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REVISITING CONSIDERATIONS FOR CRP BREAKOUT

The Conservation Reserve Program (CRP) was initiated in 1985, and from then to 1993 over 36 million acres of U.S. cropland, mostly in the Great Plains, were removed from production under the program. The initial objectives of the CRP were to reduce soil erosion on highly erodible land, protect the capability of long-term food and fiber production, reduce production of surplus commodities, provide income support for producers, provide wildlife habitat, and improve environmental quality. Many original contracts began to expire in the mid- to late 1990s, when land was either returned to grain production, kept in forage production, or re-enrolled in CRP. Thus, considerations for returning CRP land to production was an important topic of that time. It is time to revisit this topic as many acres of land in CRP in the Great Plains are again expiring and set to expire over the next few years.

Soil moisture is likely to be low upon CRP breakout due to depletion by deep-rooted grasses. A fallow period for accumulation of soil moisture after destruction of CRP grasses and prior to planting of the first crop may be helpful in replenishing soil water. Destruction of CRP grasses is another major consideration. Crop establishment and growth is difficult without good grass control. Grasses may be difficult to control with herbicides alone, although it is possible and may take several applications. Another possibility is spraying the grasses, then planting a glyphosate-ready summer crop (soybean or corn) so additional control can be applied in-season. Tillage, or a combination of herbicides and tillage, is another option for control and destruction of CRP grasses, and is sometimes necessary due to excessive surface roughness caused by burrowing animals.

One of the benefits of long-term grass production is the effect on soil physical properties. Improvements in soil aggregation and permeability are common with time in soils under sod. These improvements can enhance water infiltration, internal drainage, aeration, and moisture holding capacity. The maintenance of these improvements after return of CRP land to production is partially dependent on tillage. One of the first changes that occur with tillage is a breaking of pore continuity that was developed under sod. No-till management can help preserve the beneficial soil characteristics developed under a sod culture.

Nutrient management is an important concern in the return of CRP land to production. Soil nutrient levels, especially N, will likely be low upon breakout. An Oklahoma study (Stiegler et al., 1996) noted that N and P fertilizer were critical for producing acceptable wheat yields in nutrient depleted CRP fields, regardless of tillage method. A Kansas study (Schlegel and Thompson, 1997) reported soil nitrate levels of 2 ppm in the surface foot following destruction of CRP grasses. Nitrogen management for the crop the first year out depends upon factors such as residue management, tillage practices, soil moisture, length of fallow, and yield goal.

Another concern for CRP land returned to production is the effect of plant residue on N management. Depending on management practices (e.g., mowing, burning, tillage), significant amounts of above-ground plant residue may be returned to the soil upon breakout. For example, an estimate for above-ground bromegrass residue in Nebraska was 4 to 5 tons/A (Shapiro et al., 1996). Additionally, grass roots represent as much as 40% of the plant biomass. The residue decomposition process will initially likely immobilize N from soil solution. This immobilization of N is temporary, and the duration of the depression in plant available N levels is variable, depending on the residue quantity, C to N (C:N) ratio, degree of incorporation, and other factors. Knifing or banding of fertilizer N can help minimize immobilization. Nitrogen immobilization and low soil nitrate levels are factors that need to be considered when planning fertilization.

Application of P, K, and the secondary and micronutrients are also important and should be based on soil tests. Banded applications of starter fertilizer containing N, P, and K will generally provide a strong early response, especially under conditions where soil levels of these nutrients are low. If tillage is planned for the first year, a large application of P and K prior to tillage may be desirable to optimize soil test levels.

—WMS—

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Abbreviations: C = carbon; N = nitrogen; P = phosphorus; K = potassium; ppm = parts per million.

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