

Summary

This methodology is practical because it has similarities to the existing yield-goal approach and because necessary data are available or can be estimated. It is crucial to know average potential yield and its variability. Although this paper addresses only the N input, the principles developed here can readily be extended to multiple inputs. For instance, the expected

value of yield as a function of N and P could be found under the assumption that in the responsive region to each nutrient, the response slope is uniform each year, but the plateau yield level has a value that is randomly distributed through years with some mean and variance. Future improved predictability of climatic factors could also be included in the methodology. ■

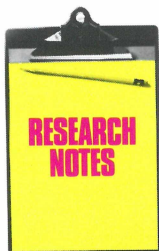
Coefficient of variability (CV) is one way of expressing the variability of data. The CV increases as variability increases and is calculated by dividing the standard deviation by the average for the data set and expressing the result as a percent. Standard deviation (sd) can be determined automatically in most computer spreadsheets or can be calculated by hand as follows.

Example: yields=60, 20, 40, 30, 50 bu/A; $60+20+40+30+50=200$; average=40;
 $60^2+20^2+40^2+30^2+50^2=9,000$

$$sd = \frac{\sqrt{\frac{\text{sum of each squared yield} - \frac{(\text{yield sum})^2}{\text{no. of years}}}{\text{years} - 1}}}{\sqrt{\frac{9,000 - \frac{200^2}{5}}{5 - 1}}} = \frac{\sqrt{\frac{9,000 - 8,000}{4}}}{\sqrt{250}} = 15.8$$

New York

Growth, Yield and Quality of Forage Maize under Different Nitrogen Management Practices



STUDIES were conducted to evaluate three corn (maize) hybrids under different sidedress nitrogen (N) rates . . . 0, 50, 125 and 225 lb/A . . . applied at the V4 growth stage. The effect of timing of N fertilization was also evaluated . . . 62.5+62.5 lb/A N at the V4 and V8 growth stages and 67+67+67 lb/A at the V4, V8 and R1 stages.

Yield response to N was curvilinear to rate, with optimum economic yield

occurring at rates of 125 to 140 lb/A. Split applications did not increase yields, improve forage quality or decrease residual soil nitrate-N levels compared to single rate applications. Higher N rates did increase residual soil levels in both years.

Researchers pointed out that when farmers apply higher rates of N to forage corn, they must balance potential benefits (higher yields and improved quality) with the potential risk associated with increased residual soil nitrate-N levels. ■

Source: Cox W.J., S. Kalonge, D.J.R. Cherney and W.S. Reid. 1993. *Agron. J.* 85:341-347.