中国农学通报 2011, 27(第18期7月) 41-44 DOI: ISSN: 1000-6850 CN: 11-1984/S

农学—研究报告

普通小麦品种籽粒矿质元素含量分析

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摘要:

山西省中部地区是山西小麦生产的重要地区，了解该区当前主栽小麦品种和骨干亲本的籽粒中矿物元素含量的基因型特点，对进一步选育富含铁、锌等元素的新品种具有指导作用。采用电感耦合等离子发射光谱仪(ICP-AES)分析了17个小麦品种的铁、锌、锰和铜元素含量。结果表明，供试材料中4种元素含量的变化范围较大，铁、锌、锰和铜的平均含量分别为38.19 mg/kg、29.30 mg/kg、38.44 mg/kg和6.89 mg/kg。其中，‘河东乌麦526’、‘京冬8号’和‘冬黑10号’的铁含量大于45 mg/kg，‘太10604’的锌含量最高为42.98 mg/kg，‘河东乌麦526’和‘冬黑10号’锰含量高于45 mg/kg，‘晋麦66’和‘冬黑10号’铜的含量较高，均高于8.50 mg/kg。籽粒中锰与铁、锰和锌元素含量间呈显著相关，其中锰和锌含量间呈极显著相关，相关系数为0.69，其他各元素间相关不显著。可以从小麦主栽品种中筛选高矿质元素含量的基因型，‘河东乌麦526’、‘京冬8号’、‘冬黑10号’和‘太10604’ 4个品种可作为进行籽粒富含铁、锌矿质营养小麦遗传改良的亲本。

关键词: 生物强化

Mineral Elements Concentration Analysis on Major Wheat Cultivars in Central Shanxi Province

Abstract:

The central region of Shanxi Province is very important for wheat production. Understanding the major mineral elements concentration of these cultivars and core parents will provide useful information for wheat nutritional breeding. The iron (Fe), zinc (Zn), manganese (Mn), copper (Cu) of 17 varieties/lines were investigated by an inductively couples plasma atomic emission spectroscopy (ICP-AES). The results showed that the 4 mineral elements content appeared to have a great variation, the mean grain content of Fe, Zn, Mn, Cu was 38.19 mg/kg, 29.30 mg/kg, 38.44 mg/kg and 6.89 mg/kg. The grain Fe content of three cultivars (‘Hedongwumai526’, ‘Jindong8’ and ‘Donghei10’) were over 45 mg/kg, ‘Tai10604’ showed the highest Zn accumulation (42.98 mg/kg). Two cultivars carried Mn content more than 45 mg/kg, and ‘Jinmai66’, ‘Donghei10’ were rich in Cu. Significant positive correlations between the concentrations of Mn and Fe (r= 0.58), Mn and Zn (r=0.69), but not significant between the other elements. It was indicated that genotypes screening with high concentrations of mineral elements from wheat cultivars was effectively. Four cultivars (‘Hedongwumai526’, ‘Jindong8’, ‘Donghei10’ and ‘Tai 10604’) could be used as parents of enriched with Fe and Zn in grains for wheat breeding program.

Keywords: bio-fortification

收稿日期 2011-02-28 **修回日期** 2011-05-17 **网络版发布日期** 2011-07-27

DOI:

基金项目:

山西省留学基金“小麦优质抗病分子标记设计育种”;山西省科技攻关项目“山西中部高产优质抗逆小麦新品种选育”;山西省农科院育种工程“小麦高产优质多抗系列新品种选育”

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