

Kernza® – *Thinopyrum intermedium*

Key Cultivars:

- MN-Clearwater
- TLI 801
- New cultivars being developed in Minnesota (MN 2022) and Canada

Climate Risk Notes:

Rising temperature in the summer may make it more difficult for Kernza to flower and for the seeds to set.

Vernalization is required for the flowering Kernza. However, if temperatures dramatically increase, this vernalization requirement may be difficult to meet.

Storm intensity, that has recently been increasing, can cause flooding and lodging during harvest.

	<i>Key Months for Crop Development and Thresholds</i>											
	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
Stage of growth (<i>under current conditions</i>)	Dormant ^s	Dormant ^s	Dormant ^s	Dormant ^s	Vegetative growth ^s	Vegetative growth ^s	Vegetative growth, Flowering ^s	Flowering, Seed formation, Harvest ^{s,n,o}	Planting, Harvest ^{n,o}	Planting, Vegetative growth ^{o,s}	Planting, Vegetative growth ^{o,s}	Dormant ^s
Min Absolute Temp (°F)	-38 ^{g,v}	-38 ^{g,v}	-38 ^{g,v}	-38 ^{g,v}	32 ^{a,b,f}	32 ^{a,b,f}	32 ^{a,b,f}	32 ^{a,b,f}	32 ^{a,b,f}	32 ^{a,b,f}	32 ^{a,b,f}	-38 ^{g,v}
Min Optimal Temp (°F)	-5 ^{g,h,l}	-5 ^{g,h,l}	-5 ^{g,h,l}	-5 ^{g,h,l}	50 ⁱ	50 ⁱ	50 ⁱ	50 ⁱ	50 ⁱ	50 ⁱ	50 ⁱ	-5 ^{g,h,l}
Max Optimal Temp (°F)	40 ^{d,i,j}	40 ^{d,i,j}	40 ^{d,i,j}	40 ^{d,i,j}	80 ^{b,l,t}	80 ^{b,l,t}	80 ^{b,l,t}	80 ^{b,l,t}	80 ^{b,l,t}	80 ^{b,l,t}	80 ^{b,l,t}	40 ^{d,i,j}
Max Absolute Temp (°F)					100 ^{h,k,u}	100 ^{h,k,u}	100 ^{h,k,u}	100 ^{h,k,u}	100 ^{h,k,u}	100 ^{h,k,u}	100 ^{h,k,u}	

<i>Climate</i>									<i>Soil</i>						
Min Optimal Temp (°F)	Max Optimal Temp (°F)	Min Absolute Temp (°F)	Max Absolute Temp (°F)	Germination Soil Temp (°F)	Growing Degree Days (32°F base)	Chilling Hours (32-45 °F)	Min Rainfall (in/year)	Max Rainfall (in/year)	Min pH	Max pH	Optimal Soil Texture	Absolute Soil Texture	Optimal Soil Drainage	Absolute Soil Drainage	Soil Depth (in)
-5 ^{g,h,l}	80 ^{b,l,t}	-38 ^{g,v}	100 ^{h,k,u}	>34 ^e	2000 ^{a,b,f}	1000 ^{d,i,j}	12 ^{b,l,t}	36 ^{b,l,t}	5.5 ^{c,p,q}	7 ^{c,p,q}	Sand, sandy loam, loamy sand, silt loam ^{c,m,t}	Sandy clay loam, silty clay loam, clay loam, silt, peat, muck ^{c,m,t}	Well drained ^{c,r,t}	Somewhat excessively drained ^{c,r,t}	18 ^{b,c,t}

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