

Increased grape rootstock growth with the application of biostimulant Foliacin et al

L. Gobbi Sri Italy

November 2005

Key words

Grapes, Foliacin, rootstocks 110R, 140 Ru, 420 A, 157-11, 161-49, 3309C, 41B, 774P, 779P, K5BB, SO4

Overview

The tests were carried out to assess various biostimulants impact on the growth of grape rootstocks. The rooted vine weight, base diameter, number of roots and fine roots and root weights were all recorded.

Treatments

Foliacin
Alga Special
LG 84 (Stimulating factor 66f)
Germon L
LG 201 (Seaweed Mix, only used in 2005)
Alga 655 (only in used 2005)



Rootstock: 110 R

Product	Yield 2002 (%)
Foliacin 500ml/hl x 12h	65.3
Foliacin 500ml/hl x 12h + Foliar treatments	61.7
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments	62.5
Control	61.2

Product	Yield 2005 (%)
Foliacin 500ml/hl x 12h	72
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	92
(LG201 4 l/hl) x 12h	70
(LG201 4 l/hl) x 12h + Foliar treatments (Alga 655 3l/ha)	80
Germon L 1% x 12h	78
Control	62

Average of experimental years

Product	Yield (%)
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	72
Germon L 2% x 12h	67
Control	59

Average of experimental years

	Germon	Foliacin	Alga Special + LG 84	Alga Special + LG 84 + Foliar	Control
Rooted vine weight (g)	73.6	72.3	70.1	93.9	68.4
Base diameter (mm)	9.6	9.4	9.7	10.6	9.8
Fleshy roots No.	2.8	3.9	2.5	3.2	2.6
Filamentary roots No.	6.7	4.7	4.7	6.2	5.4
Roots weight (g)	28.1	22.4	23.8	34.0	24.4
Opposite bud	8	17	33	8	0
At L	8	0	0	33	0
Opposite	17	33	50	42	25
At T	33	17	0	0	25
At X	33	33	17	17	50

Rootstock: 140 Ru

Product	Yield (%) 2002
Foliacin 500 ml/hl x 12h	57.1
Foliacin 500ml/hl x 12h + Foliar treatments	63.8
LG82 500 ml/hl x 12h + Foliar treatments	64.4
Control	53.1

Product	Yield (%) 2003
Foliacin 500 ml/hl x 12h	59
(LG83 4 l/hl + LG84 20 ml/hl) x 12h	61
(LG83 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	62
Control	54

Product	Yield (%) 2004
Foliacin 500 ml/hl x 12h	40
Foliacin 500ml/hl x 12h + Foliar treatments Foliacin 750 ml/ha	24
(LG83 4 l/hl + LG84 20 ml/hl) x 12h	26
(LG83 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	22
Control	9

Average of experimental years

Product	Yield (%)
Foliacin 500 ml/hl x 12h	42
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	37
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	35
Control	26

Average of experimental years

	Germon	Foliacin	Alga Special + LG 84	Alga Special + LG 84 + Foliar	Control
Rooted vine weight (g)	79.2	60.9	61.6	75	76.4
Base diameter (mm)	9.7	9.4	9.2	9.0	10.0
Fleshy roots No.	3.5	3.5	2.4	2.6	3.5
Filamentary roots No.	4.3	3.5	3.6	4.1	3.1
Roots weight (g)	25.1	20.7	20.5	29.4	24.0
Opposite bud	0	0	8	0	0
At L	0	8	8	0	0
Opposite	25	17	8	0	0
At T	8	8	17	8	0
At X	67	67	58	92	100

Rootstock: 420 A

Product	Yield (%) 2002
Foliacin 500ml/hl x 12h	83.3
Control	66.0

Product	Yield (%) 2003
Water X 12h + Foliary treatments Foliacin 750 ml/ha	69
Alga Special dipping(4l/hl) before planting	71
Water X 12h + Foliary treatments (Alga Special 3l/ha)	60
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	69
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliary treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	71
Germon L 1% x 12h	80
Control	54

Product	Yield (%) 2004
Foliacin 500ml/hl x 12h	82
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliary treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	78
(LG201 4 l/hl) x 12h	78
(LG201 4 l/hl) x 12h + Foliary treatments (LG 139 3l/ha)	84
Germon L 1% x 12h	86
Control	76

Average of experimental years

Product	Yield (%)
Foliacin 500ml/hl x 12h	62
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	65
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliary treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	66
Germon L 1% x 12h	62
Control	

Average of experimental years

	Germon	Foliacin	Alga Special + LG 84	Alga Special + LG 84 + Foliar	Control
Rooted vine weight (g)	64.8	50.4	48.1	53.0	56.8
Base diameter (mm)	9.1	8.3	8.6	9.3	9.2
Fleshy roots No.	3.4	3.3	2.2	3.3	2.3
Filamentary roots No.	4.2	3.3	3.5	2.6	3.0
Roots weight (g)	19.7	20.4	17.1	18.2	22.5
Opposite bud	0	0	0	0	4
At L	4	17	0	13	4
Opposite	13	42	4	46	54
At T	29	29	28	25	17
At X	54	13	58	17	21

Rootstock: 157-11

Product	Yield (%) 2003
Foliacin 500ml/hl x 12h	52
Water X 12h + Foliary treatments Foliacin 750 ml/ha	45
Alga Special dipping (4l/hl) before planting	45
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	56
Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliary treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	48
Germon L 1,5% x 12h	40
Control	35

Product	Yield (%) 2004
Foliacin 500ml/hl x 12h	63
Foliacin 500ml/hl x 12h + Foliary treatments Foliacin 750 ml/ha	60
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	65
Germon L 1,5% x 12h	60
Control	54

Product	Yield (%) 2005
Foliacin 500ml/hl x 12h	80
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	72
Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliary treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	72
Control	70

Average of experimental years

Product	Yield (%)
Foliacin 500ml/hl x 12h	63
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	62
Control	51

Average of experimental years

	Germon	Foliacin	Alga Special + LG 84	Alga Special + LG 84 + Foliar	Control
Rooted vine wight (g)	64.7	50.0	56.4	63.3	53.0
Base diameter (mm)	9.0	8.6	8.8	9.0	8.5
Fleshy roots No.	3.3	3.1	3.3	3.7	1.8
Filamentary roots No.	6.0	3.9	3.8	5.0	4.2
Roots weight (g)	22.5	14.7	20.6	24.5	19.2
Opposite bud	0	0	0	0	8
At L	0	8	0	13	4
Opposite	17	8	42	4	8
At T	0	21	17	4	8
At X	83	63	42	79	71

Rootstock: 161-49

Product	Yield (%) 2003
Foliacin 500ml/hl x 12h	65
Alga Special dipping (4l/hl) before planting	55
Germon L 1,5% x 12h	75
Control	52

Product	Yield (%) 2004
Foliacin 500ml/hl x 12h	60
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliary treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	67
Germon L 1,5% x 12h	56
Control	53

Product	Yield (%) 2005
Foliacin 500ml/hl x 12h	75
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	76
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliary treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	70
Control	64

Average of experimental years

Product	Yield (%)
Foliacin 500ml/hl x 12h	61
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	53
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliary treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	58
Germon L 1,5% x 12h	62
Control	50

Average of experimental years

	Germon	Foliacin	Alga Special + LG 84	Alga Special + LG 84 + Foliar	Control
Rooted vine weight (g)	59.5	48.4	56.6	60.3	56.5
Base diameter (mm)	8.7	8.0	8.5	9.1	8.2
Fleshy roots No.	2.7	2.7	2.7	3.2	2.6
Filamentary roots No.	6.8	3.5	3.5	3.6	5.1
Roots weight (g)	17.6	19.3	17.6	18.1	24.2
Opposite bud	0	0	0	0	0
At L	0	4	4	0	4
Opposite	0	21	54	33	25
At T	8	29	8	13	29
At X	92	46	33	54	42

Rootstock: 3309C

Product	Yield (%) 2003
Foliacin 500ml/hl x 12h	58
Water X 12h + Foliary treatments Foliacin 750 ml/ha	68
Alga Special dipping (4l/hl) before planting	59
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	70
Water X 12h + Foliary treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	55
Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliary treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	65
Germon L 1,5% x 12h	65
Control	49

Product	Yield (%) 2004
Foliacin 500ml/hl x 12h	76
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	80
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliary treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	62
Control	57

Product	Yield (%) 2004
Foliacin 500ml/hl x 12h	76
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	80
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliary treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	62
Control	57

Product	Yield (%) 2005
Foliacin 500ml/hl x 12h	64
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliary treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	78
(Alga Special 4 l/hl) x 12h + Foliary treatments (LG 139 3l/ha)	82
Control	62

Average of experimental years

Product	Yield (%)
Foliacin 500ml/hl x 12h	64
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	71
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliary treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	66
Control	54

Average of experimental years

	Germon	Foliacin	Alga Special + LG 84	Alga Special + LG 84 + Foliar	Control
Rooted vine weight (g)	48.8	47.4	44.2	53.4	53.4
Base diameter (mm)	8.8	8.8	8.0	8.9	8.7
Fleshy roots No.	2.4	2.8	1.9	1.8	1.8
Filamentary roots No.	6.5	6.0	5.0	6.0	6.4
Roots weight (g)	15.3	17.9	19.5	17.7	19.6
Opposite bud	0	0	0	0	0
At L	0	0	0	4	8
Opposite	13	0	8	17	0
At T	0	17	33	0	0
At X	88	83	58	79	92

Rootstock: 41 B

Product	Yield (%) 2003
Foliacin 500ml/hl x 12h	62
Alga Special dipping (4l/hl) before planting	48
Water X 12h + Foliar treatments. (Alga Special 3l/ha)	65
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	49
Water X 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	65
Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	60
Germon L 1,5% x 12h	71
Control	35

Product	Yield (%) 2004
Foliacin 500ml/hl x 12h + Foliar treatments Foliacin 750ml/ha	74
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	74
Germon L 1,5% x 12h	80
Control	62

Product	Yield (%) 2005
Foliacin 500ml/hl x 12h	70
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	76
Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	74
Germon L 1,5% x 12h	72
Control	66

Average of experimental years

Product	Yield (%)
Foliacin 500ml/hl x 12h	60
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	65
Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliary treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	63
Germon L 1,5% x 12h	73
Control	55

Average of experimental years

	Germon	Foliacin	Alga Special + LG 84	Alga Special + LG 84 + Foliar	Control
Rooted vine weight (g)	69.0	53.1	53.1	51.9	61.0
Base diameter (mm)	9.1	8.3	8.7	8.9	9.0
Fleshy roots No.	4.0	3.0	2.7	3.6	2.9
Filamentary roots No.	3.5	3.3	3.5	2.2	3.3
Roots weight (g)	27.4	18.0	21.8	15.7	22.1
Opposite bud	0	13	0	0	0
At L	8	8	13	17	0
Opposite	25	17	25	4	63
At T	33	8	29	42	8
At X	33	54	33	38	29

Rootstock: 775P

Product	Yield (%) 2002
Foliacin 500ml/hl x 12h	87.2
Foliacin 500ml/hl x 12h + Foliar treatments	93.5
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments	89.8
Control	85.4

Product	Yield (%) 2003
Foliacin 500ml/hl x 12h	68
Water X 12h + Foliary treatments Foliacin 750 ml/ha	69
Foliacin 500ml/hl x 12h + Foliar treatments (Foliacin 750 ml /ha)	68
Alga Special dipping (4l/hl) before planting	66
Water X 12h + Foliar treatments (Alga Special 3l/ha)	64
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	56
Water X 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	79
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	56
Germon L 1% x 12h	75
Control	48

Product	Yield (%) 2004
Foliacin 500ml/hl x 12h	86
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	76
Control	75

Product	Yield (%) 2005
Foliacin 500ml/hl x 12h	86
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	88
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	88
(LG201 4 l/hl) x 12h	90
(LG201 4 l/hl) x 12h + Foliar treatments (LG 139 3l/ha)	76
Control	72

Average of experimental years

Product	Yield (%)
Foliacin 500ml/hl x 12h	75
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	69
Germon L 1% x 12h	65
Control	60

Average of experimental years

	Germon	Foliacin	Alga Special + LG 84	Alga Special + LG 84 + Foliar	Control
Rooted vine weight (g)	76.1	60.8	68.4	61.0	66.5
Base diameter (mm)	10.5	9.1	9.8	9.4	9.6
Fleshy roots No.	4.6	3.2	4.1	2.8	3.5
Filamentary roots No.	5.5	5.2	4.0	3.7	4.4
Roots weight (g)	25.1	17.0	20.9	16.9	23.5
Opposite bud	0	8	0	0	0
At L	0	0	0	8	0
Opposite	0	8	8	4	29
At T	8	4	13	8	0
At X	92	79	79	79	71

Rootstock: 779P

Product	Yield (%) 2002
Foliacin 500ml/hl x 12h + Foliar treatments	87.2
Foliacin 500ml/hl x 12h + Foliar treatments	85.4
Control	79.2

Product	Yield (%) 2003
Foliacin 500ml/hl x 12h	59
Water X 12h + Foliar treatments Foliacin 750 ml/ha	55
Foliacin 500ml/hl x 12h + Foliar treatments (Foliacin 750 ml /ha)	57
Alga Special dipping (4l/hl) before planting	50
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	62
Water X 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	49
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	60
Germon L 1% x 12h	55
Control	44

Average of experimental years

Product	Yield (%)
Foliacin 500ml/hl x 12h	50
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	51
Control	42

Average of experimental years

	Germon	Foliacin	Alga Special + LG 84	Alga Special + LG 84 + Foliar	Control
Rooted vine weight (g)	70.1	68.2	71.4	67.0	73.1
Base diameter (mm)	10.2	9.3	9.7	9.2	9.4
Fleshy roots No.	2.7	4.3	3.6	3.7	2.8
Filamentary roots No.	9.1	3.9	5.1	4.0	5.5
Roots weight (g)	25.0	22.0	19.0	21.3	26.4
Opposite bud	0	0	0	8	0
At L	4	0	8	0	0
Opposite	0	46	13	13	8
At T	0	4	8	8	17
At X	96	50	71	71	75

Rootstock: K5BB

Product	Yield (%) 2002
Foliacin 500ml/hl x 12h + Foliar treatments	72.9
Foliacin 500ml/hl x 12h + Foliar treatments	72.9
Control	66.7

Product	Yield (%) 2003
Foliacin 500ml/hl x 12h	80
Water X 12h + Foliar treatments Foliacin 750 ml/ha	69
Foliacin 500ml/hl x 12h + Foliar treatments (Foliacin 750 ml /ha)	62
Alga Special dipping (4l/hl) before planting	70
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	62
Water X 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	75
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	81
Germon L 1% x 12h	55
Control	52

Product	Yield (%) 2004
Foliacin 500ml/hl x 12h	76
Foliacin 500ml/hl x 12h + Foliar treatments (Foliacin 750 ml /ha)	84
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	76
Germon L 1% x 12h	74
Control	73

Product	Yield (%) 2005
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	80
(LG201 4lt/hl x 12h)	66
Control	62

Average of experimental years

Product	Yield (%)
Foliacin 500ml/hl x 12h	69
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	70
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	67
Germon L 1% x 12h	64
Control	50

Average of experimental years

	Germon	Foliacin	Alga Special + LG 84	Alga Special + LG 84 + Foliar	Control
Rooted vine weight (g)	59.8	56.6	60.9	56.6	57.7
Base diameter (mm)	9.5	8.6	8.4	9.1	8.4
Fleshy roots No.	3.8	3.2	3.3	3.6	2.4
Filamentary roots No.	6.0	7.0	5.7	5.7	5.4
Roots weight (g)	19.6	16.8	18.5	25.2	20.2
Opposite bud	0	0	0	0	0
At L	0	0	8	0	0
Opposite	21	17	4	13	25
At T	4	0	0	0	17
At X	75	83	88	88	58

Rootstock: SO 4

Product	Yield (%) 2003
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	35
Water X 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	45
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	40
Germon L 1% x 12h	50
Control	25

Product	Yield (%) 2004
Foliacin 500ml/hl x 12h	68
Foliacin 500ml/hl x 12h + Foliar treatments (Foliacin 750 ml /ha)	72
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	56
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	79
Germon L 1% x 12h	65
Control	43

Average of experimental years

Product	Yield (%)
Foliacin 500ml/hl x 12h	74
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	64
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	75
Germon L 1% x 12h	60
Control	57

Average of experimental years

	Germon	Foliacin	Alga Special + LG 84	Alga Special + LG 84 + Foliar	Control
Rooted vine weight (g)	71.0	71.4	61.7	50.3	69.5
Base diameter (mm)	8.3	8.9	8.3	7.8	8.9
Fleshy roots No.	2.3	4.3	1.6	1.0	1.6
Filamentary roots No.	7.4	6.7	8.9	9.3	9.0
Roots weight (g)	22.8	27.5	17.0	16.4	24.0
Opposite bud	8	0	0	0	0
At L	0	0	0	4	0
Opposite	0	4	8	4	8
At T	4	0	0	8	0
At X	88	96	92	83	92

Experimental testing summary

Average of years of experimental testing with all rootstocks

Product	Yield (%)
Foliacin 500ml/hl x 12h	65
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h	62
(Alga Special 4 l/hl + LG84 20 ml/hl) x 12h + Foliar treatments (Alga Special 3l/ha + LG 84 150 ml/ha)	61
Germon L 1.5% x 12h	56
Control	55

Average of experimental years

	Germon	Foliacin	Alga Special + LG 84	Alga Special + LG 84 + Foliar	Control
Rooted vine weight (g)	70.9	59.1	61.8	64.4	66.2
Base diameter (mm)	9.4	8.8	8.9	9.1	9.2
Fleshy roots No.	3.5	3.4	2.8	3.1	2.5
Filamentary roots No.	5.9	4.5	4.9	5.0	5.7
Roots weight (g)	25.4	20.2	20.8	22.1	25.1
Opposite bud	1	3	3	2	1
At L	2	5	3	7	2
Opposite	10	17	19	15	19
At T	10	13	13	9	12
At X	77	63	62	67	66