

Seed Rate Calculations

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Seed rates & plant populations are something that are often given less consideration than they deserve. To have a chance of producing an optimum yield, it stands to reason that we should endeavour to establish an optimum plant population. No other input in the life of a crop will do what a seed can do – it will create a plant and nothing other than a plant will produce grain! I have never walked into one of our fields and said to myself; “that crop is too thick”, I have however, often walked into one of our fields and said to myself “that’s too thin”! The following are guidelines for the optimum plant population for a range of crops:

CROP	OPTIMUM PLANT POPULATION (PLANTS/M2)
WOSR (Hybrid)	25-35
Winter Barley (Conventional)	300
Winter Barley (Hybrid)	200
Winter Wheat	250
Winter Rye (Hybrid)	200 - 250
Winter Oats	350
Winter Beans	24-26
Spring Beans	30-35
Spring Oats	350
Spring Wheat	350
Spring Barley	300

Once you know the TGW (Thousand Grain Weight in grams) and Germination Rate of a given seed lot, you can easily calculate the required seed rate, not allowing for field losses. For Irish certified seed, the germination rate for cereals must be more than 85%, in normal years, this will be in the range of 90-95%. For beans, it must be a minimum of 80% but is usually in the range of 85-95%. In addition to unviable seeds, losses following planting should also be taken into account. In “really good” seed bed conditions, it is common to see 15% losses after planting. This can rise to 20-25% in poor spring seedbeds

where clods are present or if the soil contains a lot of small stones. Small stones can cover seeds, cause coulter bounce and be more supportive of soil borne pests. In late autumn sowing (for example, winter wheat being planted at the end of November, it is common to see 40-50% in field losses due to slugs, crows, clods, stones etc.

SEED CALCULATION FORMULA:

$$\frac{\text{TGW} \times \text{Target Plant Population}}{\text{Establishment Rate}} = \text{Seed Rate (KG/HA)}$$

Example:

Geraldine Spring Barley, TGW = 54g, Germination = 90%, Field Loss estimate = 15%

$$\frac{54\text{g} \times 300 \text{ plants/m}^2}{75\%} = 216\text{kg/Ha}$$

You will find that experience will be the best way of getting a handle on what to expect in terms of establishment rates. A good ploughed and one passed seedbed will usually give a higher establishment rate than min till or strip till. Of course, min-till and strip-till can have other advantages such as timeliness of sowing. Also, you will find that beans (in the absence of crows) will generally suffer fewer in field losses purely because they are a big strong seedling and can push small stones etc out of the way.

To make a ring for measuring plant populations in cereals, a piece of wavin hose bent and joined into a circle is ideal. To create a ring of 0.1m², the length of wavin should be 112cm. The area of the resultant circle will be 0.1m² and is ideal for quickly measuring plant populations in the field where you can simply multiply the number of plants inside & under the circle by 10. A larger circle is preferable for measuring plant

*** SIMPLE TIP FOR GROWERS,
11 STONE/ACRE = 70KG/ACRE!**

populations in crops such as WOSR or beans. (Circle with a Circumference of 177cm = Area of 0.25m²).

When things go wrong and a field ends up with a low plant population, WOSR, Winter Wheat and Oats have a far greater ability to compensate with more grains/ear and larger grains than will be the case with Winter or Spring barley or Spring wheat

CALCULATING CEREAL SEED RATES USING TGW'S

Goldcrop provide buyers / users of our certified seed with accurate Thousand Grain Weight (TGW) figures for ALL BATCHES of cereal seed processed and supplied. Growers should use this information to make more accurate decisions about precise seed rates before drilling the crop in question.

TARGETING 270 PLANTS/M² IN SPRING. BASED ON TGW'S FROM 2025 DAFM RECOMMENDED LIST / 2023 & 2024 RL / NL TRIALS

WINTER WHEAT			Good conditions Late Sept/Early Oct sowing 80% Establishment		Average conditions Mid-October sowing 75% Establishment		Poor conditions Nov / Dec sowing 65% Establishment *	
	VARIETY	TGW	kg/Ha	Stone/ac	kg/Ha	Stone/ac	kg/Ha	Stone/ac
	FITZROY	53.5	181	11.7	193	12.5	222	14.4
	GRAHAM	51.5	174	11.3	185	12.0	214	13.9
	LG REBELLION	50.6	171	11.1	182	11.8	210	13.6
	RGT HEXTON	50.6	171	11.1	182	11.8	210	13.6
	CHAMPION	50.2	169	11.0	181	11.7	209	13.5
	KWS SCOPE	53.1	179	11.6	191	12.4	221	14.3
	KWS EXTASE	51.0	172	11.1	184	11.9	212	13.7

TARGETING 300 PLANTS/M² IN SPRING (HYBRID = 200 PLANTS). BASED ON TGW'S FROM 2025 DAFM REC LISTS / 2024 DAFM REC LIST TRIALS

WINTER BARLEY			Good conditions September sowing 85% Establishment		Average conditions Early/Mid October sowing 80% Establishment		Poor conditions Late Oct / Nov sowing 70% Establishment	
	VARIETY	TGW	kg/Ha	Stone/ac	kg/Ha	Stone/ac	kg/Ha	Stone/ac
	KWS CASSIA 2R	54.3	192	12.4	204	13.2	233	15.1
	KWS TARDIS 2R	54.7	193	12.5	205	13.3	234	15.2
	INTEGRAL 6R CONV	52.3	185	12.0	196	12.7	224	14.5
	MOLLY 2R	58.4	206	13.3	219	14.2	250	16.2
	ORCADE 2R	63.3	223	14.5	237	15.4	271	17.6
	SY ARMADILLO 6R HYB	49.3	116	7.5	123	8.0	141	9.1

TARGETING 350 PLANTS/M² IN SPRING. BASED ON TGW'S FROM 2025 DAFM RECOMMENDED LISTS

WINTER & SPRING OATS			Good conditions 85% Establishment		Average conditions 80% Establishment		Poor conditions 70% Establishment	
	VARIETY	TGW	kg/Ha	Stone/ac	kg/Ha	Stone/ac	kg/Ha	Stone/ac
	HUSKY	42.2	174	11.3	185	12.0	211	13.7
	WPB ENYA	48.1	198	12.8	210	13.6	241	15.6
	WPB ISABEL	45.0	185	12.0	197	12.7	225	14.6

TARGETING 350 ESTABLISHED PLANTS/M². BASED ON TGW'S FROM 2025 DAFM RECOMMENDED LIST

SPRING WHEAT			Good conditions Late March / April sowing 90% Establishment		Average conditions March sowing 85% Establishment		Difficult conditions Early Sowing (Feb) 750% Establishment	
	VARIETY	TGW	kg/Ha	Stone/ac	kg/Ha	Stone/ac	kg/Ha	Stone/ac
	KWS FIXUM	51.4	200	12.9	212	13.7	240	15.5
	WPB DUNCAN	47.9	186	12.1	197	12.8	224	14.5

TARGETING 300 ESTABLISHED PLANTS/M². BASED ON TGW FROM 2025 DAFM RECOMMENDED LIST / 2024 REC LIST TRIALS

SPRING BARLEY			Good conditions Late March/April sowing 90% Establishment		Average conditions March sowing 85% Establishment		Difficult conditions Early Sowing (Feb) 80% Establishment	
	VARIETY	TGW	kg/Ha	Stone/ac	kg/Ha	Stone/ac	kg/Ha	Stone/ac
	BELTER	58.0	193	12.5	205	13.3	232	15.0
	GERALDINE	54.3	181	11.7	192	12.4	217	14.1
	GRETCHEN	57.1	190	12.3	202	13.0	228	14.8
	HURLER	56.4	188	12.2	199	12.9	226	14.6
	PLANET	55.1	184	11.9	194	12.6	220	14.3
	SPINNER	55.2	184	11.9	195	12.6	221	14.3
	SY AMITY	57.3	191	12.4	202	13.1	229	14.8