

## Artificial feeding and nutritional status of semi-domesticated reindeer during winter

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*Summary:* Three feeding experiments were done during 1980–82 with semi-domesticated reindeer in captivity out of doors in Northern Finland. Calves and adult hinds were fed with lichens (*Cladina* spp.), hay, dry molasses pulp and other feeds containing different amounts of proteins and other nutrients. The body weight, blood and faecal N were lowest in lichen fed groups. Slightly higher values were measured in groups fed with dry or ground hay, dry molasses pulp, oat bran and commercial feeds.

**Key words:** reindeer, artificial feeding, body weight, blood values, condition

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**Nieminen, M., Pokka, A-S. & Heiskari, U.** 1987. Poron kunto talvella keimoruokinnalla.

*Yhteenveto:* Vuosina 1980–82 tehtiin poroilla tarhaoloissa Pohjois-Suomessa kolme ruokintakoetta. Vasoja ja vaatimia ruokittiin jäkälällä (*Cladina* spp.), heinällä, melassileikkeellä ja muilla rehuilla, joissa oli eri määriä valkuaista ja muita ravintoaineita. Porojen elopaino, veriartvot ja ulosteen typpipitoisuus olivat alhaisimmat jäkälällä ruokitulla poroilla. Hieman karkeampia arvoja mitattiin muissa ryhmissä, joita ruokittiin, kuivalla tai jauhetulla heinällä, melassileikkeellä, kaurajauholla ja kaupallisilla rehuilla.

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**Nieminen, M., Pokka, A-S., & Heiskari, U.** 1987. Fôring og næringsstatus hos finsk rein gjennom vinteren.

*Sammendrag:* Tre forsøk med fôring av rein ble utført i årene 1980-82. Dyrene ble holdt utendørs i innhegning i Nord-Finland. Kalver og voksne simler ble gitt lav (*Cladina* spp.), høy, tørket melasse-pulp og andre fôrsorter med forskjellig innhold av protein og andre næringsstoffer. Kroppsvekt, blodverdier og total-N-innhold i fæces var lavest i de lav-fôrede grupper. Litt høyere verdier ble målt i andre grupper som ble gitt vanlig eller malt høy, tørket melasse-pulp, havrekli og kommersielle fôrsorter.

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### Introduction

Artificial feeding of semi-domesticated reindeer (*Rangifer t. tarandus* L.) has long been practiced in the southern parts of the reindeer rearing area in Finland. Usually lichen, dry hay and three leaves are supplied in captivity out of do-

ors and/or natural winter pastures. The objective of the present study was to investigate the utilization of different feeds and changes in body weight and condition of reindeer during the feeding periods.

Table 1. Dry matter (%), ash, crude protein, crude fat, crude fibre and sugar content (% of DM) in different plants and feeds used for feeding reindeer in Kaamanen during winter 1982.

Diet	Sampling date	Dry matter (%)	% of dry matter				
			Ash	Crude	Crude protein	Crude fat	Sugar fibre
Concentrates	9.3.82	84.6	6.8	15.1	4.7	6.0	6.3
	10.5.82	85.7	6.5	14.9	4.7	6.4	6.3
	Mean:	85.2	6.6	15.0	4.7	6.2	6.3
Dried water horsetail	9.3.82	91.2	6.8	12.9	1.3	26.9	8.1
	24.3.82	72.5	15.3	12.7	1.1	31.7	2.7
	10.5.82	82.8	15.9	13.3	0.9	33.1	1.0
	Mean:	82.2	12.7	13.0	1.1	30.6	3.9
Lichens	9.3.82	62.8	12.4	5.5	3.2	27.9	1.7
	24.3.82	36.0	1.4	4.1	3.4	35.9	2.0
	10.5.82	47.8	3.5	4.1	3.4	33.1	2.5
	Mean:	48.9	5.8	4.5	3.3	32.3	2.0
Ground hay	9.3.82	76.1	6.2	8.9	1.8	39.0	5.1
	24.3.82	84.6	7.3	10.6	1.6	36.3	4.8
	10.5.82	85.2	6.5	9.9	1.7	38.1	2.7
	Mean:	82.0	6.6	9.8	1.7	37.8	4.2
Oats	24.3.82	83.6	3.0	12.7	5.0	12.3	2.4
	10.5.82	84.1	2.5	11.5	5.7	12.6	2.6
	Mean:	83.9	2.8	12.1	5.4	12.5	2.5
Dry molasses pulp	24.3.82	86.2	8.8	13.3	0.3	14.0	29.8

## Material and methods

Three feeding experiments were carried out during the winters 1980–81 and 1982 in Kaamanen field station and Palojärvi reindeer herding co-operative in Northern Finland. Altogether 62 semidomesticated reindeer (31 hinds and 31 female and male calves) were divided into 9 groups. Dry molasses pulp (Melassileike 20) used in the feeding was made by Lännen Tehtaat Oy. Feed concentrates used during 1980–81 in Palojärvi was Poroelo (Vaasan Mylly Oy) and during 1982 in Kaamanen Ison Mullin Herkku (Raision Tehtaat). The chemical composition of the different feeds used 1982 in Kaamanen were determined by standard methods and feed values calculated by Salo et al. (1982) (Tables 1 and 2). *In vitro* dry matter digestibility (DMD) was determined by the method of Tilley and Terry (1963). The total N content in faeces was determined by the Kjeldahl method. The blood sam-

ples were taken from the jugular vein. Chemical composition of blood was measured by the methods described previously (Nieminen 1980).

## Results

The feeding and consumption of feeds in different groups are given in Tables 3–5. During winters 1980–81 and 1982 reindeer in the lichen feeding groups in Kaamanen ate 2 to 2.4 kg (dry matter) lichen/reindeer/day and got 1.4 to 1.8 feed unites/reindeer/day. The content of digestible crude protein (DCP) in lichens is very low and it was calculated that reindeer got only 17–22 g of digestible crude protein/reindeer/day. The consumption of dry hay in the hay feeding group was on average 1.2 kg (dry matter)/reindeer/day, which means 0.8 feed units and 86 g of digestible crude protein/reindeer/day. Reindeer fed with hay and lichen ate 0.83 kg lichen and 0.85 kg hay (dry matter)/reindeer/day and got

Table 2. Mineral (g/kg DM) and trace element (mg/kg DM) content in different plants and feeds used for feeding reindeer in Kaamanen during winter 1982.

Diet	Sampling date	G/kg dry matter					Mg/kg dry matter			
		Ca	Mg	Na	K	P	Cu	Zn	Mn	Fe
Concentrates	9.3.82	5.3	0.9	3.5	6.3	6.8	16.7	129.5	51.9	210
Dried water	9.3.82	4.6	2.0	2.4	25.0	2.5	5.0	27.5	669.0	610
	24.3.82	5.4	2.7	8.6	35.5	2.5	6.3	36.5	731.7	890
Horsetail	10.5.82	5.6	2.6	7.1	31.3	2.9	7.3	43.1	858.9	810
	Mean:	5.2	2.4	6.0	30.6	2.7	6.2	35.7	753.2	770
Lichens	9.3.82	0.9	0.2	1.2	0.6	0.4	4.6	28.3	63.2	920
	24.3.82	0.7	0.2	0.1	0.7	0.3	1.6	16.2	52.2	570
	10.5.82	0.4	0.1	2.8	0.5	0.3	8.0	28.5	26.0	830
	Mean:	0.7	0.2	1.4	0.6	0.3	4.8	24.3	47.2	770
Ground hay	9.3.82	1.0	0.9	5.7	12.8	2.0	5.1	19.2	29.9	190
	24.3.82	1.3	1.3	4.4	16.2	2.2	6.6	21.2	47.2	400
	10.5.82	1.5	1.2	5.3	14.2	2.4	6.9	26.7	39.8	210
	Mean:	1.3	1.1	5.1	14.4	2.2	6.2	22.4	38.9	270
Oats	24.3.82	0.6	1.0	0.04	3.2	3.0	3.3	28.2	66.9	390
	10.5.82	0.4	0.6	1.5	3.3	2.4	5.3	24.5	67.8	100
	Mean:	0.5	0.8	0.8	3.3	2.7	4.3	26.4	67.4	250
Dry molasses pulp	24.3.82	1.6	3.8	4.9	21.4	0.6	7.7	27.4	38.2	70

Table 3. Daily intake of feeds in different feeding groups in Kaamanen during winter 1980-81. Dry matter, digestible crude protein and feed unit values were calculated by the methods of Salo et al. (1982) using data from Tables 1 and 6.

Feeding group	n	Diet	Kg dry matter/ reindeer	Feed unit/ reindeer	Digestible crude protein (g)/ reindeer
I	8	Lichens	2.4	1.8	22
II	8	Hay	1.2	0.8	86
III	6	Lichens	0.4	0.3	4
		Hay	0.16	0.1	11
		Dry molasses pulp	0.26	0.2	17
		Oats	0.34	0.3	26
		Total	1.2	0.9	58
IV	6	Lichens	0.83	0.6	7
		Hay	0.82	0.5	54
		Total	1.7	1.1	61

Table 4. Daily intake of feed in the reindeer feeding group (n = 11) in Palojärvi reindeer herding cooperative during winter 1980–81. Dry matter, crude protein and feed unit values were calculated by the methods of Salo *et al.* (1982) and from results in Tables 1 and 6.

Diet	Kg dry matter/ reindeer	Feed unit/ reindeer	Digestible crude protein (g)/reindeer
Hay	1.16	0.70	84
Dry molasses pulp	0.05	0.04	4
Oat bran	0.13	0.05	3
Concentrates	0.23	0.19	18
Total	1.6	0.98	109

1.1 feed unit and 61 g of digestible crude protein/reindeer/day. On a mixed diet (hay, dry molasses pulp, oat bran and commercial feed) consumption was smaller, 1.2 to 1.4 kg (dry matter)/reindeer/day. The lowest consumptions were in the ground hay and commercial feed (0.9 kg/reindeer/day) and ground hay and dry molasses pulp (1.0 kg/reindeer/day) and ground hay and dry molasses pulp (1.0 kg/reindeer/day). The reindeer in these groups got on average 0.8 feed unit and 91 and 74 g of digestible crude protein/day.

*In vitro* digestibility of lichens was low (32.1% of dry matter and 30% of organic matter). Higher values were measured for ground hay (63.9 and 62.9%) and dried *Equisetum fluviatile* (71.6 and 71.8%, respectively) (Table 6).

The total N content in faeces was varied between 18.3 to 19.9 mg/g dry matter in the lichen fed group in Kaamanen during winter 1982 (Table 7). The total N content was higher in groups fed with a high crude protein diet. The highest value was measured in reindeer fed ground hay and dry molasses pulp (30.9 mg/g) dry matter.

Most reindeer managed to maintain body weight during the feeding trials (tables 8–9). Calves in Palojärvi fed hay, dry molasses pulp, oat bran and commercial feed also lost weight. These calves ate on average 1.6 kg dry matter/reindeer/day and got 0.98 feed units and 109 g of digestible crude protein/reindeer/day.

The blood values of minerals and metabolites decreased in the lichen fed group during the feeding period, and low serum cholesterol (1.6

Table 5. Daily intake of feed in different feeding groups in Kaamanen during winter 1982.

Feeding group	n	Diet	Kg dry matter/ reindeer	Feed unit/ reindeer	Digestible crude protein (g)/ reindeer
I	5	Lichens	1.96	1.4	17
II	5	Ground hay	0.33	0.2	22
		Concentrates	0.60	0.6	69
Total			0.9	0.8	91
III	5	Ground hay	0.33	0.2	22
		Dry molasses pulp	0.66	0.6	52
Total			1.0	0.8	74
IV	5	Ground hay	0.16	0.1	11
		Dried water horsetail	0.49	0.2	33
		Dry molasses pulp	0.43	0.4	35
		Oats	0.34	0.3	26
Total			1.4	1.0	105

Table 6. The nutritive values and *in vitro* digestibilities of different plants and feeds used for feeding reindeer in Kaamanen during winter 1982. The nutritive values were calculated according the methods of Salo *et al.* (1982).

Diet	Sampling date	Kg/feed unit	Kg DM/feed unit	Digestible crude protein (% of DM)	Digestible crude protein (g/feed unit)	<i>In vitro</i> digestibility (%)	
						of DM	of organic matter
Concentrates	9.3.82	1.20	1.02	10.88	110.75		
	10.5.82	1.31	1.12	10.71	120.05		
	mean	1.26	1.07	10.80	115.40		
Dried water	9.3.82	2.35	2.15	6.97	149.67	76.85	78.51
	24.3.82	2.96	2.45	6.87	168.58	68.74	67.99
	10.5.82	3.08	2.55	7.17	182.92	69.28	68.93
mean	2.80	2.38	7.00	167.06	71.62	71.81	
Lichens	9.3.82	2.05	1.29	1.15	14.78	32.01	27.97
	24.3.82	3.60	1.29	0.86	11.10	32.02	31.86
	10.5.82	2.65	1.27	0.86	10.86	32.33	32.35
	mean	2.77	1.28	0.96	12.25	32.12	30.73
Ground hay	9.3.82	2.17	1.65	5.97	98.63	63.32	62.00
	24.3.82	1.91	1.62	7.11	115.15	65.19	64.41
	10.5.82	1.93	1.64	6.66	109.39	63.31	62.24
	mean	2.00	1.64	6.58	107.72	63.94	62.88
Oats	24.3.82	1.24	1.04	8.48	88.17		
	10.5.82	1.27	1.06	7.71	82.08		
	mean	1.26	1.05	8.10	85.13		
Dry molasses pulp	24.3.82	1.37	1.18	7.30	86.37		

mmol/l), calcium (1.9 mmol/l, inorganic phosphorus (1.2 mmol/l) and magnesium (1.4 mmol/l) were measured in spring. In the other feeding groups many blood values were slightly higher (Tables 10–12).

### Discussion

Reindeer grow slowly, if at all in winter. The serum alkaline phosphatase activity (SAP) of

calves is usually at the same level as in adult hinds in February (Nieminen 1980). Similar SAP values were measured in the present study. Calves, even when offered unlimited quantities of high quality food, voluntarily reduce their food intake in winter. Growth ceases and metabolic rates drop to a relatively low level. In Norway, lichen fed reindeer calves lose 24% of their body weight during winter, but calves fed

Table 7. The nitrogen content in faeces of reindeer (mg N in DM,  $\bar{x} \pm S. E.$ ) in different feeding groups in Kaamanen during winter 1982. Diets of the reindeer groups are given in Tables 1, 2, 5 and 6.

Feeding group	Sampling date:	Mg N in DM		
		7.3.1982	21.3.1982	30.3.1982
I		18.6 $\pm$ 1.3	19.9 $\pm$ 0.5	18.3 $\pm$ 0.1
II		19.9 $\pm$ 0.1	22.4 $\pm$ 0.5	18.9 $\pm$ 0.8
III		19.9 $\pm$ 0.3	30.9 $\pm$ 1.5	26.3 $\pm$ 1.1
IV		19.0 $\pm$ 0.1	25.5 $\pm$ 1.2	22.5 $\pm$ 0.9

Table 8. Changes in the body weight (kg,  $\bar{x} \pm S. E.$ ) of the reindeer in different feeding groups in Kaamanen during winter 1980–81.

Feeding group	n	Date:	Body weight (kg $\pm$ S.E.)		
			8.2.1981	7.3.1981	13.3.1981
I	Hinds	4	67.3 $\pm$ 2.5	65.5 $\pm$ 2.6	65.3 $\pm$ 2.8
	calves	4	32.5 $\pm$ 0.9	31.8 $\pm$ 1.4	31.0 $\pm$ 1.5
II	Hinds	4	69.3 $\pm$ 2.7	70.3 $\pm$ 4.0	68.5 $\pm$ 5.5
	calves	4	36.8 $\pm$ 4.0	38.8 $\pm$ 3.2	37.0 $\pm$ 2.8
III	Hinds	4	70.5 $\pm$ 4.3	69.5 $\pm$ 4.4	71.5 $\pm$ 3.7
	calves	2	37.3 $\pm$ 3.5	37.8 $\pm$ 3.9	37.8 $\pm$ 3.3
IV	Hinds	4	68.8 $\pm$ 2.6	70.0 $\pm$ 2.1	69.0 $\pm$ 3.5
	calves	2	36.3 $\pm$ 1.8	36.5 $\pm$ 2.0	37.7 $\pm$ 1.8

with pelleted reindeer feed gained about 0.07 kg/week (Bjarghov *et al.* 1976). The calves receiving supplementary rations during winter and spring gained weight at about 0.11 kg/week in a previous study (Nieminen *et al.* 1980). According to McEwan and Whitehead (1969) barren ground caribou calves in captivity gained body weight 1.2 kg/week.

In this study calves fed lichens only lost weight during the feeding period. Similar changes were noted for the reindeer grazing freely on natural winter pasture in Kaamanen during 1980–82. Calves in Palojärvi fed hay, dry molasses pulp, oat bran and commercial feed also lost weight. The crude content of lichens is very low. This protein, moreover, is poorly digestible, so the

Table 9. Changes in the body weight (kg,  $\bar{x} \pm S. E.$ ) of the reindeer in the feeding group in the Palojärvi reindeer herding co-operative during winter 1980–81.

Reindeer	n	Date:	Body weight (kg $\pm$ S.E.)			
			31.12.1980	12.2.1981	19.3.1981	4.5.1981
Calves (females)	4		43.9 $\pm$ 0.9	43.2 $\pm$ 0.8	42.7 $\pm$ 1.2	40.5 $\pm$ 1.2
Calves (males)	2		55.0 $\pm$ 5.0	53.5 $\pm$ 3.5	55.0 $\pm$ 2.0	54.5 $\pm$ 2.5
Hinds	1		53.0	53.0	52.0	51.0

Table 10. Changes in the serum composition of reindeer ( $\bar{x} \pm S. E.$ ) during the feeding experiment in Palojärvi reindeer herding co-operative during winter 1980–81. Diet of the reindeer is given in Table 4.

Blood parameters	n	12.2.1981		n	19.3.1981		n	4.5.1981	
Glucose (mmol/l)	9	5.1 $\pm$ 0.2		11	5.6 $\pm$ 0.1		11	6.3 $\pm$ 0.2	
Total protein (g/l)	9	93.7 $\pm$ 4.1		10	106.6 $\pm$ 10.3		10	104.2 $\pm$ 8.6	
Urea (mmol/l)	9	9.1 $\pm$ 0.8		11	8.3 $\pm$ 0.8		11	8.1 $\pm$ 0.8	
Cholesterol (mmol/l)	9	2.0 $\pm$ 0.1		9	1.9 $\pm$ 0.2		11	1.8 $\pm$ 0.2	
Na (mmol/l)	9	152.7 $\pm$ 1.1		11	131.1 $\pm$ 1.1		11	150.8 $\pm$ 1.0	
K (mmol/l)	9	5.5 $\pm$ 0.1		11	21.0 $\pm$ 0.8		11	4.9 $\pm$ 0.1	
Ca (mmol/l)	9	3.4 $\pm$ 0.1		9	3.4 $\pm$ 0.2		11	2.4 $\pm$ 0.0	
P (mmol/l)	8	3.1 $\pm$ 0.2		11	2.6 $\pm$ 0.1		11	2.3 $\pm$ 0.1	
Mg (mmol/l)	9	1.5 $\pm$ 0.1		3	2.1 $\pm$ 0.2		11	1.1 $\pm$ 0.1	
Fe (umol/l)	3	39.8 $\pm$ 6.7		6	40.8 $\pm$ 3.7		11	21.5 $\pm$ 1.5	
ASAT (u/l)	9	70.2 $\pm$ 5.5		11	79.5 $\pm$ 3.6		11	66.8 $\pm$ 4.1	
ALAT (u/l)	9	54.6 $\pm$ 5.3		11	50.2 $\pm$ 4.0		11	40.9 $\pm$ 2.1	
SAP (u/l)	9	146.1 $\pm$ 14.6		11	142.3 $\pm$ 12.7		11	160.0 $\pm$ 22.3	

Table 11. Changes in serum composition ( $\bar{x} \pm S. E.$ ) of the reindeer in the different feeding groups in Kaamanen during winter 1982. Diets of the reindeer groups are given in Tables 1, 2, 5 and 6.

Feeding group	Sampling date	n	Glucose (mmol/l)	Total proteins (g/l)	Urea (mmol/l)	Cholesterol (mmol/l)	ASAT (U/l)	ALAT (U/l)	SAP (U/l)
I	7.3.82	5	4.1±0.3	72.1±4.3	7.8±0.6	1.9±0.3	87.5±10.1	45.4±4.4	87.8±9.8
II	7.3.82	5	4.3±0.2	74.3±2.0	6.6±0.3	1.7±0.1	98.3±9.8	40.6±3.6	113.4±7.4
III	7.3.82	5	4.0±0.4	70.1±4.8	6.8±2.1	2.0±0.3	88.1±6.7	47.1±2.8	98.6±10.2
IV	7.3.82	5	4.1±0.2	68.9±1.6	7.2±1.1	2.1±0.4	94.4±10.0	50.4±1.9	109.8±6.8
I	30.3.82	5	4.4±0.1	70.4±3.6	7.6±0.8	1.7±0.1	96.7±8.4	56.4±1.7	98.6±7.8
II	30.3.82	5	4.0±0.3	80.1±1.8	8.1±0.3	1.9±0.3	90.4±6.3	38.5±2.1	104.1±10.2
III	30.3.82	5	4.5±0.2	78.3±3.2	8.0±2.0	2.1±0.1	96.1±8.8	51.1±2.4	101.4±9.3
IV	30.3.82	5	4.4±0.6	81.2±4.6	7.8±1.8	2.1±0.3	101.2±11.3	44.6±1.8	107.6±6.4
I	27.4.82	5	4.0±0.4	70.0±2.8	8.0±1.2	1.6±0.4	111.6±10.6	50.1±1.9	112.8±10.1
II	27.4.82	5	4.2±0.5	78.6±3.0	7.6±0.6	1.9±0.2	93.4±8.4	44.3±1.6	104.6±9.8
III	27.4.82	5	5.0±0.3	78.2±1.8	7.8±2.1	2.3±0.4	81.3±6.4	50.7±2.1	113.1±8.6
IV	27.4.82	4	4.6±0.7	80.4±3.2	7.4±0.8	2.1±0.3	79.7±10.1	48.0±1.3	108.4±5.5

reindeer suffer a negative nitrogen balance during winter (Nordfeldt *et al.* 1961). Lichens are also deficient in minerals and many trace elements and the reindeer also suffer negative mineral balance during winter (Hyvärinen *et al.* 1977) In the present study blood values of lichen fed group decreased during the feeding period, and low values were measured during spring. In the other feeding groups blood values were higher and at a similar level to that measured previously for the reindeer in good nutritional status during the winter and spring.

Feeding trials with a number of ungulate species led Erasmus *et al.* (1978) to propose that line-

ar relationships might exist between diet and faecal concentrations of a number of key nutrients. Chemical analysis of faeces might provide a simple method for determining the quality of the available forage. In our study the total N content in faeces varied between 18.3 to 19.9 mg/g DM in the lichen fed group during winter. The values agree closely with earlier findings (Nieminen *et al.* 1980). The total N content in faeces was higher in groups fed with high crude protein diet. However, no significant correlation was found between the digestible crude protein content in feed and the total N content in faeces.

Table 12. Changes in serum mineral composition ( $\bar{x} \pm S. E.$ ) of the reindeer in different feeding groups in Kaamanen during winter 1982. Diets of the reindeer groups are given in Tables 1, 2, 5 and 6.

Feeding group	Sampling date	n	Na (mmol/l)	K (mmol/l)	Ca (mmol/l)	P (mmol/l)	Mg (mmol/l)	Fe (mmol/l)
I	7.3.82	5	150.1±2.1	6.0±0.8	2.9±0.8	1.7±0.2	1.6±0.2	39.0±4.2
II	7.3.82	5	152.3±1.6	6.1±0.6	2.8±0.4	2.0±0.1	1.5±0.1	41.4±1.6
III	7.3.82	5	151.1±2.0	5.6±0.8	3.2±0.3	2.1±0.7	1.6±0.3	37.6±2.3
IV	7.3.82	5	147.8±1.8	5.6±0.6	3.0±0.5	2.2±0.4	1.6±0.1	38.1±4.0
I	30.3.82	5	146.7±2.4	5.7±0.4	2.0±0.4	1.7±0.4	1.3±0.2	32.2±3.2
II	30.3.82	5	150.3±1.8	6.0±0.5	3.0±0.5	2.1±0.2	1.7±0.1	40.3±1.8
III	30.3.82	5	151.4±2.2	6.2±0.8	3.2±0.2	1.8±0.6	1.6±0.2	42.4±1.6
IV	30.3.82	5	150.3±1.6	6.0±0.4	3.3±0.4	1.8±0.3	1.8±0.3	39.2±2.0
I	27.4.82	5	152.1±1.9	5.4±0.5	1.9±0.2	1.2±0.2	1.4±0.1	32.1±1.8
II	27.4.82	5	148.6±2.2	5.6±0.6	2.7±0.6	2.2±0.2	1.7±0.2	41.0±1.6
III	27.4.82	5	150.1±2.0	5.8±1.1	3.4±0.1	2.5±0.4	1.8±0.4	43.2±3.0
IV	27.4.82	4	149.9±2.3	5.0±0.6	3.3±0.4	3.0±0.4	1.8±0.4	40.1±1.8

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