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Phosphorus and Potassium Elemental or Oxide

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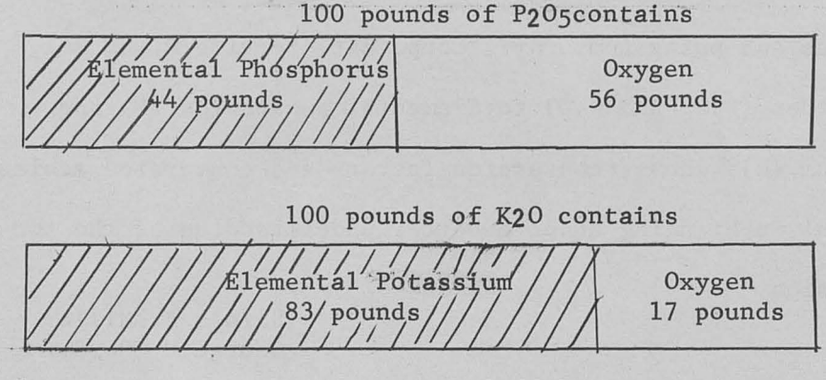
PHOSPHORUS AND POTASSIUM ELEMENTAL OR OXIDE

Soil tests for phosphorus (P) and potassium (K) are reported on the elemental basis by all soil testing laboratories (state and county) in Kentucky.

A few experiment stations in other states and some commercial laboratories report phosphorus and potassium in soil test results on the oxide as available P_2O_5 and K_2O.

The different terms used by different laboratories to report soil test results frequently cause confusion. If a Kentucky soil test shows 30 pounds of available phosphorus (P) it would be reported as 69 pounds of available P_2O_5 by those laboratories reporting on the oxide basis. The difference is that the oxides (oxygen) are not included in Kentucky soil test reports.

The relative amounts of oxygen, phosphorus and potassium in 100 pounds of P_2O_5 and 100 pounds of K_2O are shown below.



(To simplify information in this publication, trade names of some products are used. No endorsement is intended, nor is criticism implied of similar products not named.)

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All plant nutrients in fertilizer except phosphorus and potassium are guaranteed on the elemental basis. Some bagged fertilizers have appeared in Kentucky with two sets of figures. One set shows the guaranteed analysis for phosphorus and potassium on the oxide basis, while the other set shows the equivalent amounts on the elemental basis. This is referred to as dual labeling and will be more widely practiced in the future.

Fertilizer recommendations for phosphorus and potassium in Kentucky are made on the oxide (P_2O_5 and K_2O) basis since present regulations stipulate that fertilizers be guaranteed in these terms.

There is a movement among Land Grant Colleges and their associated organizations to bring about a change in fertilizer labeling whereby the nutrients, phosphorus and potassium, will be guaranteed on the elemental rather than the oxide basis. The dual labeling on the fertilizer bags is a part of an educational program that must be carried out among fertilizer dealers and farmers before such a change can be made.

To insure the success of such an educational program and to evaluate properly soil test results and crop response to fertilizers, farmers and others need an understanding of the oxide and elemental methods of expressing phosphorus and potassium. Ky. Coop. Ext. Service Misc. 291, "Conversion of Oxides (P_2O_5 and K_2O) to Elemental phosphorus (P) and Elemental potassium (K)" shows, conversion factors and conversion scales that may be helpful in bringing about a better understanding of the two methods of expression.

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