Fertilizing Millet and Canary Seed

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W. C. Dahnke, Soil Testing and Soil Science Dept.
C. Fanning, Extension Soils Specialist
A. Cattanach, Extension Soils/Sugarbeet Specialist

Proso millet and canary seed are small grain crops that are grown mainly for livestock, poultry and bird feed. In other areas of the world proso millet is mainly used as human food.

Yield Goal:

The most efficient fertilizer rate will depend on the residual soil nutrient level as determined by a soil test and the yield goal. Yield is influenced by: 1) local climate; 2) soil type; and 3) management (timeliness of planting, plant population, variety, weed control, etc.) Yield goals should be realistic. They are usually based on longtime averages and on the management ability of the grower but adjusted to conditions expected for the upcoming year (see Circular SF-822).

Excessive fertilizer use, especially nitrogen and phosphorus, has potential to degrade ground and surface water quality. Establishing realistic yield goals, carefully soil sampling fields and fertilizing crops according to soil tests will help preserve water quality.

Fertilizer Recommendations:

Table 1 shows the amount of soil nitrate-nitrogen in the top 2 feet of soil plus nitrogen fertilizer needed to meet the crop requirements for various yield goals. These data are based on nitrate-nitrogen levels in soil samples taken between September 1 and April 1. If soil samples are taken between July 1 and September 15 subtract 0.5 pounds of nitrogen from the recommendation for each day that the soil was sampled prior to September 15. These adjustments are automatically included in recommendations received from the North Dakota State University Soil Testing Laboratory.

The phosphate (P2O5) and potash (K2O) recommendations in Table 1 are for broadcast application. Drill-row applications of N + K2O should not exceed 10 pounds per acre to avoid the possibility of germination damage. To convert the broadcast rate of P and K to a band application rate reduce the broadcast rate by one third. Reduce the broadcast rate only when banding on soils testing very low. If the broadcast rate for low testing soils were reduced, you would not be applying enough phosphorus and/or potassium to maintain the level in the soil. The result would then be an increasingly deficient soil which is not conducive to high yields.

Since phosphorus and potassium move very little in the soil, it is possible to “build up” or increase the available level of these nutrients in the soil. The application of approximately 20 pounds of P2O5 per acre will increase the phosphorus soil test level by 1. In other words, if your phosphorus soil test level is 5 and you prefer to operate at test level of 12, the application of 140 lbs of P2O5 (305 pounds of 18-46-0) per acre thoroughly mixed in the top 6 inches of soil will raise the soil test level by 7. Likewise, the application of 10 pounds of K2O per acre will increase the potassium soil test by 1.

Nutrient requirements should be applied each year as needed.

Nutrient recommendations for millet and canary seed.

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<th>Soil Test Phosphorus, ppm</th>
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Methods Of Application:

The best method of nitrogen application will depend on the nitrogen source used. For example, anhydrous ammonia should be applied 4-6 inches beneath the soil surface, while nitrogen solutions, broadcast urea and other dry nitrogen fertilizer products should be worked into the soil shortly after application. Applying nitrogen fertilizer on well drained sandy soils in the fall is not recommended because of possible loss by leaching.

Crops growing on soils that test very low in P and/or K depend heavily on applied fertilizer. On soils testing medium or above the crop is much less dependent on applied fertilizer for its current needs. Fertilizer is applied on these soils to replace that removed by the crop and/or as a starter to get the crop off to a fast start. On low testing soils where the plants largely depend on fertilizer for their needs the method of application will influence the amount of fertilizer a crop can recover. Broadcast fertilizer is thoroughly mixed with the soil and as a result, some is positionally unavailable to plant roots. Band or drill row fertilizer is applied closer to the seed and can be recovered by the crop more efficiently.

Broadcast applications of phosphate and potash can be made more efficient when applied before a deep tillage operation. Recent data indicate that a band application of P at a depth of 4 or 6 inches is more effective than when drill row applied. This method of application will also prevent a buildup of nutrients at the soil surface under minimum tillage.

Other Nutrients:

Sulfur deficiencies are not common in North Dakota, but may occur early in the growing season on sandy soils. If a crop appears to be deficient in nitrogen but does not respond to nitrogen applications, sulfur may be deficient. Responses to iron, zinc, copper, manganese in North Dakota have not been observed on millet or canary seed in North Dakota.