

Maximum fertiliser application rates with seed

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

The recommendations in this guideline for seed row fertiliser were developed using research by Incitec Pivot Fertilisers and data from Canadian and Australian. They take into account crop species, the chemistry of the fertiliser, soil conditions and application equipment. The information should be used as a guide only.

The maximum rate of fertiliser is estimated using three pieces of information – the seed bed utilisation percentage, soil moisture and soil texture.

Seed-bed utilisation percentage (SBU%) describes the effect of row spacing and opener type on seed furrow fertiliser concentration. It is calculated as:

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

Table 1 shows the estimated seed spread from different opener types. You should check seed and fertiliser spread in the paddock at sowing. The width of seed and fertiliser spread varies with air flow, soil type, soil till, moisture level, amount of stubble and other soil conditions at the time of sowing (Figure 1). Worn points and discs can also affect seed furrow width. Note: some disc openers may have seed spreads less than 25 mm.

Soil moisture can decline rapidly after sowing depending on the opener, press wheels, residue, weather, equipment speed etc. Fertiliser has an osmotic effect and competes with the germinating seed for moisture. So even at low fertiliser rates, crop emergence may be delayed by a couple of days.

To use the tables:

1. Calculate the seed bed utilisation.
2. Locate table for fertiliser product, crop type, soil moisture status. If rapid drying of the seed zone (warm, dry, windy) is likely after sowing, choose the next lowest moisture status.
3. Choose the relevant soil texture class and the approximate SBU% and find the intersection of the relevant row and column. The value is the suggested maximum rate in kg/ha of product.

Table 1: Estimated seed spread from different opener types.

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

Table 2: Correlation between soil texture and texture class.

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

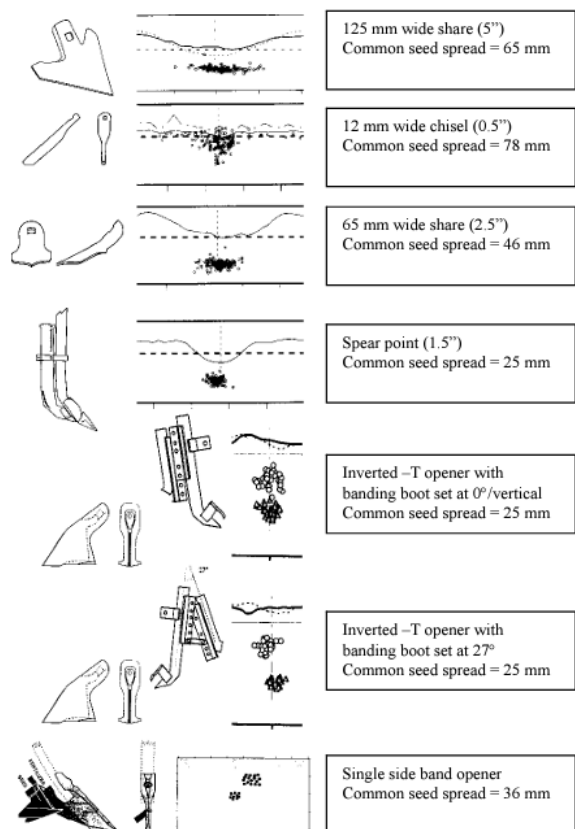


Figure 1: Seed placement and approximate seed spread values for a range of seeding points and soil openers.

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WHEAT, BARLEY – UREA

Soil moisture: Good

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

Soil moisture: Average

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

Soil moisture: Poor

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

WHEAT, BARLEY – DAP

Soil moisture: Good

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

Soil moisture: Average

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

Soil moisture: Poor

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

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WHEAT, BARLEY – MAP, GRANULOCK® Z

Soil moisture: Good

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

Soil moisture: Average

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

Soil moisture: Poor

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

WHEAT, BARLEY – CK700

Soil moisture: Good

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

Soil moisture: Average

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

Soil moisture: Poor

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

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CANOLA, LINSEED – UREA

Soil moisture: Good

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

Soil moisture: Average

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

Soil moisture: Poor

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

CANOLA, LINSEED – DAP

Soil moisture: Good

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

Soil moisture: Average

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

Soil moisture: Poor

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

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CANOLA, LINSEED – MAP, GRANULOCK® Z

Soil moisture: Good

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

Soil moisture: Average

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

Soil moisture: Poor

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

CANOLA, LINSEED – CK700

Soil moisture: Good

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

Soil moisture: Average

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

Soil moisture: Poor

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

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FURTHER INFORMATION

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WARNING

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