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### 小麦关联RIL群体产量性状与品质性状的相关分析

### Correlation Analysis on Yield Related Traits and Quality Traits of Wheat Using Two Associated RIL Populations

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中文关键词: [小麦](#) [产量相关性状](#) [品质性状](#) [相关分析](#)

英文关键词: [Wheat](#) [Yield related traits](#) [Quality traits](#) [Correlation analysis](#)

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中文摘要:

为给小麦高产优质育种提供参考依据,以潍麦8号/烟农19和潍麦8号/济麦20构建的分别含229和485个家系的两个关联重组自交系(RIL)群体为材料,在三个环境下对12个产量相关性状和品质性状进行了分析评价。结果表明,小麦单株产量与其构成因素、每穗小穗数、株高和加工品质正相关,与蛋白含量等营养品质负相关,与抽穗期和开花期无显著相关性。产量构成因素间呈显著负相关,穗粒数和千粒重与每穗小穗数和株高正相关,而单株穗数与每穗小穗数负相关。穗粒数与蛋白含量和湿面筋含量负相关,与吸水率和硬度正相关。单株穗数与品质性状负相关,但多数未达到显著水平。千粒重与蛋白含量负相关,与湿面筋含量显著正相关。说明增加产量与提高蛋白质含量等营养品质确实存在矛盾,但高产和优良的加工品质不矛盾,二者可以协调。在育种中,可以通过调节产量构成因素实现与营养品质的协调,如千粒重和湿面筋含量可以共同提高。此外,各性状间的相关性在两个群体中略有差异,在不同环境中变化很大甚至相反,说明性状间的相关性受到遗传背景和环境因素(如土壤、气候、前茬等)及其互作的影响较大。

英文摘要:

To date, high yield and fine quality are main goals as well as principal contradiction in wheat breeding program. In the present study, two associated recombinant inbred lines (RILs) derived from the crosses Weimai8/Yannong19 and Weimai8/Jimai20 with 229 and 485 lines, respectively, were used as materials to evaluate the correlations for twelve yield related traits and quality traits evaluated in three environments. The correlations were positive between grain yield per plant (GY) with its components (YC, full filled grain number per panicle, 1000 grain weight and panicle number per plant), spiklets per spike, plant height and processing quality, whereas the correlations were negative between GY with protein content or wet glutenin content. And there were no significant correlations between GY with heading date and flowering period. The correlations between different YC were significantly negative. Grain number per spike and 1,000 grain weight were positively correlated to spiklet per spike and plant height, while spike number per plant was negatively correlated to spiklet per spike. Grain number per spike, spike number per plant and protein content, wet glutenin content were negatively correlated, while were positively correlated to processing quality. However, 1,000 grain weight was positively and negatively correlated with protein content and wet glutenin content, respectively. The results above indicated the existential contradiction between GY and nutritional quality, while GY and processing quality could be coordinated. However, the contradiction between GY and nutritional quality could be resolved by coordinating YC and nutritional quality trait, such as 1,000 grain weight and wet glutenin content. The correlations between traits in the two RILs were of some difference, and between different environments the discrepancies were obviously and even was in opposite, demonstrating the influences of genetic background and the environmental factors, such as soil condition, climate, etc.

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