



# Broadcast Vs. Banding

Making the best recommendation on a fertilizer placement technique depends on the situation in a given field.

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**M**ANY believe that band applications are always more efficient than broadcast applications. However, a closer look at fertilizer placement shows that the results can be varied. Here are four cases to consider:

**Case 1: Broadcast applications produce the same yields as banded applications.** This is more likely to happen when fertility levels are fairly uniform and high throughout the rooting zone. Uniform fertility levels in the upper 6 to 8 inches are achieved only when applied fertilizer is mixed well with the soil. In this case, there is a good chance that the fertilizer will be placed in moist soil. In drier parts of the season, as the roots explore deeper portions of the soil profile in search of water, roots will still be able to come in con-

tact with applied fertilizer. The temperature of the growing season is also important. Warm season crops, such as sunflowers, soybeans, and sorghum are more likely to respond equally well to broadcast and banded applications.

**Case 2: Band applications produce higher yields than broadcast applications at lower application rates, but produce the same yields at higher rates.** This is the case that most agronomists expect and is the basis of recommendations that reduce application rates for banding. This relationship is most likely when soils are cool and wet, fertility levels are low, and soils fix a large quantity of applied fertilizer.

Fixation is defined here the transformation of applied fertilizer from plant-available compounds to compounds not readily plant-available. For example, soils that fix phosphorus typically have higher levels of aluminum and iron ox-

ides or higher levels of free calcium carbonate. In soils that fix applied fertilizer, banding reduces the amount of soil that the fertilizer contacts. The result is more plant-available fertilizer in the season of application.

**Case 3: Band applications produce higher yields than broadcast applications regardless of rate.** This may be observed in cool, wet soils when banded fertilizer stimulates early growth and the early growth is critical for attaining maximum yields (starter effect). Late planting of a full season corn hybrid may give this type of response.

A second set of circumstances where this relationship may be observed is with relatively low soil test levels, minimal incorporation of broadcast fertilizer, and dry soil surface conditions. Low soil test levels may not always be necessary to see this response. For instance, studies have shown yield increases from banded

potassium in ridge-till and no-till systems, even at very high soil test levels of potassium. Optimum band rates may be higher than optimum broadcast rates.

**Case 4: Broadcast applications are more efficient than band applications.** This is likely to occur on soils that do not fix much of the applied fertilizer, have heavy residue cover, and are warm and moist. Examples of this are no-till systems in humid regions and under irrigation. In these cases, roots proliferate near the soil surface, where broadcast fertilizer is most concentrated. Fertilizer banded deeper below the surface may not contact the roots as much as the broadcast fertilizer.

So which is better, band or broadcast? The truth is ... it all depends.

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