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## 小麦遗传育种专题

### 本期导读

#### ► 学术文献

1. 在小麦育种过程中3A染色体含有几个多效性和稳定的干旱响应等位基因决定了小麦的光合效率
2. 阿尔及利亚撒哈拉两个地区小麦地方品种间形态性状的变异——对小麦育种的潜在兴趣

#### ► 相关专利

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2. 一小麦育种杂交授粉器
3. 一种小麦育种施肥装置

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## ► 学术文献

### 1 . Chromosome 3A harbors several pleiotropic and stable drought-responsive alleles for photosynthetic efficiency selected through wheat breeding (在小麦育种过程中3A染色体含有几个多效性和稳定的干旱响应等位基因决定了小麦的光合效率)

简介: Water deficit is the most severe stress factor in crop production threatening global food security. In this study, we evaluated the genetic variation in photosynthetic traits among 200 wheat cultivars evaluated under drought and rainfed conditions. Significant genotypic, treatments, and their interaction effects were detected for chlorophyll content and chlorophyll fluorescence parameters. Drought stress reduced the effective quantum yield of photosystem II (YII) from the anthesis growth stage on. Leaf chlorophyll content measured at anthesis growth stages was significantly correlated with YII and non-photochemical quenching under drought conditions, suggesting that high throughput chlorophyll content screening can serve as a good indicator of plant drought tolerance status in wheat. Breeding significantly increased the photosynthetic efficiency as newer released genotypes had higher YII and chlorophyll content than the older ones. GWAS identified a stable drought-responsive QTL on chromosome 3A for YII, while under rainfed conditions, it detected another QTL on chromosome 7A for chlorophyll content across both growing seasons. Molecular analysis revealed that the associated alleles of AX-158576783 (515.889 Mbp) on 3A co-segregates with the NADH-ubiquinone oxidoreductase (TraesCS3A02G287600) gene involved in ATP synthesis coupled electron transport and is proximal to WKRY transcription factor locus. This allele on 3A has been positively selected through breeding and has contributed to increasing the grain yield.

来源: PubMed Central

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全文链接:

<http://agri.ckcest.cn/file1/M00/03/5B/Csgk0Yj8AT0Ab95EAGnVnux7uqM753.pdf>

### 2 .Variation of morphological traits among wheat (*Triticum aestivum* L.) landraces from two regions of the Algerian Sahara. Potential interest for wheat breeding (阿尔及利亚撒哈拉两个地区小麦地方品种间形态性状的变异——对小麦育种的潜在兴趣 )

简介: In the Saharan regions of Algeria wheat is cultivated by farmers in small areas of the oases. Saharan wheat landraces that are the result of natural and human selection in hostile environments for several centuries could represent an interesting material to improve abiotic stress tolerance in breeding programs. Indeed, a high level of drought, heat and salt tolerance has been reported in this germplasm. Very little information is however available on the morphological characteristics of these landraces. In the present study, a total of 58 bread wheat landraces originating from ten oases of the Adrar and Tamanrasset regions were characterised, together with two commercial varieties, for 21 quantitative traits

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related to plant, spike, grain, glume and lemma. A wide morphological variation was noted among landraces, as well as differences related to their environments of origin. Altitude was a determining factor of variation, landraces originating from low altitude exhibiting shorter stems and less fertile tillers and producing more grain, compared to landraces originating from high altitude. The landraces of Adrar with very dense spike of normal type were opposed to the varieties with spikes of speltoid type originating from Tamanrasset. High heritability was recorded for thousand grain weight, number of grains per spike, number of fertile tillers per plant, spike length and spike width, suggesting the possibility of using these traits in wheat breeding programs.

来源: SpringerLink

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<http://agri.ckcest.cn/file1/M00/03/5B/Csgk0Yj7-pyAK1XMAAz31sAK1hQ368.pdf>

## ➤ 相关专利

### 1. 一种小麦育种用小麦种子晾晒装置

**简介:** 本实用新型属于晾晒装置技术领域,尤其涉及一种小麦育种用小麦种子晾晒装置,所述小麦育种用小麦种子晾晒装置包括:箱体;以及设在所述箱体内部的晾晒组件,用于对小麦种子进行晾晒;所述晾晒组件包括:通过电机支架与所述箱体连接的驱动件;以及与所述驱动件连接的转杆;连接杆,一侧与转杆转动连接,另一侧转动连接有顶杆,所述连接杆与顶杆的中部转动连接;所述顶杆的一侧与箱体转动连接,另一侧转动连接有滑块;所述滑块的外侧滑动连接有滑槽。本实用新型通过设置通风组件,使得小麦种子的晾晒效果更好,在本实施例中,通过将晾晒组件和通风组件结合,从而使得装置得以对小麦进行晾晒,并自动翻面,晾晒效果好,效率高,更加适宜推广使用。

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<http://agri.ckcest.cn/file1/M00/10/2D/Csgk0GS1SwKAR6J3AAV1GcI4t0k349.pdf>

### 2. 一小麦育种杂交授粉器

**简介:** 一种小麦育种杂交授粉器,本发明涉及农作物杂交制种技术领域;且蜗轮固定在旋转板的上表面上,蜗轮套设在放置管的外侧;蜗轮的一侧啮合设置有蜗杆,蜗杆嵌设在固定板的一侧内,蜗杆相邻于蜗轮的一侧位于圆孔内;转动电机嵌设在固定板内部的后侧,转动电机的输出轴与蜗杆的后端固定连接;驱动电机固定在圆孔内壁一侧的上方;从动齿轮套设并固定在放置管的上端;主动齿轮固定在驱动电机的输出轴上,主动齿轮与其中一个从动齿轮啮合设置;授粉机构设置于放置管的下端;旋转机构设置于授粉机构上;推动机构设置于圆孔一侧内壁的下侧,推动机构与旋转机构连接;控制开关固定在提手的顶壁上;可将父本花粉均匀的撒在母本穗子的四周,从而提高了结实率。

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<http://agri.ckcest.cn/file1/M00/10/2D/Csgk0GS1SMKABaunAA1YaU-VZGs719.pdf>

### 3. 一种小麦育种施肥装置

**简介：**本发明涉及一种小麦育种施肥装置，其包括架体，所述架体底部设置有行走轮，所述架体靠近前方设有开沟机构、中部设有下料机构、靠近后方设有覆土机构；所述下料机构包括设置在架体上侧的混合箱，所述混合箱顶部通过下肥管连接有储肥箱、通过单向阀连接有储水箱，所述下肥管内设置有下料组件，所述下料组件包括转动设置于下料管内的下料转轴，所述下料转轴周侧设有下料板，所述下料转轴一端延伸出下料管连接有转动轴，所述转动轴与行走轮的转轴通过传动链连接，所述储水箱的高度低于下料组件，所述混合箱内设有喷洒泵，所述喷洒泵通过管路连接有喷洒头；本发明能够有效避免肥料浪费，充分利用肥料，施肥效果好。

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