

fertfact

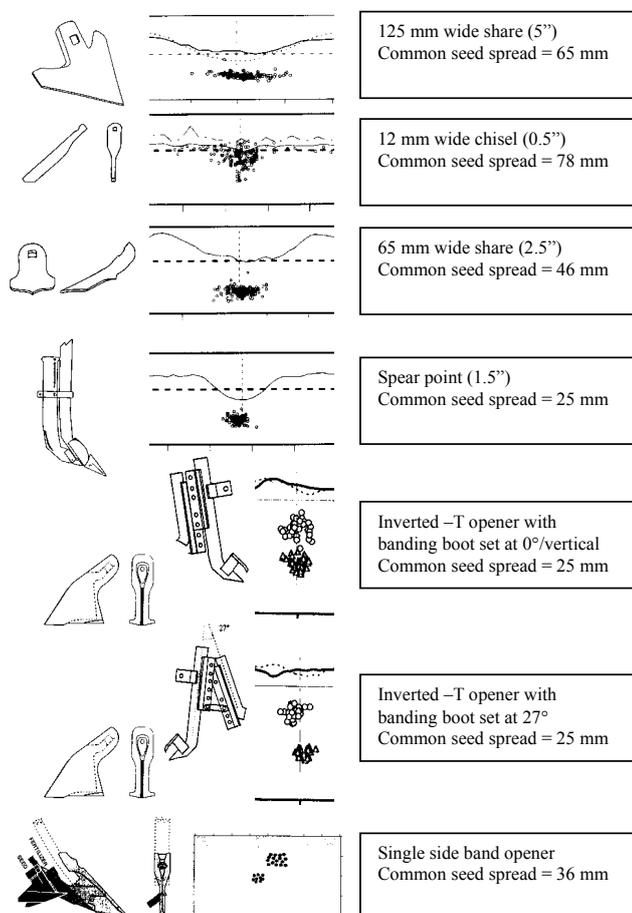
Guidelines for suggested maximum rates of fertiliser applied with the seed in winter crops

Guidelines for use

The maximum application rate of fertiliser in the seed furrow is primarily influenced by the susceptibility of the crop species to ammonia and osmotic effects of the fertiliser, application equipment and soil conditions at planting and post planting.

Ongoing research by Incitec Pivot Fertilisers and data from Canadian and Australian research has provided the necessary information to significantly update recommendations for seed row fertiliser taking into account

Figure 1. Seed placement and approximate seed spread values for a range of seeding points and soil openers



crop species, the chemistry of the fertiliser, soil conditions and application equipment.

Seed-bed utilisation percentage (SBU%) is a term that has been developed to describe the effect of row spacing and opener type on seed furrow fertiliser concentration. It is calculated as:

$$\text{SBU}\% = \frac{\text{Width of seed row}}{\text{Row spacing}} \times 100$$

Opener type	Seed spread (mm)
Disc/knife	25
Spear point	25
65 mm Wide Sweep	46
125 mm Wide Sweep	65

Some disc openers may have seed spreads less than 25 mm. Worn points and discs can affect seed furrow width. Check seed and fertiliser spread in the field at sowing.

To use the following tables:

1. Calculate the SBU% from the equation above.
2. Locate table for fertiliser product, crop type, soil moisture status.
3. Locate the relevant soil texture in the left hand column and the approximate SBU% across the top and find the intersection of the relevant row and column. The value is the suggested maximum rate in kg/ha of product.

See Appendix 1 for definitions of soil moisture, texture etc.

The following rates are to be used as a guide only.

Width of seed and fertiliser spread varies with air flow, soil type, soil tilth, moisture level, amount of stubble and other soil conditions at the time of sowing.

Crop: Wheat, barley

Product: Urea

Soil moisture: Good

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	55	60	65	70	75	80	95	105
Medium soil	45	50	55	60	65	70	80	90
Light soil	25	30	35	40	45	50	60	65

Soil moisture: Average

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	40	40	45	50	55	60	65	75
Medium soil	30	35	40	40	45	50	55	60
Light soil	20	20	25	30	30	35	40	45

Soil moisture: Poor

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	30	30	35	35	40	40	50	50
Medium soil	25	25	30	30	30	35	40	45
Light soil	15	15	20	20	20	25	30	35

Crop: Wheat, barley

Product: DAP

Soil moisture: Good

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	80	90	95	100	110	120	135	150
Medium soil	60	70	75	83	90	95	110	125
Light soil	40	45	50	55	60	70	80	95

Soil moisture: Average

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	55	60	65	70	75	80	90	105
Medium soil	45	50	55	60	65	70	80	90
Light soil	25	30	35	40	45	50	55	65

Soil moisture: Poor

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	40	45	50	50	55	60	70	75
Medium soil	30	35	40	40	45	48	55	60
Light soil	20	20	25	30	30	35	40	50

Crop: Wheat, barley

Product: MAP, Granulock® Z

Soil moisture: Good

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	110	120	130	140	150	165	190	210
Medium soil	90	95	110	115	125	135	155	175
Light soil	50	60	70	80	90	95	115	130

Soil moisture: Average

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	75	85	90	100	110	115	130	145
Medium soil	60	65	75	80	90	95	110	122
Light soil	35	40	50	55	60	65	80	90

Soil moisture: Poor

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	55	60	65	70	75	80	90	105
Medium soil	45	50	55	60	65	70	80	90
Light soil	25	30	35	40	45	50	55	65

Crop: Wheat, barley

Product: CK700

Soil moisture: Good

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	70	80	85	95	100	110	125	140
Medium soil	55	65	70	75	85	90	100	115
Light soil	35	40	45	50	55	65	75	85

Soil moisture: Average

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	50	55	60	65	70	75	85	95
Medium soil	40	45	50	55	60	60	70	80
Light soil	25	30	30	35	40	45	50	60

Soil moisture: Poor

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	35	40	45	45	50	55	60	70
Medium soil	30	30	35	40	40	45	50	60
Light soil	15	20	25	25	30	30	35	45

Crop: Canola, linseed

Product: Urea

Soil moisture: Good

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	15	25	30	40	45	55	65	80
Medium soil	10	15	20	25	30	35	50	60
Light soil	0	0	10	15	20	25	35	45

Soil moisture: Average

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	10	15	20	25	30	35	45	55
Medium soil	5	10	15	20	20	25	35	45
Light soil	0	0	5	10	15	15	25	30

Soil moisture: Poor

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	10	15	20	25	30	35	45	55
Medium soil	0	0	15	20	20	25	35	45
Light soil	0	0	0	10	15	15	25	30

Crop: Canola, linseed

Product: DAP

Soil moisture: Good

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	25	35	45	55	65	75	95	115
Medium soil	10	20	25	35	45	55	70	85
Light soil	0	0	15	20	25	35	50	60

Soil moisture: Average

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	15	25	30	40	45	55	65	80
Medium soil	0	15	20	25	30	35	50	60
Light soil	0	0	0	15	20	25	35	45

Soil moisture: Poor

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	0	15	20	25	30	40	50	60
Medium soil	0	0	15	20	20	25	35	45
Light soil	0	0	0	0	15	15	25	30

Crop: Canola, linseed

Product: MAP, Granulock® Z

Soil moisture: Good

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	35	50	60	75	90	105	135	160
Medium soil	15	25	40	50	60	75	100	120
Light soil	0	0	20	30	40	50	65	85

Soil moisture: Average

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	25	35	45	55	65	75	95	115
Medium soil	0	20	25	35	45	50	70	85
Light soil	0	0	15	20	25	35	45	60

Soil moisture: Poor

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	15	25	30	40	45	55	65	80
Medium soil	0	15	20	25	30	35	50	60
Light soil	0	0	0	15	20	25	35	45

Crop: Canola, linseed

Product: CK700

Soil moisture: Good

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	20	30	40	50	60	70	90	105
Medium soil	0	15	25	35	40	50	65	80
Light soil	0	0	15	20	25	30	45	55

Soil moisture: Average

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	15	20	30	35	40	50	60	75
Medium soil	0	0	20	25	30	35	45	55
Light soil	0	0	0	15	20	20	30	40

Soil moisture: Poor

SBU %	5	10	15	20	25	30	40	50
kg/ha								
Heavy soil	0	15	20	25	30	35	45	55
Medium soil	0	0	15	15	20	25	30	40
Light soil	0	0	0	0	15	15	20	30

Appendix 1

Texture	
Heavy	Clay to heavy clay
Medium	Loam to clay loam
Light	Sandy loam

Soil moisture	
Good	About field capacity
Average	Between field capacity and marginal
Poor	Marginal for germination

Seed bed moisture can rapidly decline after seeding depending on the opener, press wheels, residue, weather, equipment speed etc.

Where climatic conditions post-sowing are forecast to create rapid drying of the seed zone (warm, dry, windy) soil moisture should be for the next lower moisture status. As a result of the osmotic effect of fertiliser (fertiliser competes with the germinating seed for soil moisture) emergence of crops even where low fertiliser rates have been applied may be delayed by up to a couple of days. Short delays to emergence are not usually detrimental to crop performance.

References:

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