

## Blended Fertilizer Calculator

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The Excel spreadsheet ***Blended Fertilizer Calculator*** can be used to develop fertilizer blends to meet the needs of grass-legume and nitrogen-fertilized grass hay crops. Add the required information in the blue boxes. Additional notes on use of the spreadsheet are contained in cells with the red triangles.

When cool-season grass hay fields have 20-30% or more legume content in the stand it is unlikely that there will be an economic response to nitrogen fertilization. If the manager wishes to maintain or increase legumes in the stand no nitrogen fertilizer should be applied.

The amount of nitrogen (N) available drives hay yield which determines how much phosphate and potash fertilizer ( $P_2O_5$  and  $K_2O$  respectively) is needed to meet plant uptake. Harvest method (dry hay or wrapped haylage), date of last harvest, and soil realistic yield expectation are factors that determine hay yield. Wrapped bale haylage results in less harvest loss than making dry hay, resulting in higher yield and increased  $P_2O_5$  and  $K_2O$  requirement.

Enter expected yield for the soil present in the field as found in the ***Fertility Recommend Tool*** spreadsheet. The ***FRT*** spreadsheet gives the maximum N rate recommended for soils based on their potential yield. We do not recommend rates of N greater than 250 lbs/acre/year on grass hay since the economic and environmental risks are too great. As N rate is reduced by 50 lbs N/A/year from the maximum, yield is reduced by 10-12%. Also, dry hay results in about 20% lower yields than haylage due to dry matter losses in tedding, raking and baling.

If soil fertility phosphorus and potassium is to be built up then the ***Nutrient Balance*** should be positive for the respective plant nutrients. If the soil test level is high or above the ***Nutrient Balance*** line can be negative to draw on the reserve fertility. When drawing on reserve fertility soil test levels will go down. If drawn on too much fertility levels will become suboptimal and yield will also go down.

This spreadsheet should be used in conjunction with a recent soil test report and the information provided in the WVU-ES fact sheet ***Forage Fertilization Based on Yield and Management Goals*** and the ***FRT*** spreadsheet.