

### **F3. Field Pea “Kaspa type” variety mixtures, various sites, South Australia**

#### **Aim**

To provide a long term yield evaluation of “Kaspa type” field pea varieties and their self-regenerating blends in five key field pea production regions across the state.

#### **Treatments**

Sites details: trials were conducted at the five Pulse Breeding Australia field pea breeding sites in South Australia. Sites are listed in order of increasing growing season rainfall.

Variety	Date sown	Soil type	Rainfall (mm) J-M / A-O	pH (H <sub>2</sub> O)
<b>Snowtown</b>	3/6	Sandy Loam / Light-medium Clay	87/178	8.4
<b>Minnipa</b>	27/4	Loam	63/185	8.6
<b>Balaklava</b>	5/6	Sandy Loam / Light-medium Clay	53/188	8.1
<b>Kadina</b>	22/5	Sandy clay loam	62/212	8.5
<b>Turretfield</b>	15/6	Light clay / Light-medium Clay	74/288	6.8

Variety and mixture details:

Variety / Blend	Year 1 Percentage Component		
	PBA Twilight	PBA Gunyah	Kaspa
Kaspa	0	0	100
Kaspa Mix	25	25	50
KasLight	50	0	50
PBA Gunyah	0	100	0
PBA Gunyah Mix	25	50	25
PBA Twilight	100	0	0
PBA Twilight Mix	50	25	25
TwikaYah (2011 carryover)	33	33	33
TwikaYah (2012 remix)	33	33	33
Flower Timing ^	Early	Early-Med	Late
Flowering Period ^	Medium	Long	Short
Maturity ^	Early	Early-Med	Medium

#### **Background**

- The variety Kaspa, which has a number of production and marketing advantages compared to other varieties, is the most significant field pea variety in South Australia. Its round seed shape (referred to as ‘Kaspa type’) is preferred by export markets for its high milling quality, and its excellent standing ability and pod shatter resistance traits are favoured by growers. However it is relatively late flowering and maturing, and often does not perform well in shorter seasons or short season environments.
- Two recently released “Kaspa type” field pea varieties with earlier flowering and maturity profiles offer growers improved yield stability across variable seasons and are better suited to lower rainfall areas and short seasons with rapid finishes compared to Kaspa. These varieties are also better suited to late season breaks or where delayed sowing for blackspot control is practised.
- Since all three varieties can be marketed together as “Kaspa type” grain, growers have the opportunity to blend varieties to create a population that provides an extended flowering period. This strategy may provide risk mitigation against frost and heat events during the vulnerable flowering period. It also may produce a continuously adapting population that may

convey a production advantage in the target production area over time. Long term field trials may assist growers with identification of optimum seed blends and for maximum adaptation and yield stability.

### Results and Interpretation

- Grain yields were generally above average at the five Pulse Breeding Australia field pea breeding sites in 2012, due to a combination of good early winter rainfall and low disease pressure.
- Individual site yields increased with increasing growing season rainfall. All sites except Kadina showed a significant variety response for grain yield.
- Lower yielding sites Snowtown and Balaklava showed several varietal blends expressing a yield advantage over Kaspas. Reasons for these are unclear at this stage, and further validation is required.
- At Turretfield, the highest yielding site, all varieties and blends except for PBA Gunyah showed a yield penalty compared to Kaspas.

Variety	Snowtown	Minnipa	Balaklava	Kadina	Turretfield
Kaspas	1.26	1.93	2.25	2.75	3.67
PBA Gunyah	104	100	112	92	96
PBA Twilight	<b>112</b>	97	100	96	<b>90</b>
Kaspas Mix	106	103	104	96	<b>85</b>
Gunyah Mix	<b>111</b>	97	<b>117</b>	98	<b>90</b>
Twilight Mix	102	106	102	100	<b>89</b>
Twikasyah (2012)	101	<b>90</b>	99	99	<b>85</b>
Twikasyah (2011)	102	99	<b>114</b>	99	<b>89</b>
KasLight	97	97	<b>115</b>	102	<b>87</b>
Average	<b>1.33</b>	<b>1.91</b>	<b>2.39</b>	<b>2.69</b>	<b>3.23</b>
LSD (P<0.05) (%)	<b>8</b>	<b>8</b>	<b>13</b>	ns	<b>9</b>

Shaded figures denote significant difference to grain yield of Kaspas

### Key Findings and Comments

- Kaspas continues to show a yield advantage over earlier maturing varieties and blends in regions with high yield potential (eg Turretfield) due to its later maturity and subsequent higher yield potential.
- Earlier maturing varieties and blends may confer a yield advantage over Kaspas in lower yielding situations/seasons.
- This work will continue for a number of years reusing the seed from each location to identify any potential benefit for growers using a mix of these varieties to manage pea yields across variable seasonal conditions.