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Physiological performance of cotton seeds treated with tiametoxam

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The introduction of new products to incorporate on seeds is increasing each year. Bioativators, such as tiametoxam, are used to increase the yield potential of plants, through the modification of the plant's metabolism. This work had the objective of evaluating the effects of tiametoxam on the physiological quality of cotton seeds, particularly seedling root growth, as well as establishing the appropriate concentration of the active ingredient concentrations for seed pre-treatment. The experiment used three seed lots of the cultivar CD 408, and three of the cultivar CD 409, both treated with a commercial product containing 35 grams per liter of tiametoxam active ingredient and submitted to six different concentrations: 0, 200, 400, 600, 800 and 1000 ml of product / 100 kg of seeds. The evaluations made were: standard germination, germination first count, accelerated ageing, root dry matter and length, emergence rate and final seedling emergence. The results revealed that cotton seed treatment with tiametoxam positively affected the physiological quality of the seeds, and that the concentrations of 5.0 and 7.0 ml of the product/kg of seeds were more efficient in increasing the physiological performance of cotton seeds.

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Germination capacity, vigour and field emergence rate for sorghum

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The high temperature requirements of sorghum significantly influence the emergence rate. A testing procedure should be developed in the laboratory, in which the emergence rate can be predicted. In the 1st and 2nd experimental year the germination capacity of 30 and/or 40 sorghum samples was determined and at the same time they were grown in the field. Subsequently 3 germination groups ($< 80\%$; $\geq 80\%$ and $\leq 90\%$; $> 90\%$) were identified. The germination result does not allow any statement about the emergence rate to be expected, because the test was carried out under optimum conditions. Therefore a further testing of sorghum was necessary in a laboratory under stress conditions. The sorghum samples were grown for one week at 10°C (stress phase) and subsequently brought to germination at 25°C. In pilot tests a further testing variant, namely use of a constant temperature of 15°C, proved sensible. The quality of the seeds was very varied. The division into 3 germination groups was carried out to see how the various seed qualities would behave in the vigour test and in their emergence rate. The vigour values are lower than the germination values in both testing processes (10/25°C and 15°C constant). A significant annual effect was evident in the field emergence rate. In the 1st experimental year the emergence rate was below the vigour rate for all 3 groups. In the 2nd experimental year there was a good conformity between the vigour and emergence rate for the better quality seeds. For the poor quality seeds the emergence rate significantly exceeded the vigour values. The weather significantly influences the emergence rate. If the soil temperature is only slightly above the minimum temperature for germination when sowing, then the emergence rate is in part significantly lower than the determined vigour values. There was only a slight difference between the two tested vigour variants.

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Effect of seed vigour on stress tolerance of barley (*Hordeum vulgare*) seed at germination stage

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One of the prerequisites of efficient crop production is the use of high vigour seed that guarantees vigorous establishment. Seed production under organic and low input conditions is more difficult compared to conventional systems. Either nutrient or drought stress during seed development on parent plants can affect subsequent seed quality. The effects of drought and salt stress on the subsequent germination of barley seeds were evaluated under using either polyethylene glycol or NaCl at osmotic potentials of 0, -0.4, -0.8,