growth and yield of some promising wheat genotypes as affected by seeding rate and nitrogen fertilization

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Agricultural research station, agricultural research center during 1996/ 97 and 1997/ 98 growing seasons to evaluate the two long spike wheat varieties sids 8 and sids 10 versus the commercial cultivar sids , the three bread wheat genotypes were supplied with 4 n levels (75, 100, 125 and 150 kg/ fad) and were seeded at 3 seeding rates (300, 350 and 400 seeds/ m2 in the first season and 200, 400 and 600 seeds/ m2 in the second season), the soil of the experiments was clay in texture and its chemical analysis showed a high soil content of available n (81.6 and 135.53 ppm in the first and second season, respectively.). sowing date was december, 16 in the first season and november , 27 in the second one. the preceding crop was maize in 1996/ 97 season and cotton in 1997/ 98, a split split plot design with 4 replications was used in both seasons. the 3 wheat genotypes were the main plots, the 4 n levels were randomly distributed in the sub plots and the 3 seeding rates were randomly allocated in the sub sub plots. the sub- subplot area was 8,4 m2, the normal cultural practices of growing wheat in the region were followed, the main results could be summarized as follows: i. genotypes evaluation : 1- the commercial cultivar sids 1 produced significantly higher number of tillers/ 0.05 m2 at 60 das compared with the 2 long spike genotypes in both seasons. also, sids 8 surpassed sids 10 in the this trait in the second season, 2-sids 1 recorded higher values of rgr at 60- 75 das than the 2 long spike genotypes with significant differences in the second season. no significant differences were observed in rgr among the 3 genotypes at 75- 90 and 90- 105 das, 3-the 3 evaluated genotypes did not show any marked differences in lai at the different growth stages (at 60, 75, 90 and 105 das). also, no significant differences were detected in lad from anthesis to ripening as well as in flag leaf area at anthesis 4-sids 1 plants were taller than the two long spike genotypes with significant differences in the second season, 5--the three evaluated genotypes did not show any marked differences in heading and maturity dates in both seasons, 6--sids 10 produced longer spikes than sids 1 and no significant differences were observed among the three genotypes in number of spikelets/ spike and kernels weight/ spike 7-sids 8 produced greater number of kernels/ spike (78 and 80 in the first and second season, respectively) and sids 1 produced lower number (59 and 65 in the two successive seasons), while sids 10 was in-between. (69 and 74), 8-weight of 1000 kernels of the two long spike genotypes surpassed that of sids 1 with significant differences in the first season, whereas sids 1 surpassed significantly sids 8 and sids 10 in number of spikes/ m2 in both seasons, 9-no significant differences were detected in biological yield, grain yield/ fad and harvest index among the three genotypes. however, sids 8 outyielded sids 1, and sids 10 in grain yield by 4.8 and 11.9% in the first season, respectively, corresponding to 6.8 and 5.4% in the second season. the present results did not show any clear superiority of the long spike genotypes over the commercial cultivar sids 1 . the main defect of these genotypes is the few number of spikes/ m2 due to their limited tillering capacity, 10-harvest index of sids 8 was slightly higher than of sids 1 in both seasons, ii. effects of n level, 1-raising n level from 75 to 100, 125 and 150 kg/ fad did not significantly affect number of tillers/ 0.05 m2 at 60 das, rgr at the different growth stages, lad from anthesis to ripening and fla at anthesis, 2-lai at 75, 90 and 105 das was significantly affected by n level in 1996/ 97 season. a

significant increase in lai was induced with the increase in n level, 3-plant height at harvest was significantly increased in1997/ 98 season with increasing n level. the increase in n level to 150 kg/ fad delayed heading, whereas maturity date was not affected by n level, 4• spike length, number of spikelets/ spike, kernels weight/ spike and 1000- kernel weight were not significantly affected by n level, whereas number of kernels/ spike and number of spikes/ m2 were significantly increased with the increase in n level in the second season, 5-biological yield/ fad significantly increased by increasing n level in 1996/ 97 season, whereas grain yield/ fad was not affected, 6-increasing n level significantly reduced h.i. and the lowest h.i. was recorded at the highest n level, iii: effects of seeding rate, 1-number of tillers/ 0.05 m2 at 60 das, increased with the increase in seeding rate. rgr at the different growth stages was not significantly affected by seeding rate, 2-lai significantly increased by increasing seed rate at 75 das in the first season as well as at 90 das in the second one. on the other hand, lai at 60 as well as at 105 das was not significantly affected by seeding rate.3-lad from anthesis to ripening increased with increasing seeding rate. on the other hand, fla insignificantly reduced due to increasing seeding rate.4-plant height was significantly reduced with increasing seeding rate.5-days to 50% heading as well as to 50% maturity were increased with increasing seeding rate, 6-spike length as well as number of spikelets/ spike were not significantly affected by seeding rate, 7-increasing seeding rate significantly reduced number of kernels/ spike, kernels weight/ spike and 1000- kernel weight in both seasons, whereas number of spikes/ m2 significantly increased , 8-biological yield insignificantly increased with the increase in seeding rate, whereas grain yield/ fad significantly increased by 4.5 and 7.2% in 1996/ 97 due to increasing seeding rate from 300 to 350 and 400 seeds/ m2, respectively. in 1997/ 98 season, raising seeding rate from 200 to 400 and 600 seeds/ m2 significantly increased grain yield/ fad by 9.0 and 10.5%, respectively, 9-harvest index significantly increased with the increase in seeding rate in both seasons as a result of increasing grain yield, iv: interaction effect 1- genotype x n level had significant effect on: - number of tillers/ 0.05 m2 at 60 das, - flag leaf area at anthesis (in 1997/ 98). - days to 50% maturity, spike length (in 1996/ 97) - number of kernels/ spike (in 1996/ 97). - 1000- kernel weight (in 1997/ 98) - number of spikes/ m2 at harvest - grain yield/ fad (in 1996/ 97) - harvest index (in 1996/ 9.