

论文

气象因子对河南省夏玉米产量与品质的影响

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摘要:

以郑单958、浚单20、登海662三个高产玉米品种为材料,于2007-2008年在河南省4个生态区(豫南、豫中、豫东、豫北)研究了气象因子对河南省夏玉米产量与品质的影响。结果表明:4个生态区的玉米产量表现为豫北>豫东>豫中>豫南,其中豫北玉米2年平均产量为708.5kg/667m²,显著高于其他3个生态区。豫东玉米籽粒中粗淀粉、粗脂肪和赖氨酸的含量较高,豫北玉米籽粒中粗蛋白含量较高,豫中玉米籽粒中粗蛋白、粗脂肪和赖氨酸的含量较低。玉米籽粒产量与生育期光照时数、吐丝后光照时数呈极显著正相关(r=0.97, 0.92),与生育期总降水量呈极显著负相关(r=-0.88);籽粒中粗蛋白含量与生育期光照时数、吐丝后光照时数和吐丝后日均光照时数呈极显著正相关(r=0.76, 0.85, 0.88),气象因子与粗淀粉、粗脂肪及赖氨酸的相关性均未达到显著水平。试验表明:在豫北,光照、吐丝后光照、吐丝后日均光照充足是籽粒高产优质的有利因素;在豫南,降雨较多限制了产量的形成;在豫中,生育期积温、吐丝后积温、吐丝后日均积温较高不利于粗淀粉、粗脂肪及赖氨酸的形成积累;在大气湿度较高的豫东,则有利于粗淀粉、粗脂肪及赖氨酸的形成积累。

关键词: 气象因素 玉米产量 籽粒品质

EFFECTS OF CLIMATIC FACTORS ON GRAIN YIELD AND QUALITY OF SUMMER CORN IN HENAN PROVINCE

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Abstract:

Experiments with maize cultivar ZD958, XD20 and DH662 planting on farmland of four ecological area (YS, YE, YM and YN mean area in south part, east part, middle part and north part) in Henan province) were conducted to study the effects of climatic factors on grain yield and quality of summer maize, during 2007 and 2008. Results showed that, the order of average grain yield of maize of two years was YN>YE>YM>YS. Among them, the average grain yield of maize in YN was 708.5kg/667m², which was much higher than that in the other ecological areas. Among four ecological area, the contents of crude starch, crude fat and lysine of grain in YE, crude protein in YN were higher, while crude protein, crude fat and lysine in YM were lower. The grain yield had positive correlation with illumination hours during the whole growth stage and illumination hours per day after silking (r=0.97 and 0.92 respectively), and had a negatively correlated relationship with total rainfall during the whole growth stage (r=-0.88). The crude protein content had positively correlated relationships with illumination hours during the whole growth stage, illumination hours after silking and illumination hours per day after silking (r=0.76, 0.85 and 0.88, respectively), while the contents of crude starch, crude fat and lysine of grain had no significant correlation with climatic factors. Test showed that, sufficient illumination, illumination hours after silking and illumination hours per day after silking were the favorable factors of high yield, high quality grain in YN; rainfall more limited yield formation in YS; higher accumulated temperature, accumulated temperature after silking and accumulated temperature per day after silking were against crude starch, crude fat and lysine formation accumulation in YM; the air humidity higher in YE, was helpful for crude starch, crude fat and lysine formation accumulation.

Keywords: climatic factor maize yield grain quality

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