

**Table S1.** Summary statistics of the plant trait variables measured at 20 sample points in field A.

Date	Parameter	Unit	Mean	SD <sup>1</sup>	CV (%) <sup>2</sup>	Minimum	Maximum	Median	Absolute deviation from median
2019/4/10	Plant max height	cm	24.8	3.09	12.5	17.8	31.5	25.15	1.95
	Plant mean height	cm	14.0	2.98	21.3	8.5	20.9	14.40	1.80
	LAI	-	-	-	-	-	-	-	-
	Leaf nitrogen	%	5.2	0.43	8.2	4.55	6.32	5.20	0.23
	Fresh biomass	kg	0.4	0.14	35.8	0.22	0.89	0.36	0.05
2019/5/13	Plant max height	cm	59.0	7.66	13.0	44.0	72.0	61.00	3.50
	Plant mean height	cm	47.6	6.32	13.3	32.0	55.5	49.50	3.75
	LAI	-	3.1	0.90	28.8	1.7	6.2	3.05	0.40
	Leaf nitrogen	%	7.7	0.67	8.7	6.22	8.98	7.80	0.39
	Fresh biomass	kg	1.5	0.31	20.4	0.82	1.86	1.56	0.20
2019/6/11	Plant max height	cm	85.8	11.41	13.3	62.0	99.0	88.85	5.15
	Plant mean height	cm	76.5	12.21	16.0	46.5	90.5	79.25	4.40
	LAI	-	4.50	1.96	43.9	0.7	8.4	4.45	1.15
	Leaf nitrogen	%	7.00	2.45	35.0	2.44	9.68	7.95	0.83
	Fresh biomass	kg	2.60	0.97	37.0	0.96	4.20	2.65	0.44

<sup>1</sup> SD: Standard Deviation. <sup>2</sup> CV (%): coefficient of variation.

**Table S2.** Summary statistics of the plant trait variables measured at 20 sample points in field G.

Date	Parameter	Unit	Mean	SD	CV (%)	Minimum	Maximum	Median	Absolute deviation from median
2019/4/10	Plant max height	cm	39.20	5.06	12.9	24.2	49.0	39.90	2.1
	Plant mean height	cm	27.35	3.74	13.7	19.0	34.5	26.95	2.3
	LAI	-	2.21	0.70	31.8	1.0	3.9	2.10	0.3
	Leaf nitrogen	%	5.69	0.78	13.7	4.00	6.79	5.80	0.65
	Fresh biomass	kg	1.20	0.26	21.5	0.76	1.89	1.18	0.11
2019/5/13	Plant max Height	cm	107.95	7.76	7.2	86.0	118.0	108.00	3.00
	Plant mean height	cm	100.78	7.37	7.3	79.0	112.5	101.00	2.00
	LAI	-	4.31	0.88	20.4	2.5	5.7	4.30	0.55
	Leaf nitrogen	%	6.61	0.53	7.9	5.32	7.17	6.77	0.24
	Fresh biomass	kg	3.23	0.54	16.7	2.12	4.28	3.32	0.3
2019/6/11	Plant max height	cm	108.89	7.44	6.8	88.1	121.2	109.50	3.30
	Plant mean height	cm	104.82	8.31	7.9	82.7	117.2	105.60	4.25
	LAI	-	4.16	0.78	18.8	2.5	5.5	4.30	0.45
	Leaf nitrogen	%	-	-	-	-	-	-	-
	Fresh biomass	kg	2.17	0.46	21.3	1.26	2.88	2.26	0.27

**Table S3.** Absolute correlation results of plant maximum height and mean height in field A

Month	Platform	Parameters	GLI	GNDVI	MGRVI	NDRE	NDVI	RVI	VARI
April	UAV	Max. Height	0.19	0.30	0.20	0.31	0.25	0.30	0.22
		Mean Height	<b>0.71</b>	<b>0.77</b>	<b>0.73</b>	<b>0.77</b>	<b>0.74</b>	<b>0.78</b>	<b>0.75</b>
	Satellite	Max. Height	0.11	0.18	0.19	0.20	0.21	0.18	0.19
		Mean Height	0.21	<b>0.62</b>	0.43	<b>0.66</b>	<b>0.62</b>	<b>0.59</b>	<b>0.47</b>
May	UAV	Max. Height	<b>0.84</b>	<b>0.86</b>	<b>0.86</b>	<b>0.81</b>	<b>0.84</b>	<b>0.86</b>	<b>0.87</b>
		Mean Height	<b>0.89</b>	<b>0.95</b>	<b>0.92</b>	<b>0.88</b>	<b>0.93</b>	<b>0.88</b>	<b>0.92</b>
	Satellite	Max. Height	0.18	<b>0.88</b>	<b>0.67</b>	<b>0.87</b>	<b>0.89</b>	<b>0.87</b>	<b>0.72</b>
		Mean Height	0.05	<b>0.87</b>	<b>0.62</b>	<b>0.86</b>	<b>0.88</b>	<b>0.81</b>	<b>0.69</b>
June	UAV	Max. Height	<b>0.96</b>	<b>0.96</b>	<b>0.97</b>	<b>0.95</b>	<b>0.96</b>	<b>0.94</b>	<b>0.97</b>
		Mean Height	<b>0.94</b>	<b>0.93</b>	<b>0.94</b>	<b>0.92</b>	<b>0.93</b>	<b>0.90</b>	<b>0.95</b>
	Satellite	Max. Height	<b>0.77</b>	<b>0.84</b>	<b>0.84</b>	<b>0.87</b>	<b>0.84</b>	<b>0.80</b>	<b>0.84</b>
		Mean Height	<b>0.68</b>	<b>0.76</b>	<b>0.76</b>	<b>0.81</b>	<b>0.76</b>	<b>0.72</b>	<b>0.76</b>

**Table S4.** Absolute correlation results of plant maximum height and mean height in field G

Month	Platform	Parameters	GLI	GNDVI	MGRVI	NDRE	NDVI	RVI	VARI
April	UAV	Max. Height	<b>0.53</b>	<b>0.63</b>	<b>0.75</b>	<b>0.68</b>	<b>0.83</b>	<b>0.77</b>	<b>0.80</b>
		Mean Height	<b>0.50</b>	<b>0.73</b>	<b>0.68</b>	<b>0.76</b>	<b>0.84</b>	<b>0.85</b>	<b>0.75</b>
	Satellite	Max. Height	0.24	<b>0.63</b>	0.30	<b>0.58</b>	<b>0.53</b>	<b>0.57</b>	0.30
		Mean Height	0.26	<b>0.72</b>	0.33	<b>0.72</b>	<b>0.60</b>	<b>0.65</b>	0.33
May	UAV	Max. Height	<b>0.46</b>	0.06	<b>0.47</b>	0.01	0.19	0.12	0.44
		Mean Height	0.43	0.11	<b>0.48</b>	0.04	0.24	0.18	<b>0.47</b>
	Satellite	Max. Height	0.09	0.34	0.02	0.34	0.20	0.26	0.01
		Mean Height	0.08	0.34	0.01	0.34	0.21	0.29	0.05
June	UAV	Max. Height	0.22	<b>0.48</b>	0.19	0.29	0.36	0.17	0.18
		Mean Height	0.31	<b>0.54</b>	0.28	0.38	0.44	0.25	0.27
	Satellite	Max. Height	0.02	0.39	0.06	0.25	0.20	0.18	0.03
		Mean Height	0.06	<b>0.46</b>	0.05	0.33	0.30	0.28	0.06

**Table S5.** Absolute correlation results of LAI in field A

Month	Platform	GLI	GNDVI	MGRVI	NDRE	NDVI	RVI	VARI
April	UAV	-	-	-	-	-	-	-
	Satellite	-	-	-	-	-	-	-
May	UAV	<b>0.91</b>	<b>0.97</b>	<b>0.94</b>	<b>0.93</b>	<b>0.95</b>	<b>0.95</b>	<b>0.95</b>
	Satellite	0.08	<b>0.92</b>	<b>0.56</b>	<b>0.94</b>	<b>0.91</b>	<b>0.86</b>	<b>0.65</b>
June	UAV	<b>0.83</b>	<b>0.85</b>	<b>0.84</b>	<b>0.84</b>	<b>0.83</b>	<b>0.88</b>	<b>0.86</b>
	Satellite	<b>0.68</b>	<b>0.78</b>	<b>0.76</b>	<b>0.80</b>	<b>0.77</b>	<b>0.72</b>	<b>0.76</b>

**Table S6.** Absolute correlation results of LAI in field G

Month	Platform	GLI	GNDVI	MGRVI	NDRE	NDVI	RVI	VARI
April	UAV	0.31	0.44	0.39	0.44	<b>0.49</b>	<b>0.55</b>	0.43
	Satellite	0.20	<b>0.54</b>	0.38	<b>0.51</b>	<b>0.51</b>	<b>0.57</b>	<b>0.45</b>

May	UAV	<b>0.60</b>	0.13	<b>0.64</b>	0.08	0.30	0.24	<b>0.62</b>
	Satellite	0.07	0.27	0.17	0.33	0.23	0.31	0.22
June	UAV	<b>0.56</b>	<b>0.72</b>	<b>0.55</b>	<b>0.60</b>	<b>0.64</b>	<b>0.57</b>	<b>0.55</b>
	Satellite	0.43	<b>0.46</b>	0.42	<b>0.45</b>	<b>0.50</b>	0.21	0.42

**Table S7.** Absolute correlation results of fresh biomass in field A

Month	Platform	GLI	GNDVI	MGRVI	NDRE	NDVI	RVI	VARI
April	UAV	<b>0.58</b>	<b>0.56</b>	<b>0.59</b>	<b>0.56</b>	<b>0.58</b>	<b>0.55</b>	<b>0.59</b>
	Satellite	0.04	<b>0.52</b>	0.17	<b>0.52</b>	0.43	0.41	0.20
May	UAV	<b>0.77</b>	<b>0.72</b>	<b>0.77</b>	<b>0.62</b>	<b>0.77</b>	<b>0.54</b>	<b>0.72</b>
	Satellite	0.03	<b>0.55</b>	0.37	<b>0.59</b>	<b>0.56</b>	0.46	0.41
June	UAV	<b>0.84</b>	<b>0.86</b>	<b>0.86</b>	<b>0.85</b>	<b>0.84</b>	<b>0.86</b>	<b>0.87</b>
	Satellite	<b>0.65</b>	<b>0.77</b>	<b>0.73</b>	<b>0.80</b>	<b>0.76</b>	<b>0.70</b>	<b>0.73</b>

**Table S8.** Absolute correlation results of fresh biomass in field G

Month	Platform	GLI	GNDVI	MGRVI	NDRE	NDVI	RVI	VARI
April	UAV	<b>0.59</b>	<b>0.51</b>	<b>0.69</b>	<b>0.53</b>	<b>0.70</b>	<b>0.74</b>	<b>0.69</b>
	Satellite	0.23	<b>0.66</b>	0.39	<b>0.55</b>	<b>0.60</b>	<b>0.65</b>	0.44
May	UAV	<b>0.67</b>	0.25	<b>0.73</b>	0.19	0.42	0.35	<b>0.70</b>
	Satellite	0.15	0.44	0.34	<b>0.50</b>	0.42	<b>0.52</b>	0.42
June	UAV	<b>0.86</b>	<b>0.92</b>	<b>0.85</b>	<b>0.89</b>	<b>0.92</b>	<b>0.82</b>	<b>0.84</b>
	Satellite	<b>0.75</b>	<b>0.65</b>	<b>0.74</b>	<b>0.76</b>	<b>0.79</b>	<b>0.56</b>	0.75

**Table S9.** Absolute correlation results of leaf nitrogen in field A

Month	Platform	GLI	GNDVI	MGRVI	NDRE	NDVI	RVI	VARI
April	UAV	0.02	0.13	0.01	0.17	0.09	0.05	0.01
	Satellite	0.14	0.38	0.14	0.26	0.33	0.30	0.20
May	UAV	0.38	<b>0.52</b>	0.42	<b>0.50</b>	<b>0.49</b>	0.42	0.40
	Satellite	0.08	<b>0.56</b>	<b>0.64</b>	<b>0.53</b>	<b>0.62</b>	<b>0.56</b>	<b>0.71</b>
June	UAV	<b>0.94</b>	<b>0.95</b>	<b>0.95</b>	<b>0.95</b>	<b>0.94</b>	<b>0.93</b>	<b>0.95</b>
	Satellite	<b>0.74</b>	<b>0.80</b>	<b>0.80</b>	<b>0.83</b>	<b>0.80</b>	<b>0.76</b>	<b>0.80</b>

**Table S10.** Absolute correlation results of leaf nitrogen in field G

Month	Platform	GLI	GNDVI	MGRVI	NDRE	NDVI	RVI	VARI
April	UAV	0.20	<b>0.81</b>	<b>0.48</b>	<b>0.86</b>	<b>0.74</b>	<b>0.82</b>	<b>0.65</b>
	Satellite	0.17	<b>0.65</b>	0.38	<b>0.72</b>	<b>0.60</b>	<b>0.62</b>	0.44
May	UAV	0.24	0.01	0.42	0.04	0.13	0.10	<b>0.45</b>
	Satellite	0.13	0.34	0.01	0.35	0.21	0.30	0.07
June	UAV	-	-	-	-	-	-	-
	Satellite	-	-	-	-	-	-	-