

Indexed in SCI

Available online at www.sciencedirect.com

ScienceDirect

Review

Yield penalty of maize (*Zea mays* L.) under heat stress in different growth stages: A review 2465

LI Teng, ZHANG Xue-peng, LIU Qing, LIU Jin, CHEN Yuan-quan, SUI Peng

Crop Science

Heterosis and heterotic patterns of maize germplasm revealed by a multiple-hybrid population under well-watered and drought-stressed conditions 2477

SANG Zhi-qin, ZHANG Zhan-qin, YANG Yu-xin, LI Zhi-wei, LIU Xiao-gang, XU Yun-bi, LI Wei-hua

Genetic dissection of ear-related traits using immortalized F₂ population in maize 2492

GAO Ri-xin, HU Ming-jian, ZHAO Hai-ming, LAI Jin-sheng, SONG Wei-bin

Characterization of the petiole length in soybean compact architecture mutant M657 and the breeding of new lines 2508

GAO Hua-wei, SUN Ru-jian, YANG Meng-yuan, YAN Long, HU Xian-zhong, FU Guang-hui, HONG Hui-long, GUO Bing-fu, ZHANG Xiang, LIU Li-ke, ZHANG Shu-zhen, QIU Li-juan

Genome-wide association and linkage mapping strategies reveal genetic loci and candidate genes of phosphorus utilization in soybean 2521

ZHANG Hua, WU Hai-yan, TIAN Rui, KONG You-bin, CHU Jia-hao, XING Xin-zhu, DU Hui, JIN Yuan, LI Xi-huan, ZHANG Cai-ying

A geranylgeranyl pyrophosphate synthase gene, *lbGGPS*, increases carotenoid contents in transgenic sweetpotato 2538

LI Rui-jie, ZHAI Hong, HE Shao-zhen, ZHANG Huan, ZHAO Ning, LIU Qing-chang

Growth characteristics and grain yield of machine-transplanted medium *indica* hybrid rice with high daily yield 2547

DENG Fei, HE Lian-hua, CHEN Duo, ZHANG Chi, TIAN Qing-lan, WU Zhen-yuan, LI Qiu-ping, ZENG Yu-ling, ZHONG Xiao-yuan, CHEN Hong, WANG Li, REN Wan-jun

Strip deep rotary tillage combined with controlled-release urea improves the grain yield and nitrogen use efficiency of maize in the North China Plain 2559

HAN Yu-ling, GUO Dong, MA Wei, GE Jun-zhu, LI Xiang-ling, Ali Noor MEHMOOD, ZHAO Ming, ZHOU Bao-yuan

Cotton maturity and responses to harvest aids following chemical topping with mepiquat chloride during bloom period 2577

QI Hai-kun, DU Ming-wei, MENG Lu, XIE Liu-wei, A. Egrinya ENEJI, XU Dong-yong, TIAN Xiao-li, LI Zhao-hu





Sponsored by CAAS

© 2022, Chinese Academy of Agricultural Sciences (CAAS). All rights reserved. By your submission of this work and effectively at our acceptance for publication, you hereby assign rights of the manuscript identified above and any tables, illustrations and other materials submitted for publication as part of the manuscript — including but not limited to copyrights, distribution rights, information network dissemination rights, broadcasting rights, performance rights, translation rights, compilation rights, adaptation rights and other copyright property rights, in print, electronic and all other media, in any form, in all languages, all over the world, and the rights to license others to do the same, exclusively to CAAS. Submission of a manuscript implies that the submitted work has not been published before (except as part of a thesis or lecture note or report, or in the form of an abstract); that it is not under consideration for publication elsewhere; that its publication has been approved by all co-authors as well as by the authorities at the institute where the work has been carried out; that, if and when the manuscript is accepted for publication, the authors hand over the transferable copyrights of the accepted manuscript to CAAS, and that the manuscript or parts thereof will thus not be published elsewhere in any language without the consent of the copyright holder. Author(s) will have the right to share their article in the same ways permitted to the third parties under the relevant user license, as well as certain scholarly usage rights.



Co-sponsored by CAASS

The electronic full texts are available on ScienceDirect: <http://www.sciencedirect.com/science/journal/20953119>



Horticulture

A novel long non-coding RNA, *DIR*, increases drought tolerance in cassava by modifying stress-related gene expression 2588

DONG Shi-man, XIAO Liang, LI Zhi-bo, SHEN Jie, YAN Hua-bing, LI Shu-xia, LIAO Wen-bin, PENG Ming

Genome-scale mRNA and miRNA transcriptomic insights into the regulatory mechanism of cucumber corolla opening 2603

SONG Xiao-fei, GE Dan-feng, XIE Yang, LI Xiao-li, SUN Cheng-zhen, CUI Hao-nan, ZHU Xue-yun, LIU Ren-yi, YAN Li-ying

Establishment of an efficient regeneration and genetic transformation system for *Malus prunifolia* Borkh. ‘Fupingqiuzi’ 2615

LIU Yu-song, WANG Hong-ying, ZHAO Yong-juan, JIN Yi-bo, LI Chao, MA Feng-wang

Plant Protection

BcSDR1* is involved in regulation of glucose transport and cAMP and MAPK signaling pathways in *Botrytis cinerea 2628

SI He-long, ZHANG Kang, LI Bai, YUAN Xue-mei, ZANG Jin-ping, CAO Hong-zhe, XING Ji-hong, DONG Jin-gao

Tomato mottle mosaic virus: Characterization, resistance gene effectiveness, and quintuplex RT-PCR detection system 2641

Carlos Kwesi TETTEY, YAN Zhi-yong, MA Hua-yu, ZHAO Mei-sheng, GENG Chao, TIAN Yan-ping, LI Xiang-dong

Study on burrowing nematode, *Radopholus similis*, pathogenicity test system in tobacco as host 2652

YANG Si-hua, ZHAO Li-rong, DING Sha, TANG Shi-qiao, CHEN Chun, ZHANG Huan-xin, XU Chun-ling, XIE Hui

A survey on the off-target effects of insecticidal double-stranded RNA targeting the *Hvβ COPI* gene in the crop pest *Henosepilachna vigintioctopunctata* through RNA-seq 2665

LÜ Jing, Satyabrata NANDA, CHEN Shi-min, MEI Yang, HE Kang, QIU Bao-li, ZHANG You-jun, LI Fei, PAN Hui-peng

Animal Science • Veterinary Medicine

Transcriptomic analysis elucidates the enhanced skeletal muscle mass, reduced fat accumulation, and metabolically benign liver in human follistatin-344 transgenic pigs 2675

LONG Ke-ren, LI Xiao-kai, ZHANG Ruo-wei, GU Yi-ren, DU Min-jie, XING Xiang-yang, DU Jia-xiang, MAI Miao-miao, WANG Jing, JIN Long, TANG Qian-zi, HU Si-lu, MA Ji-deng, WANG Xun, PAN Deng-ke, LI Ming-zhou

Dietary threonine deficiency affects expression of genes involved in lipid metabolism in adipose tissues of Pekin ducks in a genotype-dependent manner 2691

JIANG Yong, MA Xin-yan, XIE Ming, ZHOU Zheng-kui, TANG Jing, CHANG Guo-bin, CHEN Guo-hong, HOU Shui-sheng

Cold plasma promotes Sertoli cell proliferation via AMPK–mTOR signaling pathway 2700

ZHANG Jiao-jiao, LI Ya-qj, SHI Mei, WANG Yu-sha, TANG Yao, WANG Xian-zhong



<http://www.ChinaAgriSci.com>
 Submit online via ScholarOne
 Advance online publications are accessible

Agro-Ecosystem & Environment

Effect of long-term fertilization on phosphorus fractions in different soil layers and their quantitative relationships with soil properties 2720

WANG Qiong, QIN Zhen-han, ZHANG Wei-wei, CHEN Yan-hua, ZHU Ping, PENG Chang, WANG Le, ZHANG Shu-xiang, Gilles COLINET

Long-term straw addition promotes moderately labile phosphorus formation, decreasing phosphorus downward migration and loss in greenhouse vegetable soil 2734

ZHANG Yin-jie, GAO Wei, LUAN Hao-an, TANG Ji-wei, LI Ruo-nan, LI Ming-yue, ZHANG Huai-zhi, HUANG Shao-wen

Quantifying *in situ* N₂ fluxes from an intensively managed calcareous soil using the ¹⁵N gas-flux method 2750

LIU Yan, WANG Rui, PAN Zhan-lei, ZHENG Xun-hua, WEI Huan-huan, ZHANG Hong-rui, MEI Bao-ling, QUAN Zhi, FANG Yun-ting, JU Xiao-tang

Food Science

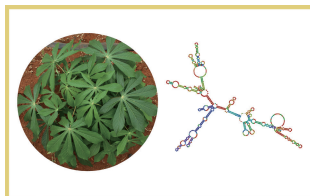
The metabolomics variations among rice, brown rice, wet germinated brown rice, and processed wet germinated brown rice 2767

REN Chuan-ying, LU Shu-wen, GUAN Li-jun, HONG Bin, ZHANG Ying-lei, HUANG Wen-gong, LI Bo, LIU Wei, LU Wei-hong

Identification of peanut oil origins based on Raman spectroscopy combined with multivariate data analysis methods 2777

ZHU Peng-fei, YANG Qing-li, ZHAO Hai-yan

COVER



Cassava (*Manihot esculenta*) is an important tropical crop for starch, biofuel production, and animal feed due to its starch-enriched root. Severe drought stresses affect cassava productivity and quality. In plants, it is known that long non-coding RNAs (lncRNAs) are involved in response to abiotic stresses by regulating gene expression. However, the function of cassava lncRNAs in drought response remains largely unknown. The present four-year study demonstrated that *DROUGHT-INDUCED INTERGENIC lncRNA (DIR)* play a pivotal role in regulating drought stress tolerance in cassava, which may be related to mRNA export and protein quality control pathways. Gain-of-function analysis revealed that *DIR* overexpression in transgenic cassava seedlings conferred tolerance to drought stress. RNA sequencing (RNA-seq) analysis indicated that a range of drought-responsive genes, such as TFs (*NAC*, *WRKY* and *bHLH*), were induced in *DIR*-overexpressing transgenic lines. Furthermore, we found that *DIR* interacted directly with proteins that regulate mRNAs or protein metabolisms in cassava cells to cope with drought stress. Taken together, this study greatly extends the repertoire of lncRNAs in plants, and may provide new insights into lncRNA functions conserved among tropical crops in response to drought stress. The cover photo shows the morphology of field-grown of cassava plant and the predicted secondary structure of *DIR*, which was provided by Prof. Ruan Mengbin and Prof. Li Shuxia from Institute of Tropical Bioscience and Biotechnology, Chinese Academy of Tropical Agricultural Sciences, China. See pages 2588–2602 for more details.