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Granular fertiliser

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GRANULAR FERTILISER.

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There is general agreement that granulation of fertilisers improves their physical characteristics with respect to handling, storage and distribution in the field. These physical advantages rather than any established agronomic reason appear to be responsible for the increasing use of granular fertiliser.

Mehring et al (8) found that on a light textured soil localised placement of fertiliser gave higher yields than mixed placement. When placed in bands particles smaller than 80 meshes per inch were superior to large particles. In mixed placement with different particle size the differences in yield which did occur, favoured the larger particle size.

Reports from Russia and Western Europe indicate that granular superphosphate gives better yields for a number of crops than does powdered superphosphate (2,4,5,6,9,15). Only abstracts of this literature are available. The impression is gained that placement, and in the Russian work placement and/or the incorporation of dung in the granules have contributed to the increased yields. Fruhstorfer (1) states that in Germany granular super is superior when in layers or bands.

Williams and Reith at the Macaulay Institute (16) found no difference between granular and powdered superphosphate or triple superphosphate. Skinner et al (13) with mixed fertiliser found that particle size had no effect on the yield of cotton.

The residual effects of granulated super have been reported to be greater than that of powdered super (4,11).

Granular super has been reported to be superior to powdered super on soils of high phosphate fixing capacity (10,11). No such benefit was found by Williams & Reith (16).

Starkoska et al (14) tested the availability of phosphorus from granulated fertiliser. They used increased yield, total P uptake and percent plant P derived from fertiliser as criteria of agronomic value. The mesh sizes (meshes per inch) of the granules tested were 4-6, 8-10, 14-20, 28-35 and -35. They found that for super the 14-20 mesh size was the best and for dicalcium phosphate the 28-35 and -35 sizes were the best.

The dissolution and migration of P from granular super has been investigated by Lawton and Vomocil (7). They found that in moist soils there is a rapid movement of P out of the granule: 50-80% of the w.s. P moved out of the granule in 24 hours. The migration of P was small. In four weeks it moved about an inch and most of this movement took place in the first week. The spherical zone of penetration was roughly proportional to the original P content of the granule. Baranov (1) found that practically all the w.s. P had moved out of the granule by 10 days and was concentrated around the granule.

Skinner et al (13) found that between April and September granules of mixed fertiliser lost nearly all their N and K and ½ to 2/3rds of their P. On the other hand, Sayre and Clarke (12) found that after 1 year the residues of granules contained "remarkably high percentage of available phosphate." They also found that the percent insoluble P in the residues increased with increasing size of granule.

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