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TESTING M8 ADVANCED BARLEY MUTANT LINES FOR MATURITY, LODGING RESISTANCE AND YIELD IMPROVEMENT

Mutation breeding has been as a successful strategy for widening the genetic base of major crops. Syria is a centre of origin for barley (Hordeum vulgare L.) and it is mainly cultivated for livestock feed. Arid and semi-arid regions in Syria need new barley varieties with vigorous early growth, early maturity, lodging resistance, drought tolerance and increased yield. Seeds of a local cultivar, Furat 9, were treated with 100 and 200 Gy doses of gamma radiation. Fourteen selected mutant lines (M8) with their parent (Furat 9) were tested for the above traits at two locations: South of Syria in Ezra'a (AAR 292 mm), and in the North in Sfeera (AAR 276 mm). Data analysis showed late heading (8-14 days) in genotypes grown in Sfeera as compared to Ezra' a. Nonetheless, Mutant lines M7 and M20 showed accelerated maturity from heading to maturity in less than 8 days compared to their counterparts in Ezra'a, while the parent variety had 16 days difference. Non-significant positive correlations (0.278 and 0.063) were noted between plant height and lodging in Ezra'a and Sfeera, respectively. Both M7 and M20 showed lower lodging resistance than the parent in Sfeera and Ezra' a, respectively. Principal component analysis (PCA) of the agricultural traits studied showed a distinctive separation of the genotypes in the two locations, with M20 and M7 distant from the parent in Ezra'a and Sfeera, respectively. Testing of these advanced mutant lines in multiple locations, enables the segregation of genotypes that meet our objective agricultural traits from others. It also provides the mutant genetic material to study and investigate their physiological and biological processes under different environments towards a better understanding of crop behaviour and adaptability.

Country or International Organization

Atomic Energy Commission of Syria

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