

Table S3. Improving drought tolerance of wheat through engineering gene. A complement of this table is available from [201].

Gene	Source	Improved traits	References
<i>P5CS</i>	<i>T. aestivum</i>	Promotes proline accumulation	[242]
<i>TaFER-5B</i>	<i>T. aestivum</i> cv TAM107	Promotes higher leaf's iron and ROS content, drought and temperature tolerance	[201]
<i>TaPEPKR2</i>	<i>T. aestivum</i> cv TAM107	Promotes higher drought tolerance and root length	[201]
<i>TaSHN1</i>	<i>T. aestivum</i> cv RAC875	Promotes lower stomatal density and leaf water loss, beter recovery after severe drought	[243]
<i>TaNf-YB4</i>	<i>T. aestivum</i> cv RAC875	Promotes more spikes	[243]
<i>DREB/CBF</i>	<i>T. aestivum</i> cv RAC875	Enhanced ability to survive to frost and drought	[243]
<i>TuNAC69</i>	<i>T. aestivum</i>	Larger root biomass and root length	[244]
<i>TabZIP2</i>	<i>T. aestivum</i> cv RAC875	Fewer spikes and seeds, higher seed weight	[243]
<i>DREB</i>	<i>T. durum</i> cv Langdon	Higher survival rate, slower growth, delayed flowering, lower grain yield	[245]
<i>RRF</i>	Rice	Promotes chloroplast development and early stages of embryo development.	[246]
Rhodanese	Rice	Promotes cell cycle control by phosphatase superfamily protein	[246]
<i>MRL1</i>	Rice	A conserved pentatricopeptide repeat protein required for stabilization of rbcL mRNA	[246]
<i>PGRL1B</i>	Rice	A transmembrane protein present in thylakoids. Plants lacking PGRL1 show perturbation of cyclic electron flow	[246]
<i>LHCB3</i>	Rice	A component of the main light-harvesting chlorophyll a/b-protein complex of Photosystem II (LHC II)	[246]
<i>RPH1</i>	Rice	A chloroplast protein RPH1 (resistance to <i>Phytophthora 1</i>) involved in immune response to <i>Phytophthora brassicae</i>	[246]
<i>APL1</i>	Rice	Large subunit of ADP-glucose pyrophosphorylase, which catalyzes the first and rate-limiting step in starch biosynthesis.	[246]
<i>HAD</i>	Rice	Haloacid dehalogenase-like hydrolase (HAD) superfamily protein	[246]
<i>SOQ1</i>	Rice	Suppressor of quenching 1 that prevents the formation	[246]

		of a slowly reversible form of antenna quenching, thereby maintaining the efficiency of light harvesting.	
<i>PEROXIN11C</i>	Rice	Member of the <i>peroxin11</i> (<i>PEX11</i>) gene family, integral to peroxisome membrane, controls peroxisome proliferation	[246]
<i>HvAKT2</i>	Barley	Found in plasma membrane, H ⁺ homeostasis, K ⁺ uptake	[247]
<i>HvHAK1</i>	Barley	Found in plasma membrane, H ⁺ homeostasis, K ⁺ uptake	[247]
<i>BART1_0-P34164</i>	Barley	Molecular chaperone HtpG, stabilize the folding, association and translocation	[235]
<i>BART1_0-p07678</i>	Barley	Aquaporin protein that transport water	[235]
<i>BART1_0-P47576</i>	Barley	Betaine aldehyde dehydrogenase; it produces glycine betain and acts as osmoprotectant	[235]
<i>BART1_0-P13794</i>	Barley	Absciscic stress-ripening protein 2, involved in plant growth and development	[235]
<i>BART1_0-P29183</i>	Barley	Sucrose synthase	[235]
<i>BART1_0-P29382</i>	Barley	Hexosyltransferase	[235]
<i>BART1_0-P21831</i>	Barley	2C-type protein phosphatase protein	[235]
<i>BART1_0-P15058</i>	Barley	Putative zeaxanthin epoxidase	[235]
<i>mtlD</i>	<i>Escherichia coli</i>	Improved biomass and mannitol accumulation	[248]
<i>DHN1</i>	Maize	Dehydrins, help keeping cellular stability	[249]
<i>KNR6</i>	Maize	KERNEL NUMBER PER ROW6, which interacts with GTPase leading to increase the kernel number and to enhance the maize grain yield	[250]
<i>YIGE1</i>	Maize	Encodes an unidentified protein that may have a role in sucrose and auxin signaling pathways, which could have an impact on the activity of the inflorescence meristem (IM) and on the maize inflorescence morphogenesis	[251]
<i>EAD1</i>	Maize	Encodes a protein with cytoplasmic membrane localization that is selectively expressed in xylem conduit tissues of early maize ears and an aluminum-activated malate transporter.	[252]
<i>AtGA2ox1</i>	Maize	Preservation of cellular osmotic potential, regulating gibberellins content and enhancing transgenic maize's drought resistance.	[253]
<i>LEA5-D-like</i>	Maize		[254]
<i>SbER2-1</i>	Maize	Present in plasma membrane and chloroplast. The transgenic maize have enhanced photosynthesis rate	[255]

		and phenylpropanoid metabolism that promotes drought tolerance.	
<i>qEL7</i>	Maize	KERNEL EAR LENGTH7 increases the ethylene level, which play a role in auxin biosynthesis and boost grain yield	[256]
<i>ZmNF-YB16</i>	Maize	Transgenic maize showed high rate of photosynthesis and cellular antioxidant capacity during the vegetative and reproductive stage.	[257]
<i>ZmPYL7</i>	Maize	The expression of this gene in shoots and roots regulates the ABA level and enhances drought tolerance	[258]
<i>ahb2</i>	Maize	Induce fast stomata closure to reduce water lost during dehydration stress.	[259]
<i>BADH</i>	<i>Atriplex hortensis</i>	Higher BADH activity under normal growth	[260]