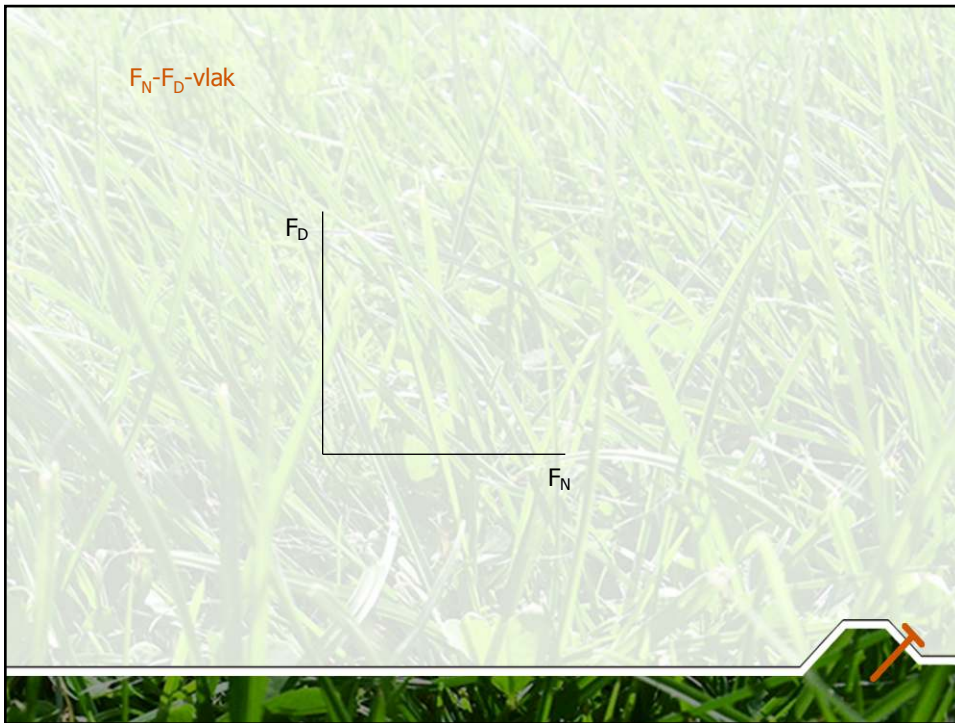


Bezwijkcriteria



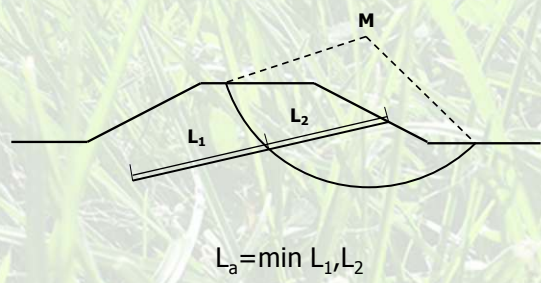






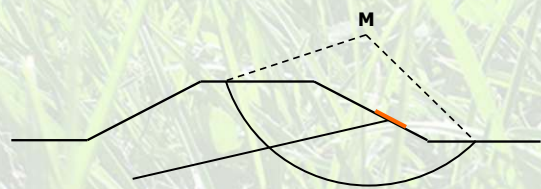
Criterium 1: Bezwingen op wrijving tussen nagel en grond

Nagel zonder facing



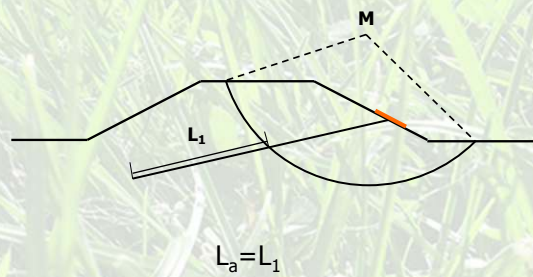
Criterium 1: Bezwingen op wrijving tussen nagel en grond

Nagel met facing



Criterion 1: Bezijken op wrijving tussen nagel en grond

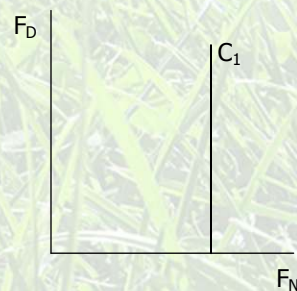
Nagel met facing



Criterion 1: Bezijken op wrijving tussen nagel en grond

$$F_N \leq F_{N,\max}$$

$$F_{N,\max} = \pi \cdot D \cdot L_a \cdot \tau_{\max}$$



Criterion 2: Bezijken op maximale gronddruk

$$p = k_s y$$

$$F = pD = k_s D y = E_s y$$

$$F_D \leq F_{D,\max}$$

F kracht op de nagel
p druk op de nagel
D diameter van de nagel
 k_s beddingconstante van de grond
y verplaatsing van de nagel tov. de grond
 E_s elasticiteitsmodulus van de grond

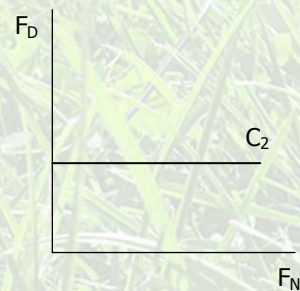
$$p \leq p_u$$

p_u maximale gronddruk

Criterion 2: Bezijken op maximale gronddruk

$$F_D \leq F_{D,\max}$$

$$F_{D,\max} = p_u \frac{DL_0}{2}$$



Criterion 3: Bezijken van de nagel op dwarskracht

Criterion van Anthoine:

$$\left(\frac{F_N}{R_N}\right)^2 + \left(\frac{F_D}{R_D}\right)^2 + \left|\frac{M}{M_{\max}(0)}\right| \leq 1$$

F_N	optredende trekkracht
R_N	maximaal opneembare trekkracht
F_D	optredende dwarskracht
R_D	maximaal opneembare dwarskracht
M	optredende moment
$M_{\max}(0)$	maximaal opneembare moment bij zuivere buiging ($F_N=0$)

Criterion 3: Bezijken van de nagel op dwarskracht

Criterion van Anthoine:

$$\left(\frac{F_N}{R_N}\right)^2 + \left(\frac{F_D}{R_D}\right)^2 + \left|\frac{M}{M_{\max}(0)}\right| \leq 1$$

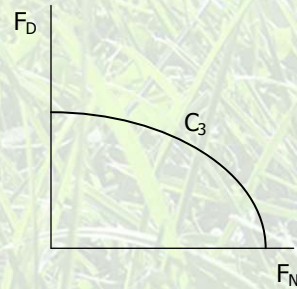
$M=0$:

$$\left(\frac{F_N}{R_N}\right)^2 + \left(\frac{F_D}{R_D}\right)^2 \leq 1 \quad R_D = \frac{R_N}{2}$$

Criterion 3: Bezijken van de nagel op dwarskracht

$$F_D \leq F_{D,\max}$$

$$F_{D,\max} = \frac{1}{2} \sqrt{(R_N^2 - F_N^2)}$$



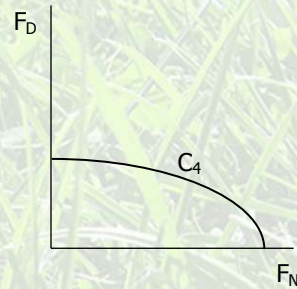
Criterion 4: Bezijken van de nagel op moment

$$M_{\max} = M_{\max}(0) \left[1 - \left(\frac{F_N}{R_n} \right)^2 \right]$$

$$F_{D,\max} = 1,62 \frac{M_{\max}}{L_0} + 0,24 p_u D L_0$$

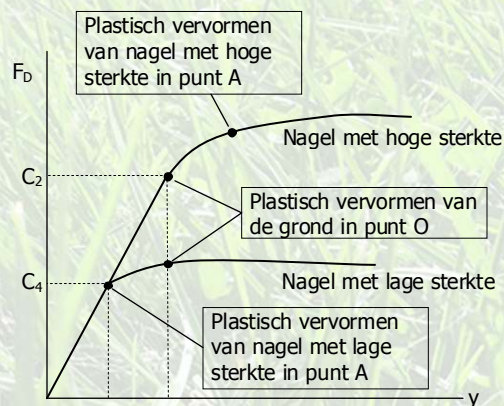
criterium 4: Bezijden van de nagel op moment

$$F_D \leq F_{D,\max}$$



$$F_{D,\max} = 1,62 \frac{M_{\max}(0)}{L_0} \left[1 - \left(\frac{F_N}{R_n} \right)^2 \right] + 0,24 p_u D L_0$$

Ontwikkeling F_D als functie van y en nagelsterkte

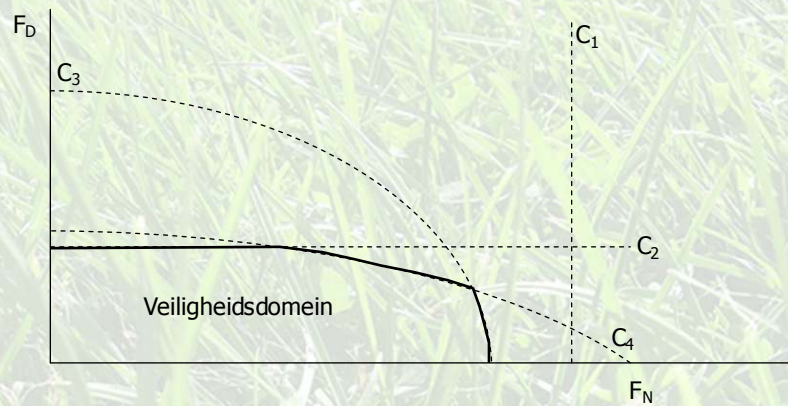


Combinatie criteria

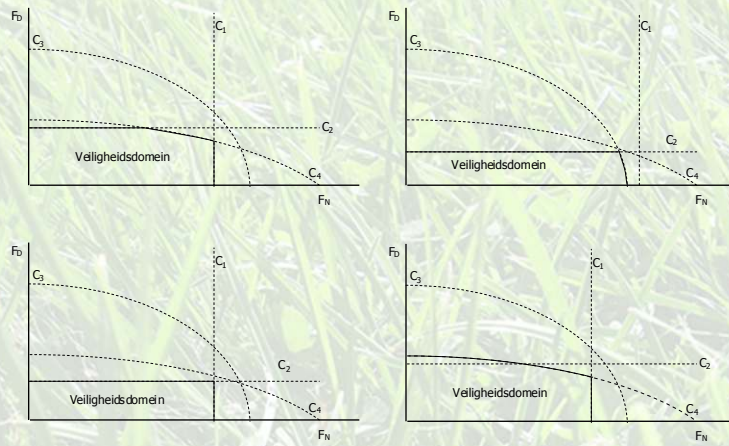
$$F_N \leq F_{N,\max} \quad F_D \leq F_{D,\max}$$

Criterium	
1	$F_{N,\max} = \pi \cdot D \cdot L_a \cdot \tau_{\max}$
2	$F_{D,\max} = \rho_u \frac{DL_0}{2}$
3	$F_{D,\max} = \frac{1}{2} \sqrt{(R_N^2 - F_N^2)}$
4	$F_{D,\max} = 1,62 \frac{M_{\max}(0)}{L_0} \left[1 - \left(\frac{F_N}{R_n} \right)^2 \right] + 0,24 \rho_u DL_0$

Combinatie criteria



Combinatie criteria



Nagelkrachten

