



**Western Cape
Government**

Agriculture

BETTER TOGETHER.

THE GROWTH RATE AND TOTAL DRY MATTER PRODUCTION OF ANNUAL RYEGRASS IN THE SOUTHERN CAPE

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51st GSSA Congress

Wilderness

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Introduction

- Predominant perennial pasture species as pasture base in the Southern Cape:



Kikuyu
(*Pennisetum clandestinum*)



Perennial ryegrass
(*Lolium perenne*)



Lucerne
(*Medicago sativa*)

- **Challenges with predominant perennial pasture bases in Southern :**
 1. Mutually low growth rates during winter
 2. Poor persistence over years

Establish annual Italian (*L. multiflorum* var. *italicum*) and Westerwolds ryegrass (*L. multiflorum* var. *westerwoldicum*) either as pure swards, mixtures or over-sown into existing perennial pastures

Introduction

- Large number of annual ryegrass varieties commercially available
- Continuous evaluation to assist producers in selecting the most suitable variety:
 - Dry matter production
 - Fodder flow requirements



The aim of this study was to determine the monthly growth rate and total annual DM production of commercially available *L. multiflorum* varieties.

Materials and methods

- 1 hybrid ryegrass (*L. multiflorum* x *L. perenne*)
- 5 Italian ryegrass (*L. multiflorum* var. *italicum*)
- 10 Westerwolds ryegrass (*L. multiflorum* var. *westerwoldicum*)



- Small plot cutting trial- established March 2015



- Permanent over-head sprinkler irrigation



- Harvested approximately every 28 days/canopy closure



- Fertilise 50 kg N ha⁻¹ after each harvest



Figure 1. Total DM production (t DM ha⁻¹) of annual ryegrass varieties

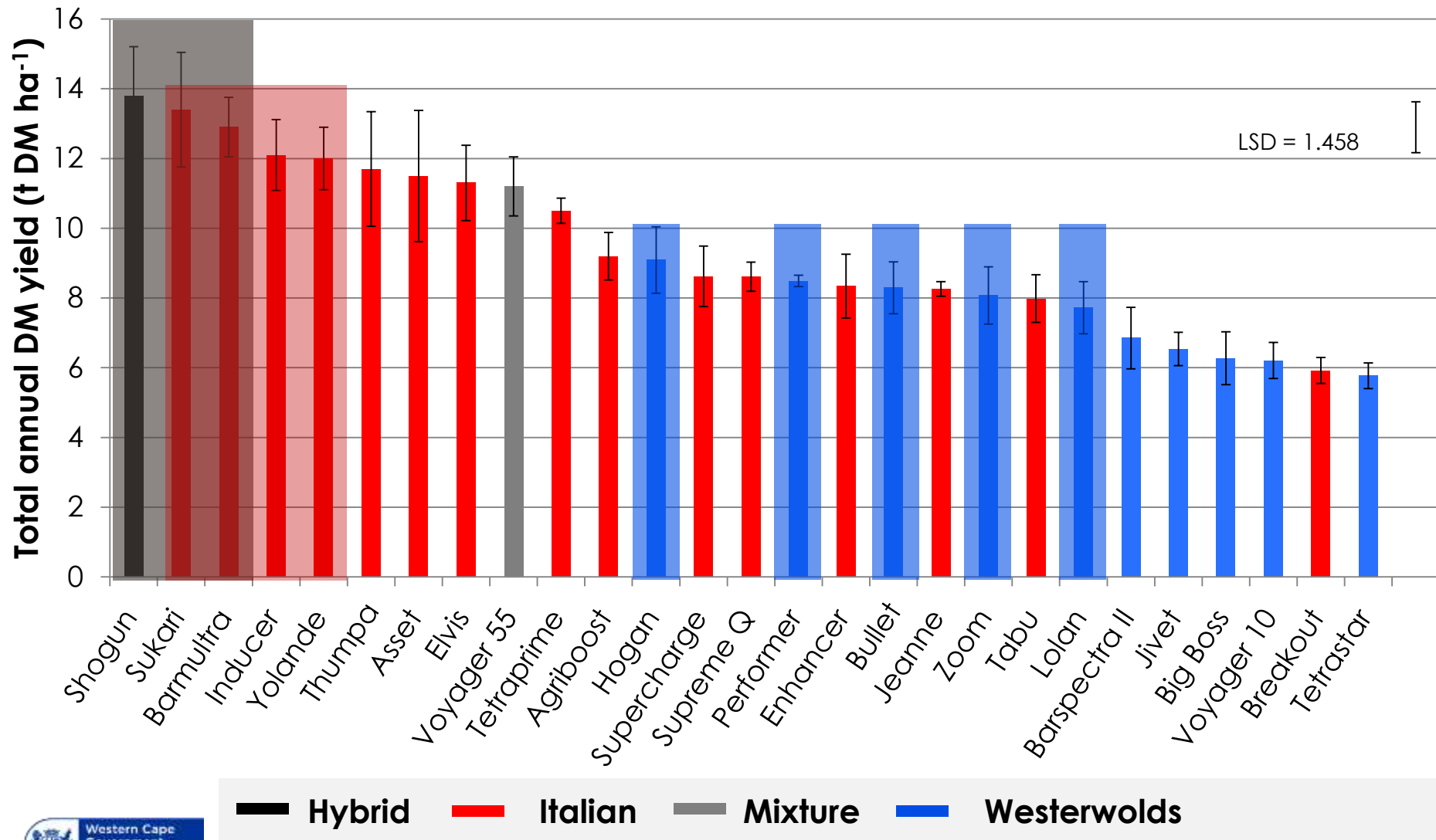


Figure 1. Total DM production (t DM ha⁻¹) of Italian ryegrass varieties

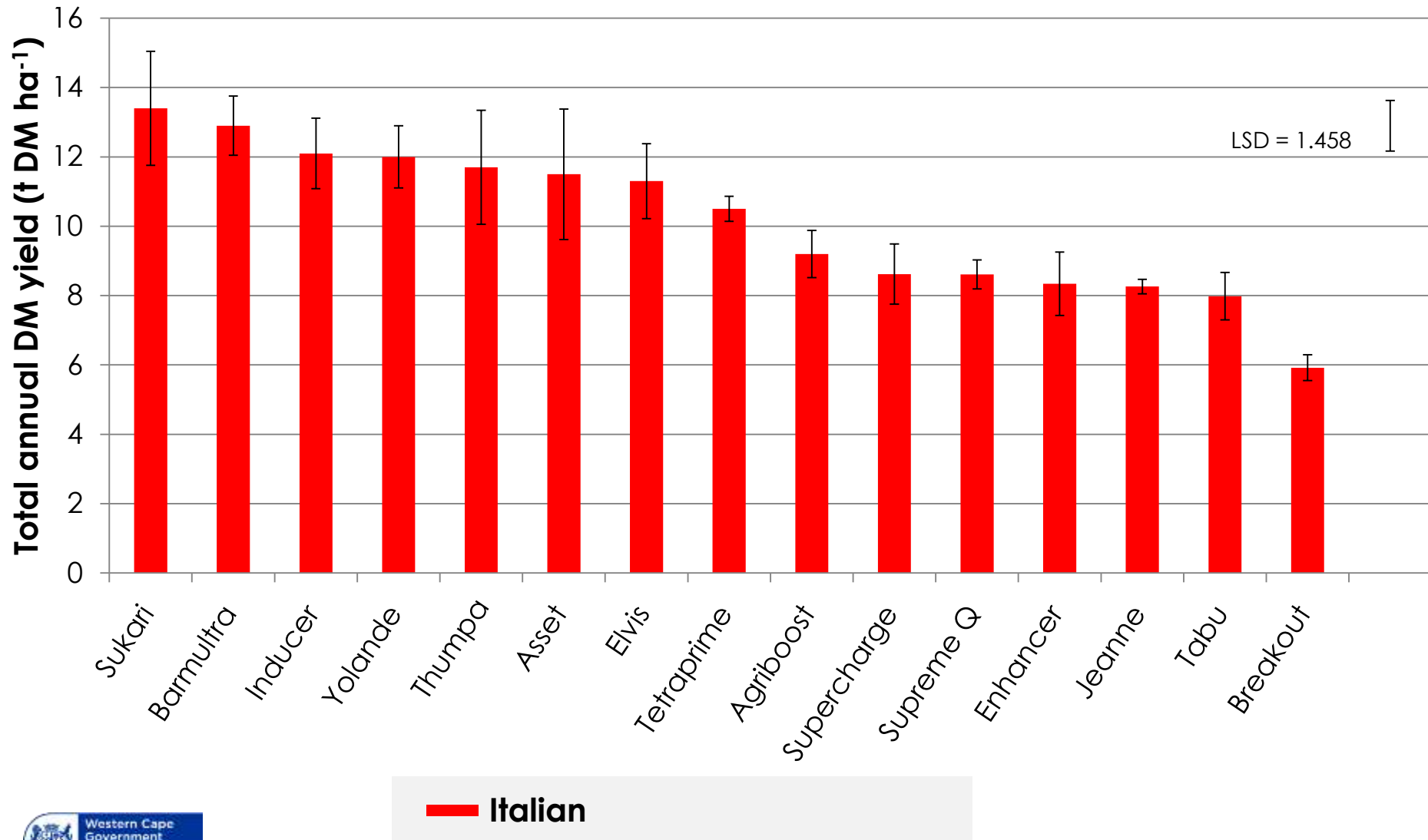


Figure 2. Monthly growth rate (kg DM ha⁻¹ day⁻¹) of selected Italian ryegrass varieties

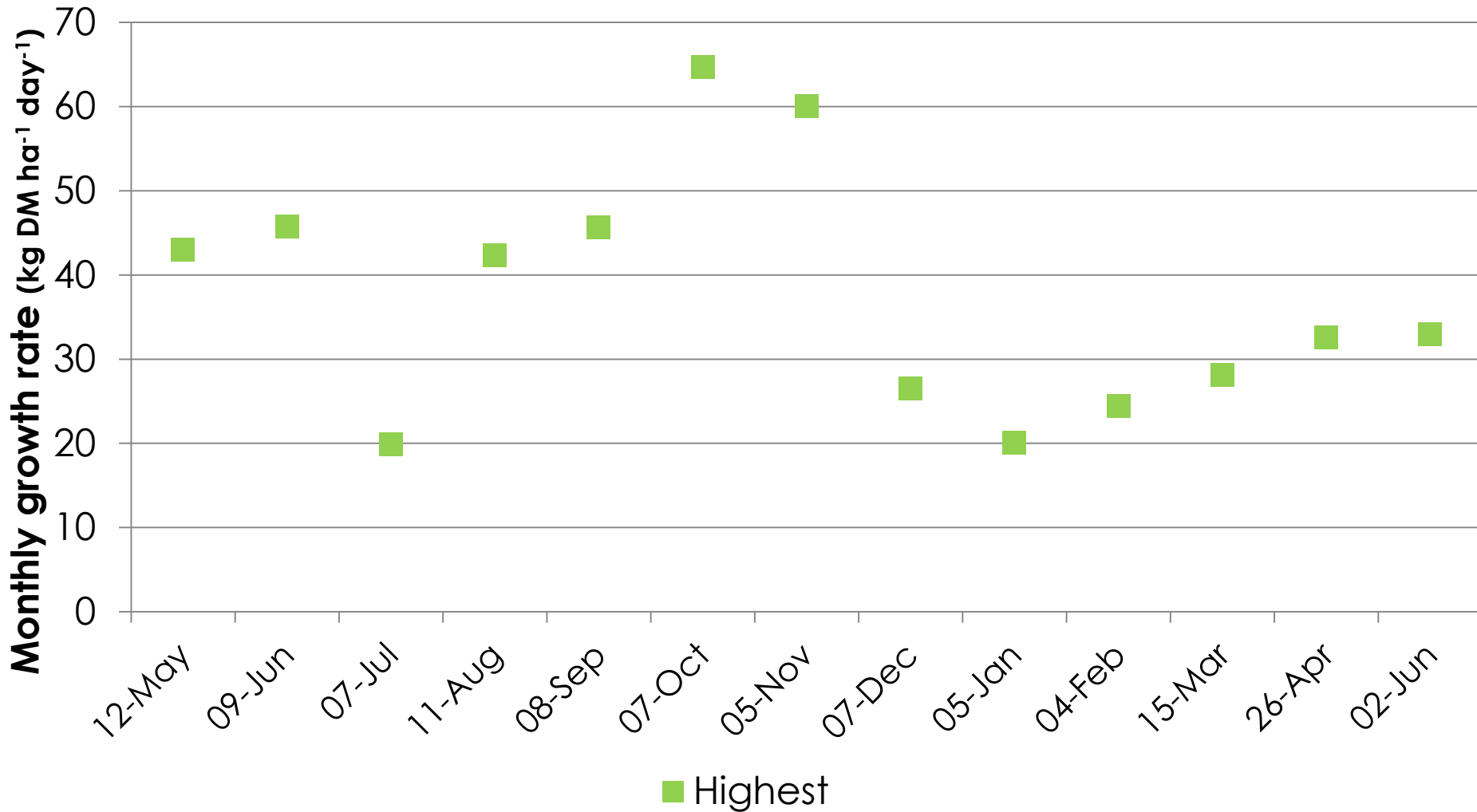


Figure 2. Monthly growth rate (kg DM ha⁻¹ day⁻¹) of selected Italian ryegrass varieties

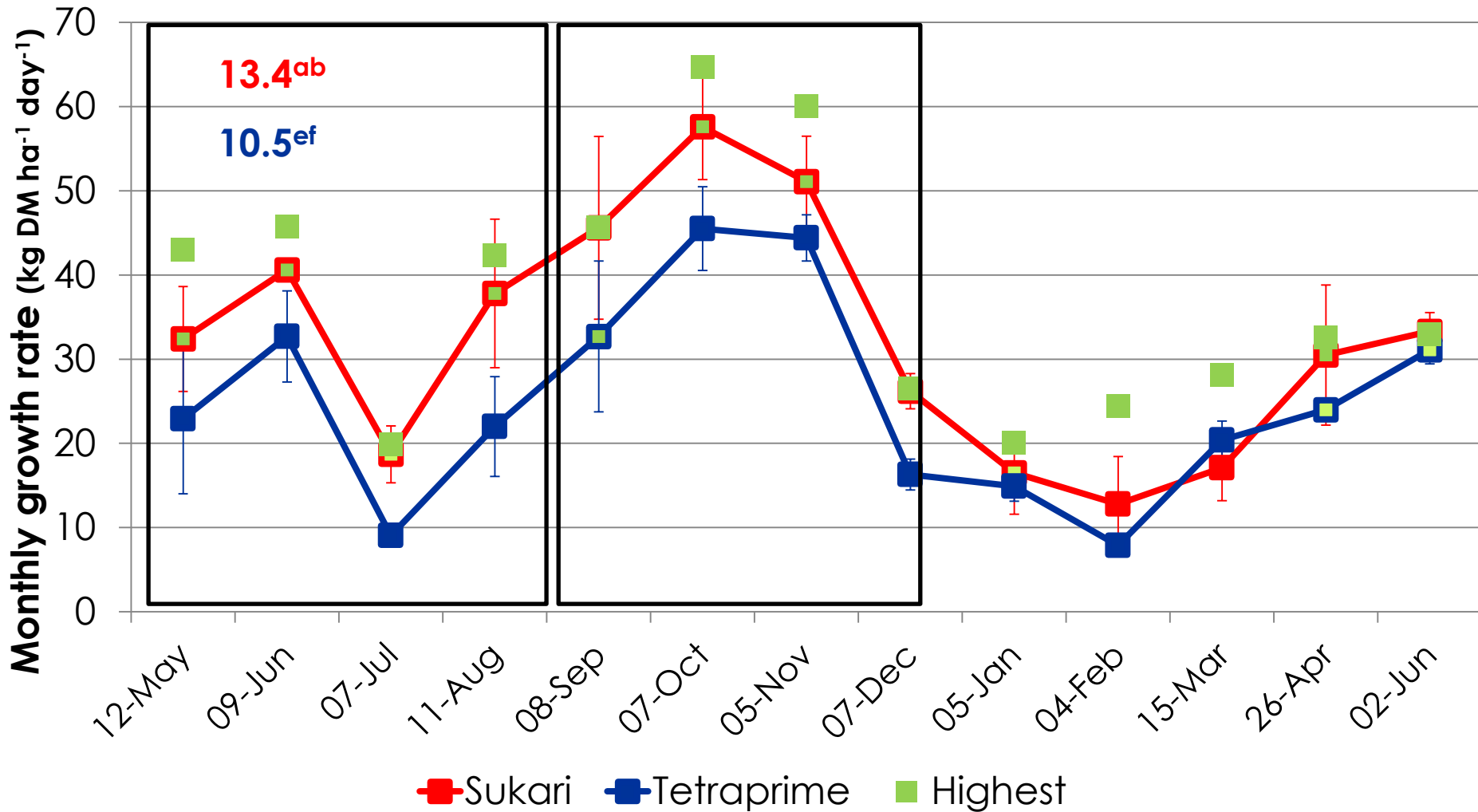
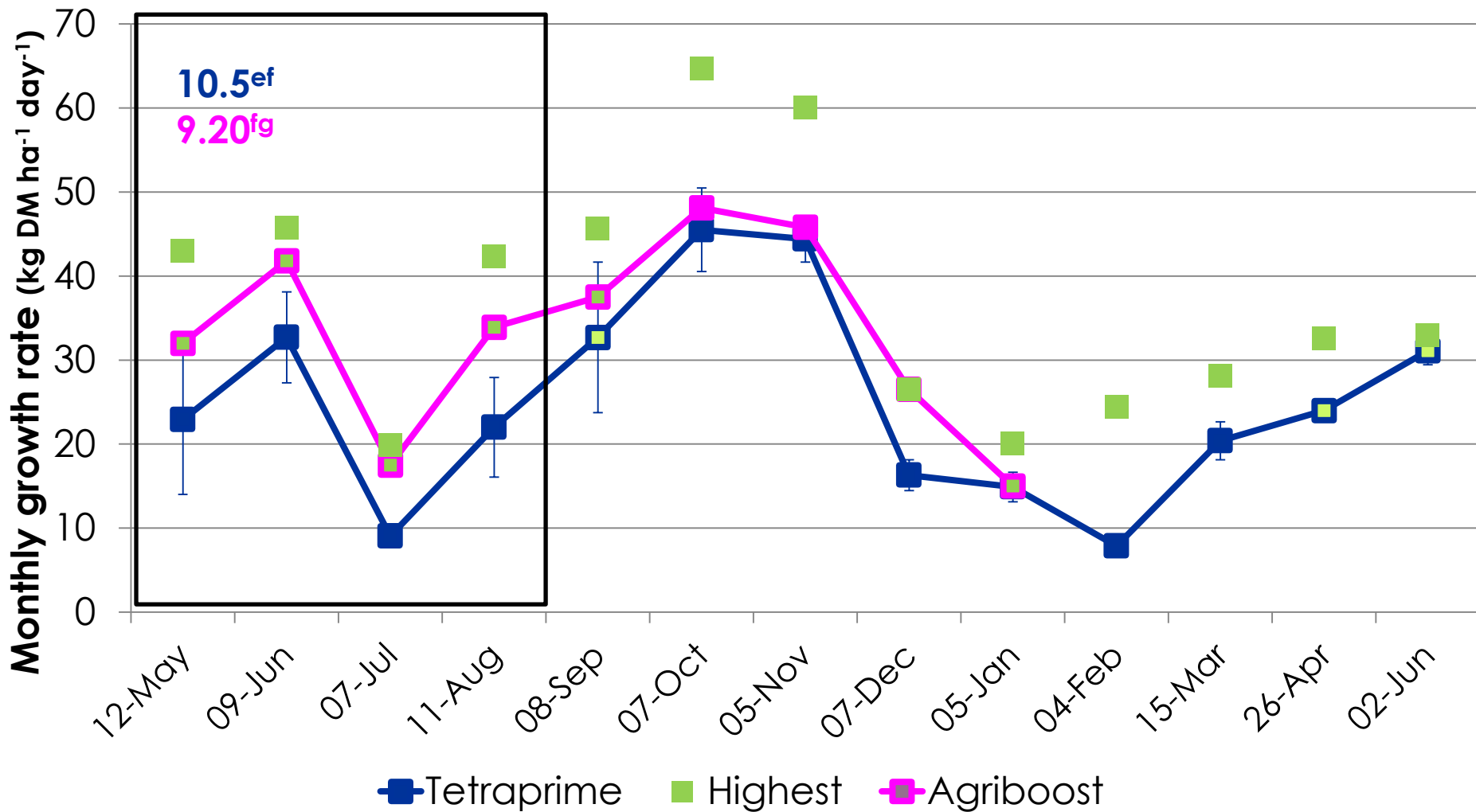


Figure 2. Monthly growth rate (kg DM ha⁻¹ day⁻¹) of selected Italian ryegrass varieties



Conclusions

- Long growth duration and good winter growth activity
- Sukari and Shogun = 13 t DM ha⁻¹
(Barmultra II)



Thank you

Contact Us



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Figure 2. Monthly growth rate (kg DM ha⁻¹ day⁻¹) of selected ryegrass varieties

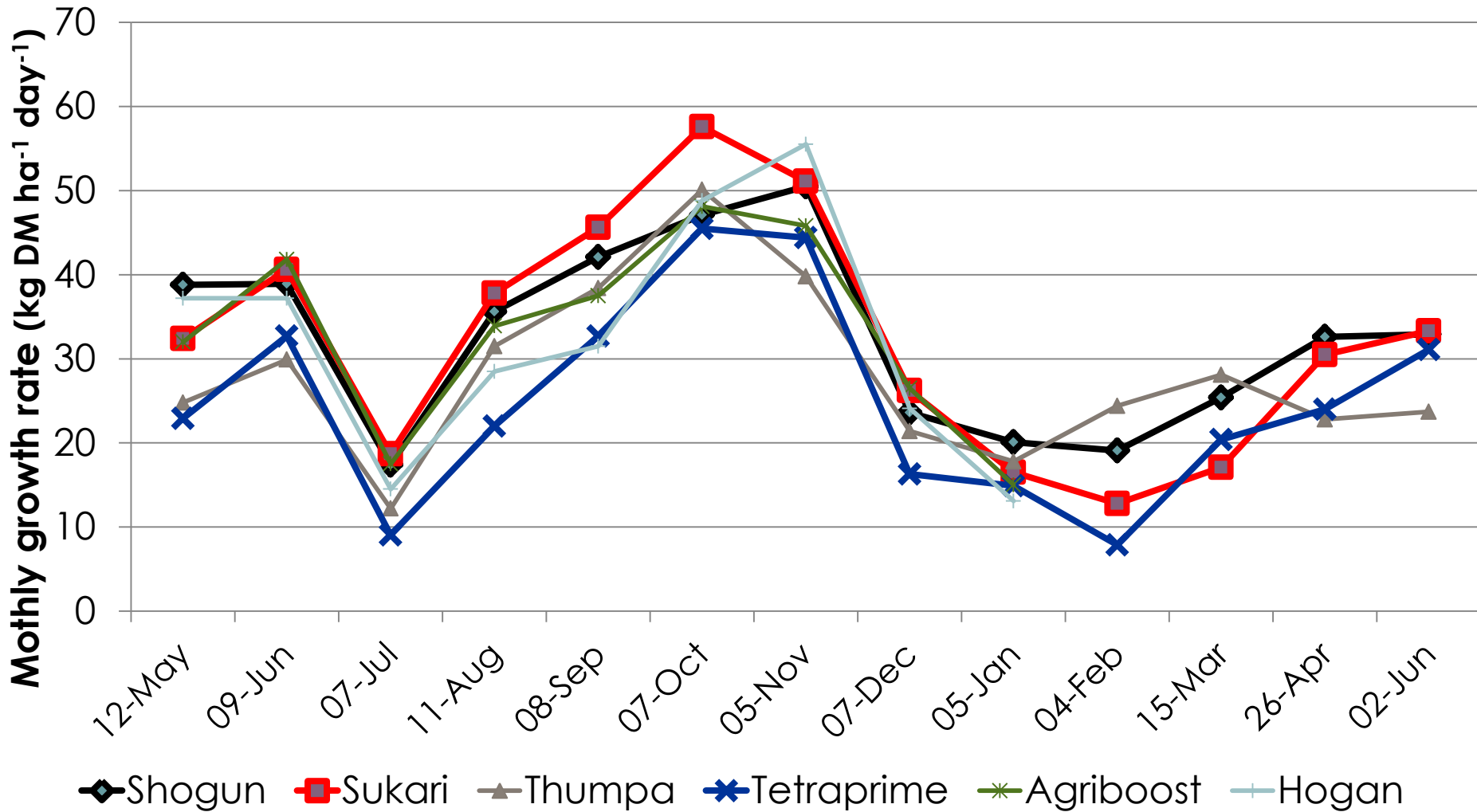


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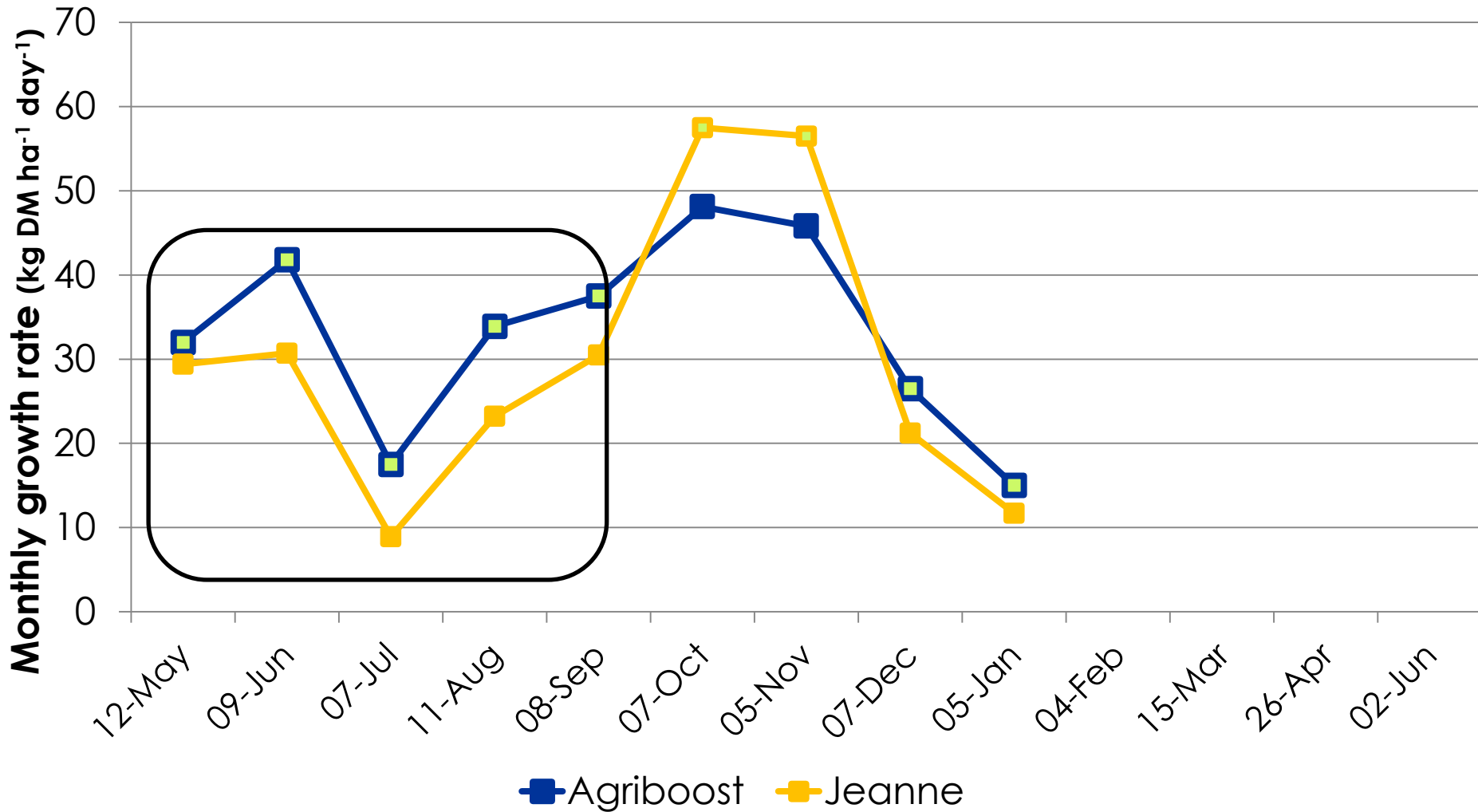
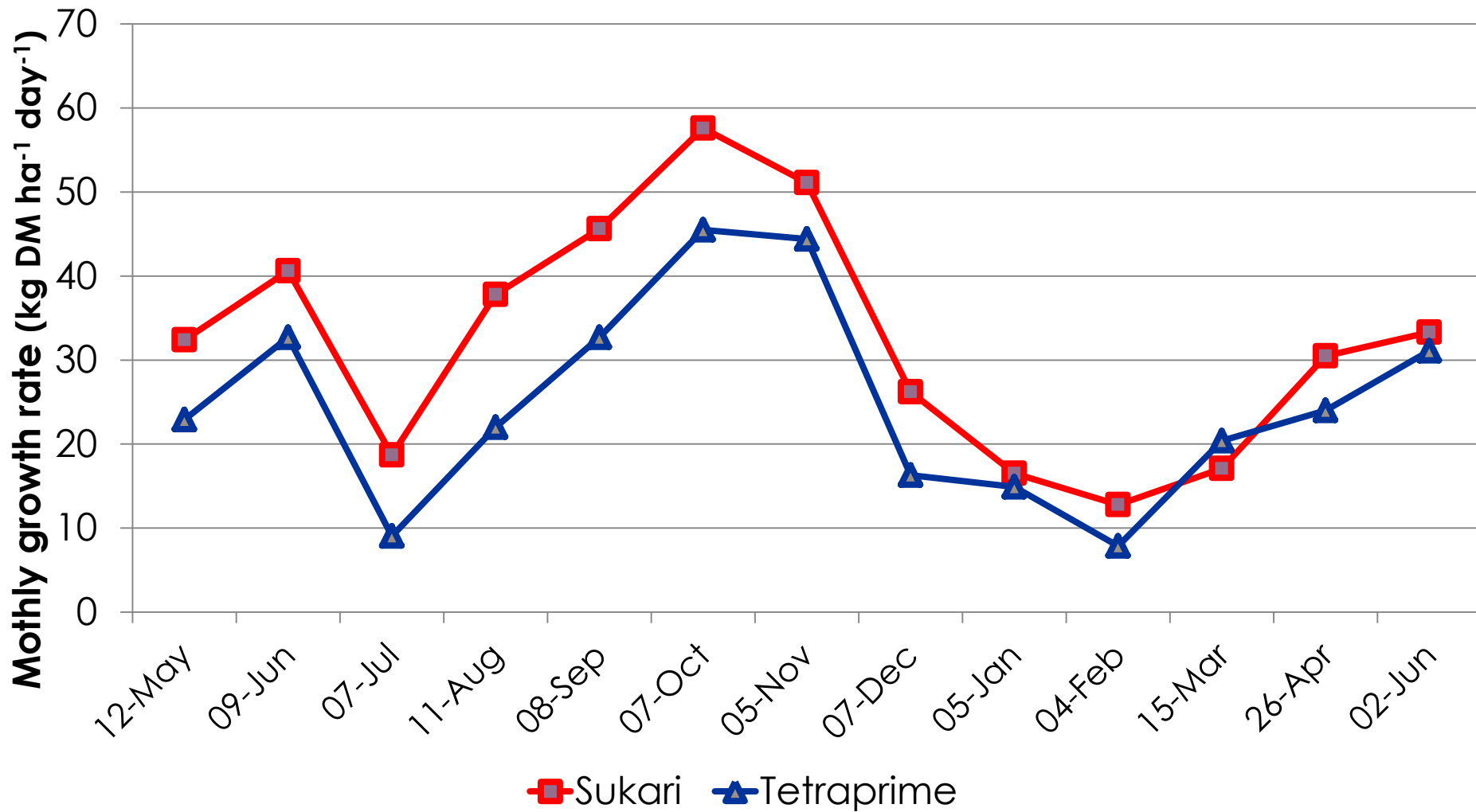
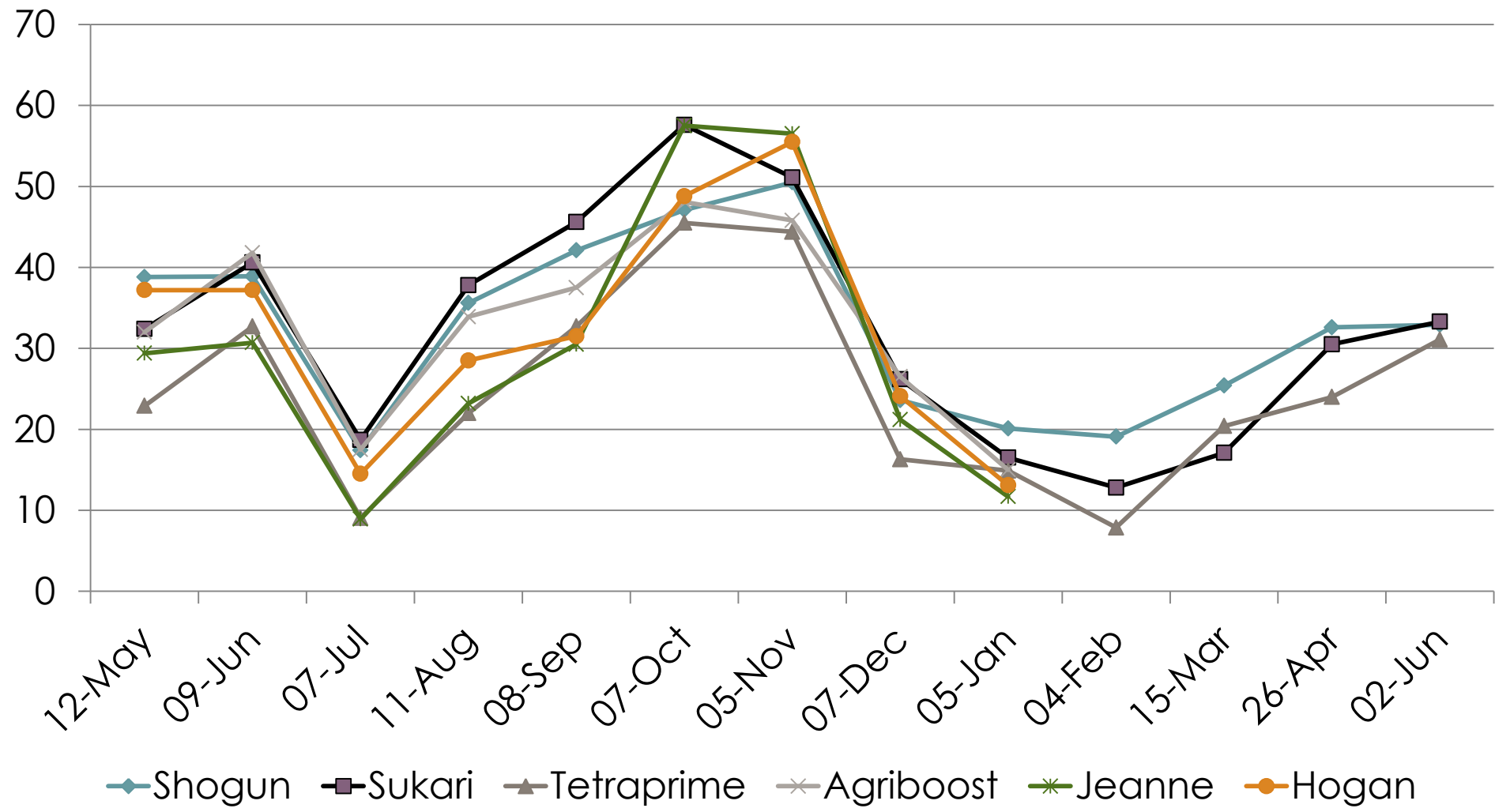


Figure 2. Monthly growth rate (kg DM ha⁻¹ day⁻¹) of selected ryegrass varieties





Variety	Monthly growth rate (kg DM ha ⁻¹ day ⁻¹)												
	12 May	9 Jun	7 Jul	11 Aug	8 Sep	7 Oct	5 Nov	7 Dec	5 Jan	4 Feb	15 Mar	26 Apr	2 June
Shogun	38.8*	38.9*	17.4*	35.6*	42.1*	47.1	50.5	23.6*	20.1**	19.1*	25.4*	32.6**	32.9**
Sukari	32.4*	40.6*	18.7*	37.8*	45.6**	57.6*	51.1*	26.2**	16.5*	12.8	17.1	30.5**	33.3**
Barmultra	31.6*	32.8	10.5	28.0	38.3*	64.7**	57.8*	23.1*	18.2*	14.5*	22.5*	30.0**	28.2*
Inducer	36.4*	37.3	10.9	21.2	28.5	55.2	54.8*	19.0	18.1*	12.7	19.6	25.1*	29.4*
Yolande	30.8	40.1*	14.4*	29.9	39.2*	54.8	52.1*	19.4	17.4*	13.7*	13.1	24.4*	28.0*
Thumpa	24.8	29.9	12.2	31.5	38.4*	50.1	39.8	21.4	17.8*	24.4**	28.1**	22.8*	23.7
Asset	31.4	33.6	12.0	28.8	35.3*	47.5	49.5	15.9	17.0*	10.9	17.9	24.2*	28.8*
Elvis	25.0	33.9	13.8	22.6	28.5	60.5*	60.0**	20.7	14.0*	7.48	19.6	23.3*	27.2
Voyager 55	28.2	36.1	14.7*	30.2	35.6*	43.9	52.6*	20.8	18.0*	8.06	17.2	19.1	26.7
Tetraprime	22.9	32.7	9.05	22.0	32.7*	45.5	44.4	16.3	14.9*	7.87	20.4	24.0*	31.1*
Agriboost	32.0*	41.8*	17.5*	33.9*	37.5*	48.1	45.8	26.5**	15.0*				
Hogan	37.2*	37.2	14.5*	28.5	31.5	48.8	55.5*	24.1*	13.1				
Supercharge	26.6	40.1*	19.9**	42.3**	41.2*	44.9	35.2	19.3	13.4				
Supreme Q	30.7	39.3*	17.3*	33.8*	36.9*	46.4	42.9	21.6	9.98				
Performer	30.7	39.0*	10.4	25.4	33.8*	61.1*	42.5	23.9*	7.22				
Enhancer	43.0**	42.4*	13.3	31.4	34.0*	29.1	40.3	19.4	8.78				
Bullet	28.6	31.1	14.2*	28.9	38.6*	54.5	52.2*	18.9	6.34				
Jeanne	29.4	30.7	8.91	23.2	30.5	57.5*	56.5*	21.2	11.7				
Zoom	37.2*	33.6	9.28	29.4	31.1	43.8	48.2	17.8	5.11				
Tabu	8.97	24.5	18.5*	39.5*	44.8*	47.8	55.3*	22.2*	15.6*				
Lolan	34.3	36.7	13.7	29.6	33.2*	38.3	35.4	18.4	6.05				
Barspectra II	26.7	30.7	16.2*	31.3	35.6*	30.4	36.4	16.1	2.88				
Jivet	23.9	32.2	12.7	27.2	32.4*	34.2	31.0	18.4	3.71				
Big Boss	35.9*	41.2*	12.2	36.5*	33.8*	14.4	26.7						
Voyager 10	28.9	45.7**	19.4*	39.4*	30.7	11.6	24.1						
Breakout	32.5*	39.3*	15.4*	28.6	29.2	18.1	28.4						
Tetrastar	35.6*	38.3	14.2*	26.2	23.6	16.7	24.4						
LSD	11.48	7.141	5.947	10.35	13.27	9.043	9.118	4.428	6.1676	6.7624	6.762	10.146	5.267

Variety	Monthly growth rate (kg DM ha ⁻¹ day ⁻¹)												
	12 May	9 Jun	7 Jul	11 Aug	8 Sep	7 Oct	5 Nov	7 Dec	5 Jan	4 Feb	15 Mar	26 Apr	2 June
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Sukari	32.4*	40.6*	18.7*	37.8*	45.6**	57.6*	51.1*	26.2**	16.5*	12.8	17.1	30.5**	33.3**
Barmultra	31.6*	32.8	10.5	28.0	38.3*	64.7**	57.8*	23.1*	18.2*	14.5*	22.5*	30.0**	28.2*
Inducer	36.4*	37.3	10.9	21.2	28.5	55.2	54.8*	19.0	18.1*	12.7	19.6	25.1*	29.4*
Yolande	30.8	40.1*	14.4*	29.9	39.2*	54.8	52.1*	19.4	17.4*	13.7*	13.1	24.4*	28.0*
Hogan	37.2*	37.2	14.5*	28.5	31.5	48.8	55.5*	24.1*	13.1				
Performer	30.7	39.0*	10.4	25.4	33.8*	61.1*	42.5	23.9*	7.22				
Bullet	28.6	31.1	14.2*	28.9	38.6*	54.5	52.2*	18.9	6.34				
Zoom	37.2*	33.6	9.28	29.4	31.1	43.8	48.2	17.8	5.11				
Lolan	34.3	36.7	13.7	29.6	33.2*	38.3	35.4	18.4	6.05				
LSD	11.48	7.141	5.947	10.35	13.27	9.043	9.118	4.428	6.1676	6.7624	6.762	10.146	5.267

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Thumpa	24.8	29.9	12.2	31.5	38.4*	50.1	39.8	21.4	17.8*	24.4**	28.1**	22.8*	23.7
Asset	31.4	33.6	12.0	28.8	35.3*	47.5	49.5	15.9	17.0*	10.9	17.9	24.2*	28.8*
Elvis	25.0	33.9	13.8	22.6	28.5	60.5*	60.0**	20.7	14.0*	7.48	19.6	23.3*	27.2
Voyager 55	28.2	36.1	14.7*	30.2	35.6*	43.9	52.6*	20.8	18.0*	8.06	17.2	19.1	26.7
Tetraprime	22.9	32.7	9.05	22.0	32.7*	45.5	44.4	16.3	14.9*	7.87	20.4	24.0*	31.1*
Agriboost	32.0*	41.8*	17.5*	33.9*	37.5*	48.1	45.8	26.5**	15.0*				
Hogan	37.2*	37.2	14.5*	28.5	31.5	48.8	55.5*	24.1*	13.1				
Supercharge	26.6	40.1*	19.9**	42.3**	41.2*	44.9	35.2	19.3	13.4				
Supreme Q	30.7	39.3*	17.3*	33.8*	36.9*	46.4	42.9	21.6	9.98				
Performer	30.7	39.0*	10.4	25.4	33.8*	61.1*	42.5	23.9*	7.22				
Enhancer	43.0**	42.4*	13.3	31.4	34.0*	29.1	40.3	19.4	8.78				
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Zoom	37.2*	33.6	9.28	29.4	31.1	43.8	48.2	17.8	5.11				
Tabu	8.97	24.5	18.5*	39.5*	44.8*	47.8	55.3*	22.2*	15.6*				
Lolan	34.3	36.7	13.7	29.6	33.2*	38.3	35.4	18.4	6.05				
Barspectra II	26.7	30.7	16.2*	31.3	35.6*	30.4	36.4	16.1	2.88				
Jivet	23.9	32.2	12.7	27.2	32.4*	34.2	31.0	18.4	3.71				
Big Boss	35.9*	41.2*	12.2	36.5*	33.8*	14.4	26.7						
Voyager 10	28.9	45.7**	19.4*	39.4*	30.7	11.6	24.1						
Breakout	32.5*	39.3*	15.4*	28.6	29.2	18.1	28.4						
Tetrastar	35.6*	38.3	14.2*	26.2	23.6	16.7	24.4						
LSD	11.48	7.141	5.947	10.35	13.27	9.043	9.118	4.428	6.1676	6.7624	6.762	10.146	5.267

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Sukari	32.4*	40.6*	18.7*	37.8*	45.6**	57.6*	51.1*	26.2**	16.5*	12.8	17.1	30.5**	33.3**
Barmultra	31.6*	32.8	10.5	28.0	38.3*	64.7**	57.8*	23.1*	18.2*	14.5*	22.5*	30.0**	28.2*
Inducer	36.4*	37.3	10.9	21.2	28.5	55.2	54.8*	19.0	18.1*	12.7	19.6	25.1*	29.4*
Yolande	30.8	40.1*	14.4*	29.9	39.2*	54.8	52.1*	19.4	17.4*	13.7*	13.1	24.4*	28.0*
Thumpa	24.8	29.9	12.2	31.5	38.4*	50.1	39.8	21.4	17.8*	24.4**	28.1**	22.8*	23.7
Asset	31.4	33.6	12.0	28.8	35.3*	47.5	49.5	15.9	17.0*	10.9	17.9	24.2*	28.8*
Elvis	25.0	33.9	13.8	22.6	28.5	60.5*	60.0**	20.7	14.0*	7.48	19.6	23.3*	27.2
Voyager 55	28.2	36.1	14.7*	30.2	35.6*	43.9	52.6*	20.8	18.0*	8.06	17.2	19.1	26.7
Tetraprime	22.9	32.7	9.05	22.0	32.7*	45.5	44.4	16.3	14.9*	7.87	20.4	24.0*	31.1*
Agriboost	32.0*	41.8*	17.5*	33.9*	37.5*	48.1	45.8	26.5**	15.0*				
Hogan	37.2*	37.2	14.5*	28.5	31.5	48.8	55.5*	24.1*	13.1				
Supercharge	26.6	40.1*	19.9**	42.3**	41.2*	44.9	35.2	19.3	13.4				
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Barspectra II	26.7	30.7	16.2*	31.3	35.6*	30.4	36.4	16.1	2.88				
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Voyager 10	28.9	45.7**	19.4*	39.4*	30.7	11.6	24.1						
Breakout	32.5*	39.3*	15.4*	28.6	29.2	18.1	28.4						
Tetrastar	35.6*	38.3	14.2*	26.2	23.6	16.7	24.4						
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Thumpa	24.8	29.9	12.2	31.5	38.4*	50.1	39.8	21.4	17.8*	24.4**	28.1**	22.8*	23.7
Asset	31.4	33.6	12.0	28.8	35.3*	47.5	49.5	15.9	17.0*	10.9	17.9	24.2*	28.8*
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Enhancer	43.0**	42.4*	13.3	31.4	34.0*	29.1	40.3	19.4	8.78				
Bullet	28.6	31.1	14.2*	28.9	38.6*	54.5	52.2*	18.9	6.34				
Jeanne	29.4	30.7	8.91	23.2	30.5	57.5*	56.5*	21.2	11.7				
Zoom	37.2*	33.6	9.28	29.4	31.1	43.8	48.2	17.8	5.11				
Tabu	8.97	24.5	18.5*	39.5*	44.8*	47.8	55.3*	22.2*	15.6*				
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Tetrastar	35.6*	38.3	14.2*	26.2	23.6	16.7	24.4						
LSD	11.48	7.141	5.947	10.35	13.27	9.043	9.118	4.428	6.1676	6.7624	6.762	10.146	5.267

Variety	Monthly growth rate (kg DM ha ⁻¹ day ⁻¹)												
	12 May	9 Jun	7 Jul	11 Aug	8 Sep	7 Oct	5 Nov	7 Dec	5 Jan	4 Feb	15 Mar	26 Apr	2 June
Shogun	38.8*	38.9*	17.4*	35.6*	42.1*	47.1	50.5	23.6*	20.1**	19.1*	25.4*	32.6**	32.9**
Sukari	32.4*	40.6*	18.7*	37.8*	45.6**	57.6*	51.1*	26.2**	16.5*	12.8	17.1	30.5**	33.3**
Barmultra	31.6*	32.8	10.5	28.0	38.3*	64.7**	57.8*	23.1*	18.2*	14.5*	22.5*	30.0**	28.2*
Inducer	36.4*	37.3	10.9	21.2	28.5	55.2	54.8*	19.0	18.1*	12.7	19.6	25.1*	29.4*
Yolande	30.8	40.1*	14.4*	29.9	39.2*	54.8	52.1*	19.4	17.4*	13.7*	13.1	24.4*	28.0*
Thumpa	24.8	29.9	12.2	31.5	38.4*	50.1	39.8	21.4	17.8*	24.4**	28.1**	22.8*	23.7
Asset	31.4	33.6	12.0	28.8	35.3*	47.5	49.5	15.9	17.0*	10.9	17.9	24.2*	28.8*
Elvis	25.0	33.9	13.8	22.6	28.5	60.5*	60.0**	20.7	14.0*	7.48	19.6	23.3*	27.2
Voyager 55	28.2	36.1	14.7*	30.2	35.6*	43.9	52.6*	20.8	18.0*	8.06	17.2	19.1	26.7
Tetraprime	22.9	32.7	9.05	22.0	32.7*	45.5	44.4	16.3	14.9*	7.87	20.4	24.0*	31.1*
Agriboost	32.0*	41.8*	17.5*	33.9*	37.5*	48.1	45.8	26.5**	15.0*				
Hogan	37.2*	37.2	14.5*	28.5	31.5	48.8	55.5*	24.1*	13.1				
Supercharge	26.6	40.1*	19.9**	42.3**	41.2*	44.9	35.2	19.3	13.4				
Supreme Q	30.7	39.3*	17.3*	33.8*	36.9*	46.4	42.9	21.6	9.98				
Performer	30.7	39.0*	10.4	25.4	33.8*	61.1*	42.5	23.9*	7.22				
Enhancer	43.0**	42.4*	13.3	31.4	34.0*	29.1	40.3	19.4	8.78				
Bullet	28.6	31.1	14.2*	28.9	38.6*	54.5	52.2*	18.9	6.34				
Jeanne	29.4	30.7	8.91	23.2	30.5	57.5*	56.5*	21.2	11.7				
Zoom	37.2*	33.6	9.28	29.4	31.1	43.8	48.2	17.8	5.11				
Tabu	8.97	24.5	18.5*	39.5*	44.8*	47.8	55.3*	22.2*	15.6*				
Lolan	34.3	36.7	13.7	29.6	33.2*	38.3	35.4	18.4	6.05				
Barspectra II	26.7	30.7	16.2*	31.3	35.6*	30.4	36.4	16.1	2.88				
Jivet	23.9	32.2	12.7	27.2	32.4*	34.2	31.0	18.4	3.71				
Big Boss	35.9*	41.2*	12.2	36.5*	33.8*	14.4	26.7						
Voyager 10	28.9	45.7**	19.4*	39.4*	30.7	11.6	24.1						
Breakout	32.5*	39.3*	15.4*	28.6	29.2	18.1	28.4						
Tetrastar	35.6*	38.3	14.2*	26.2	23.6	16.7	24.4						
LSD	11.48	7.141	5.947	10.35	13.27	9.043	9.118	4.428	6.1676	6.7624	6.762	10.146	5.267

Variety	Monthly growth rate (kg DM ha ⁻¹ day ⁻¹)												
	12 May	9 Jun	7 Jul	11 Aug	8 Sep	7 Oct	5 Nov	7 Dec	5 Jan	4 Feb	15 Mar	26 Apr	2 June
Shogun	38.8*	38.9*	17.4*	35.6*	42.1*	47.1	50.5	23.6*	20.1**	19.1*	25.4*	32.6**	32.9**
Sukari	32.4*	40.6*	18.7*	37.8*	45.6**	57.6*	51.1*	26.2**	16.5*	12.8	17.1	30.5**	33.3**
Barmultra	31.6*	32.8	10.5	28.0	38.3*	64.7**	57.8*	23.1*	18.2*	14.5*	22.5*	30.0**	28.2*
Inducer	36.4*	37.3	10.9	21.2	28.5	55.2	54.8*	19.0	18.1*	12.7	19.6	25.1*	29.4*
Yolande	30.8	40.1*	14.4*	29.9	39.2*	54.8	52.1*	19.4	17.4*	13.7*	13.1	24.4*	28.0*
Hogan	37.2*	37.2	14.5*	28.5	31.5	48.8	55.5*	24.1*	13.1				
Supercharge	26.6	40.1*	19.9**	42.3**	41.2*	44.9	35.2	19.3	13.4				
Supreme Q	30.7	39.3*	17.3*	33.8*	36.9*	46.4	42.9	21.6	9.98				
Performer	30.7	39.0*	10.4	25.4	33.8*	61.1*	42.5	23.9*	7.22				
Bullet	28.6	31.1	14.2*	28.9	38.6*	54.5	52.2*	18.9	6.34				
Zoom	37.2*	33.6	9.28	29.4	31.1	43.8	48.2	17.8	5.11				
Lolan	34.3	36.7	13.7	29.6	33.2*	38.3	35.4	18.4	6.05				
Barspectra II	26.7	30.7	16.2*	31.3	35.6*	30.4	36.4	16.1	2.88				
Jivet	23.9	32.2	12.7	27.2	32.4*	34.2	31.0	18.4	3.71				
Big Boss	35.9*	41.2*	12.2	36.5*	33.8*	14.4	26.7						
Voyager 10	28.9	45.7**	19.4*	39.4*	30.7	11.6	24.1						
Tetrastar	35.6*	38.3	14.2*	26.2	23.6	16.7	24.4						
LSD	11.48	7.141	5.947	10.35	13.27	9.043	9.118	4.428	6.1676	6.7624	6.762	10.146	5.267

Figure 1. Total DM production (t DM ha⁻¹) of annual ryegrass varieties

