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1. 一种高效小麦育种装置

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2019年04月01日

前沿资讯

1．Comparing the effects of growing conditions on simulated Ethiopian tef and wheat yields(生长条件变化对埃塞俄比亚苔麸和小麦产量影响的对比)

简介：苔麸和小麦是埃塞俄比亚的主要粮食作物，是埃塞俄比亚粮食安全的重要组成部分。采用DSSAT NWheat和DSSAT Tef模型，研究了氮肥、种植时间和大气二氧化碳对30年间埃塞俄比亚四个地区苔麸和小麦产量的影响。实验观察到小麦产量始终高于苔麸产量，但模型表明，在一些低产量的情况下，苔麸产量可以超过小麦。因为更高的收获指数导致更多的额外生物量分配给粮食产量，小麦产量对氮肥的响应比苔麸强。通常情况下，高降雨量会增加氮素淋失，加剧了氮素胁迫，导致两种作物产量的下降。早期种植通常对产量不利，除非在干旱和高温胁迫末期的地区和年份。随着大气二氧化碳浓度的不断增加，未来只要氮不受限制，小麦作为C3作物的表现将进一步超过C4作物苔麸。培育抗倒伏性和较高的收获指数可以显著提高未来的苔麸产量，而较高的氮肥施用和避免浸出的分肥施用可以提高苔麸和小麦产量。由于小麦对氮的响应比苔麸强，对未来大气中二氧化碳水平升高的反应更为灵敏，而且通常产量更高，因此小麦可以为埃塞俄比亚的粮食安全增加更多的保障。然而，在低投入、低产量条件下，由于其较高的文化、营养和经济价值，种植苔麸可能仍然是埃塞俄比亚的首选谷物。

来源：Agricultural and Forest Meteorology

发布日期:2019-03-15

全文链接:

http://agri.ckcest.cn/file1/M00/06/61/CsgkOFyYggqAHekkAFCE01fRjcg718.pdf

学术文献

1．Development of P genome-specific SNPs and their application in tracing Agropyron cristatum introgressions in common wheat(P基因特异性SNPs的研究进展及其在普通小麦（Agropyron cristatum）基因渗入过程中的应用)

简介：Wheat (Triticum aestivum L.) is one of the three major global food crops. High-temperature stress can affect its yield and quality. Studies of the effect of high-temperature stress on wheat kernel development are important because they can reveal the stability of wheat quality and lead to the genetic improvement of wheat quality traits. In this study, the isobaric tags for relative and absolute quantitation (iTRAQ) method was adopted to analyze changes in the protein expression profile of wheat cultivars under high temperature stress. The protein content of wheat grain increased under heat stress, while the SDS-sedimentation value and starch content decreased. Grain filling was deficient under high temperature stress, which reduced thousand-kernel weight but did not affect wheat kernel length. The 207 differentially expressed proteins identified in Gaocheng 8901 under heat stress were associated with energy metabolism, growth and development, and stress response. Gene Ontology enrichment analysis showed that the annotated proteins that were

differentially expressed in Gaocheng 8901 under heat stress were involved mainly in stimulus response, abiotic stress response, stress response, and plasma membrane. A set of 78 differentially expressed proteins were assigned to 83 KEGG signaling/metabolic pathways. KEGG pathway enrichment analysis showed that this set of proteins was significantly enriched in members of 51 pathways, and the proteins participated mainly in protein synthesis in the endoplasmic reticulum, starch and sucrose metabolism, and reaction on ribosomes. Five differentially expressed proteins were involved in proteinprotein interaction networks that may greatly influence the yield and quality of wheat grain. In wheat, high-temperature stress leads to a variety of effects on protein expression and may ultimately cause changes in yield and quality.

来源：The Crop Journal

发布日期:2018-12-01

全文链接:

http://agri.ckcest.cn/file1/M00/06/61/CsgkOFyYjQGAZAX5ACS9kShw6Hs233.pdf

2. Identifying changes in the wheat kernel proteome under heat stress using iTRAQ(利用iTRAQ技术鉴定小麦籽粒蛋白质组在高温胁迫下的变化)

简介：小麦（Triticum aestivum L.）是全球三大粮食作物之一。高温胁迫会影响其产量和质量。研究高温胁迫对小麦籽粒发育的影响具有重要意义，因为高温胁迫能够揭示小麦品质的稳定性，并影响小麦品质性状的遗传改良。本研究采用同位素标记相对和绝对定量法（iTRAQ）分析高温胁迫下小麦品种蛋白质表达谱的变化。高温胁迫下小麦籽粒蛋白质含量增加，SDS沉淀值和淀粉含量降低；籽粒灌浆不足，减轻了千粒重，但不影响小麦籽粒长度；Gaocheng8901的207个差异表达蛋白与能量代谢、生长发育和应激反应有关。基因本体富集分析表明，在高温胁迫下，Gaocheng8901中差异表达的注释蛋白主要参与刺激反应、非生物应激反应、应激反应和质膜。一组78个差异表达蛋白被分配到83个KEGG信号/代谢途径。KEGG途径富集分析表明，这套蛋白在51条途径中有显著富集，主要参与内质网蛋白合成、淀粉和蔗糖代谢、核糖体反应。五种不同表达的蛋白质参与了蛋白质-蛋白质相互作用网络，这可能对小麦产量和品质产生重大影响。在小麦中，高温胁迫对蛋白质表达产生多种影响，并最终导致产量和品质的变化。

来源：The Crop Journal

发布日期:2018-12-01

全文链接:

http://agri.ckcest.cn/file1/M00/06/61/CsgkOFyYiy2AN3P6AA7qTXYgNeA530.pdf

3. Short communication: Similar wheat varieties can impart different flavors(简评：相似的小麦品种可以传递不同的味道)

简介：Most evaluations of wheat varieties do not include the sensory attributes of wheat-based foods. For example, the 2017 wheat quality report published by the U.S. Wheat Associates only considers the sensory attributes of hard white wheat in the context of Asian noodles (US Wheat Associates, 2017). Likewise, the wheat varieties developed at Oklahoma State University (OSU) are evaluated using a battery of tests, from performance in the field to

their rising ability during baking, but their flavor profiles are not considered. This is unfortunate, as wheat based foods made from different varieties can convey different flavors (Callejo et al., 2015; Kucek et al., 2016; Starr, Bredie and Hansen, 2012; Vindras-Fouillet et al., 2014). Sensory analysis is not performed at OSU because it is assumed that all hard red winter wheat varieties designed for the Oklahoma region will taste approximately the same. As this short communication shows, this assumption is not warranted.

来源： Journal of Cereal Science

发布日期:2018-11-01

全文链接:

http://agri.ckcest.cn/file1/M00/06/61/CsgkOFyYjl-AB5pmAAgqOkI-1QE907.pdf

相关专利

1．一种高效小麦育种装置

简介：本发明公开了一种高效小麦育种装置，包括育种箱本体和控制器；育种箱本体左侧铰接有箱门，育种箱本体内部从上至下间隔设有多个左右对称的育种盘，育种箱本体两侧的内壁上对应每个育种盘的位置处对称设有能够承托育种盘的L形托板，两个对称的育种盘中间设有V形过滤板且两个育种盘分别和V形过滤板的两端固定连接，每个育种盘的上方设有喷头，育种箱本体的底板上设有沥水箱，育种箱本体内壁的顶端分别安装有温度传感器和湿度传感器，育种箱本体的一侧还设有控制器，育种箱本体的侧壁上安装有补光灯，温度传感器、湿度传感器、抽水泵和补光灯分别通过导线与控制器电连接。本发明可在整个育种过程中控制温度、湿度，从而大大提高了育种率。

来源： 国家知识产权局专利检索及分析

发布日期:2018-09-21

全文链接:

http://agri.ckcest.cn/file1/M00/06/61/CsgkOFyYju2AQpMpAAVlOI_9kBO957.PDF