Seed Rate per Hectare from Spacing and Test Weight

Seed rate for a crop from row and plant spacing, seeds per hill, 1000-seed weight, germination and purity, with plant population per hectare.

Method: Seed rate from plant population and 1000-seed weight

Input parameters

Unit system: SI

Parameter	Value	Unit
Row spacing	600.00	mm
Plant (hill) spacing in the row	200.00	mm
Seeds per hill	1.0000	
1000-seed weight	300.00	g
Germination	85.000	%
Purity	98.000	%
Allowance for field losses	10.000	%

Calculated results

Parameter	Value	Unit
Hills per hectare	83,333	
Viable seeds needed per hectare	83,333	
Seed rate per hectare (kg)	33.013	

Notes for this case

• The spacing fixes the number of hills per hectare (10,000 m² over the area each occupies), times seeds per hill. The seed mass follows from the 1000-seed weight; since only pure, germinating seed counts, divide by germination and purity, and add an allowance for losses in the field. Large-seeded crops (groundnut, maize) need far more kg per hectare than small-seeded ones (millets, vegetables).

Formula and method

$$N = \frac{10\,000}{S_r S_p}, \quad m = \frac{N n_s m_{1000}}{1000\, g\, p_u}(1 + f_l)$$

Variables

S_r	Row spacing	m
S_p	Plant (hill) spacing in the row	m
n_s	Seeds per hill	-
m_{1000}	1000-seed weight	kg
g	Germination	-
p_u	Purity	-
f_l	Allowance for field losses	-
N	Hills per hectare	-
n	Viable seeds needed per hectare	-
m	Seed rate per hectare (kg)	-

Method and standards

Seed rate.

Assumptions and limits

- Uniform spacing.

References

Seed rate from plant population and 1000-seed weight

Report details

Report reference	FCC-66PM-GWNY (the same inputs always give the same reference)
Generated	23 November 2026, 17:34 UTC
Calculator	Seed Rate per Hectare from Spacing and Test Weight
Method last reviewed	17 November 2026
Software release	FireCAD Calc, release of 22 November 2026
Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/civil/irrigation-farm/seed-rate-calculation

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.