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Weekly Farm Economics: Impacts of Rental Arrangements on Cover Crop and Conservation Practice Adoption

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Cover crops reduce nitrogen effluent in water and increase soil carbon over time, thereby providing environmental benefits, which may also translate into longer-term economic benefits. However, the costs associated with cover crops in the initial years usually exceed benefits accruing directly to farmers and landowners. Over time, benefits may increase and exceed costs. Land tenure and rental arrangements likely will impact adoption, with adoption more likely on owned farmland than rented farmland. Public policy that encourages cover crop adoption should consider rental arrangements' impact on incentives. Similar incentive issues exist for other conservation practices, as well as carbon credit markets.

Rental Arrangements in Illinois

Incentive issues will be influenced by rental type. For farmland that is not owned, four control methods predominate:

Cash rent: A cash rental arrangement involves a fixed payment from the farmer tenant to the landowner. A cash rent agreement is relatively straight-forward, with the major difficulty being the setting of the rent level during times of changing expectations. Likely due to their relative simplicity, cash rental arrangements are the most used lease type, with the USDA estimating that cash rental arrangements are used on 70 percent of the non-owned farmland in the Midwest (Bigelow et al.).

Share rent: A share rental arrangement involves sharing revenue and direct costs. In northern and central Illinois, the most common split is 50% to the farmer and 50% to the landowner, or a 50%-50% agreement. Share rent arrangements are more varied in southern Illinois, with two-thirds (farmer) — one-third (landowner), 60% (farmer) — 40% (landowner), and 50% (farmer) — 50% (landowner) being used.

The USDA estimates that share rental arrangements are used on about 18% of the farmland in the Midwest (Bigelow et al.).

Flexible cash rent: A flexible cash rental arrangement is a modification of a cash rental arrangement. The rental payment typically equals a percentage of crop revenue with a minimum or base rent level specified. For example, a fairly typical arrangement in northern and central Illinois is a minimum rent of $200, with a higher rent possible if revenues are high enough for the share to exceed the minimum base level. For corn and soybeans, 33% and 40% revenue shares are fairly typical. USDA estimates that less than 10% of rented farmland in the Midwest uses flexible leasing arrangements (Bigelow et al.).

Custom farming: A custom farming arrangement has the landowner paying all costs and receiving all revenue from a parcel of farmland. In addition, the landowner pays a farmer to perform all field operations. According to Iowa State's custom operation survey, the usual payment to the farmer for custom operations is about $120 per acre. USDA estimates that one to two percent of farmland in the Midwest is operated using custom farming arrangements.

Prevalence of Leasing Arrangements in Illinois

While the above statistics from USDA provide estimates of averages for the Midwest, Illinois' land tenure and rental arrangements are unique. Illinois has more of its farmland rented than other states, with 60% of the farmland rented according to the 2017 Census of Agriculture. Grain farms in Illinois Farm Business Farm Management Association (FBFM) tend to be larger than "average" farms and have more of their farmland rented, 80% for FBFM farms compared to 60% for the USDA state average (see farmdoc Daily, July 6, 2021, for more discussion). Given the relatively large share of rented farmland and other factors, the use of leasing arrangement types also likely vary in Illinois from Midwest averages.

There are two sources of the prevalence of rental arrangements in Illinois. The Illinois Society of Professional Farm Managers and Rural Appraisers surveys its members each year. According to the 2021 survey, professional farm managers used the following arrangements on professionally managed farmland in 2021 (see Land Values publication of the Illinois Society):

- 41% used cash rental arrangements,
- 31% used share rental arrangements,
- 22% used variable cash rents arrangements, and
- 6% used custom farming

The above use statistics relate to professionally managed farmland. Farm managers likely use more variable cash rents and custom farming arrangements than non-professionally managed farmland.

Illinois FBFM releases the percent of farmland cash and share rented by its grain farms. In FBFM's share and cash rent dichotomy, variable cash rents are classified as cash rents.

Figure 1 shows the percent of cash rent acres on rented farmland by FBFM farms. Note that there are regional differences in the use of rental arrangements, with northern Illinois having higher use of cash rent than the other regions. In 2020, cash rental arrangements were used on 77% of rented land in northern Illinois, 53% in central Illinois, and 54% in southern Illinois. As a result, incentive issues will vary across Illinois. Over time, there has been a movement away from share to cash rents. In central Illinois, for example, cash rents were used on 26% of acres in 1995 and now are used on 53%. Almost every year, there is about a one percentage point shift from share rent to cash rent arrangements. As a result, dealing with incentive issues on cash rent farmland is becoming more of a concern.

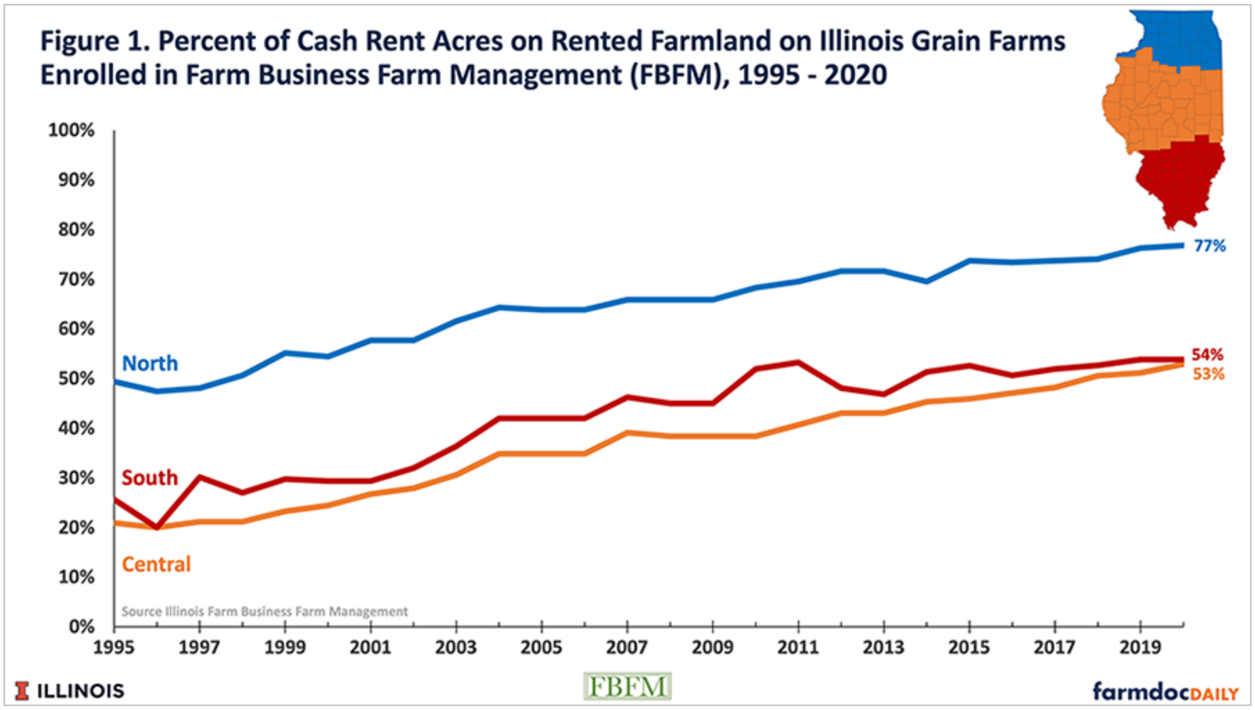

Figure 1. Percent of Cash Rent Acres on Rented Farmland on Illinois Grain Farms Enrolled in Farm Business Farm Management (FBFM), 1995 - 2020

Incentive Issues on Rented Farmland

When farmland is owned and operated by the same individual, there is compatibility between the person that bears the costs and receives the benefits, even over multi-year planning horizons. The same is not true under rental arrangements when costs are incurred upfront and benefits occur in the future. There are incentive problems because most leasing arrangements are less than three years in length. In Illinois, a fairly common practice is to have year-to-year leases that can be changed or terminated at the end of each year. While most of these year-to-year leases are renewed, there is no guarantee that the farmer will continue to operate on the rented farmland in the future.

Compatibility issues often arise with lime applications. Lime is typically applied every fourth to fifth year and costs roughly $25 to $30 per acre. Farmers usually pay lime costs in rented situations according to the split in share arrangements. The farmer typically pays 100% of lime's cost in cash rental arrangements. If a farmer stops farming the land before the end of the life of the lime application, the farmer does not gain all the benefits of the lime. Some leases account for this possibility by having a schedule that pays the farmer for the remaining lime if the lease is terminated. Without such a lease stipulation, some farmers would be reluctant to spread lime.

Incentive Issues with Cover Crops

Similar to lime, compatibility issues arise with adopting conservation practices, with uncertainties and risk further adding to incentive issues. Cover crops are a prime example. In the initial years of planting, the costs of planting and terminating cover crops often are not offset by higher yields or reductions in other costs. Net cover crop costs often are around $25 per acre in the initial years of plantings. In central Illinois, the average return to cash rent farmland from 2016 to 2020 averaged $52 per acre (data from Revenue and Costs for Illinois Crops). A $25 net cover crop cost represents almost half the farmer returns from a cash rent acre. Future economic benefits to the farmer and landowner may accrue from the continued use of cover crops, but those benefits are not well documented. Compared to the lime example where benefits are well known, farmers and landowners may be reluctant to adopt cover crops because of uncertainties of benefits. Tenure and leasing arrangements will further impact adoption decisions.

Owned farmland: If a farmer plants cover crops on owned farmland, the farmer bears the initial costs and accrue all the benefits in the future. In this case, the economic decision is relatively straight-forward when compared to those from leasing situations. Only one party — the farmer, who also is the landowner

— needs to be involved in that decision and decide that the prospect of future benefits exceeds the current costs.

Share rent farmland: The farmer and the landowner will typically share in the initial costs of the cover crops and will also share in the future benefits. If the arrangement is 50-50, the farmer and landowner share equally in costs and benefits. There are two complications for share rental arrangements compared to owned farmland:

1. Both the farmer and landowner likely have to agree that the future benefits from cover crops exceed the current costs. As a result, at least two parties must be convinced that expected long-term benefits exceed current costs.

2. The farmer faces an additional risk because the farmland is not owned. A farmer will not necessarily receive the future benefits from the initial costs of the cover crop. As a result of this rental uncertainty, a farmer may be more reluctant to undertake cover crops in a share rent situation as compared to an owned farmland situation. The degree to which farmers are more reluctant depends on the long-run nature of the share rental arrangement. Farmers with expectations of long-run relationships likely will be more willing to adopt cover crops than those with shorter expectations.

Cash rent farmland: Under most cash rent arrangements, the farmer will bear all the costs of the cover crop. Theoretically, all benefits will then accrue to the farmer in the future. However, the farmer likely will be more reluctant to use the cover crop for two reasons:

1. The farmer has the same rental uncertainty as in the share rent situation. As a result, the farmer may be more reluctant to place cover crops on cash rented farmland.

2. The farmland rental market is competitive. If there are benefits in the future from cover crops, it is likely that cash rents will increase as those benefits become apparent. As a result, farmers could bear all the costs of cover crops and receive less of the benefits because of rising cash rents.

3. Similar to a share rent, farmers in a cash rent situation face rental uncertainty and the possibility that they will not farm the land in the future. The expectations of the long-run nature of the arrangement will influence the willingness to adopt cover crops. Farmers with expectations of long-run relationships likely will be more willing to adopt cover crops than those with shorter expectations.

Given a choice, a farmer is much more likely to plant cover crops on owned farmland, where future benefits are more assured to flow to the farmer. Depending on the cash rent landowner, farmers may be more reluctant on cash rent farmland than on share rent farmland. If the landowner desires higher rent levels, the probability of adopting cover crops declines.

Variable cash rent farmland: Variable cash rent arrangements have a blend of the characteristics of share and cash rent. Unless some other arrangement is made, the farmers will have to pay all the costs on variable cash rent farmland. At most, the farmer will only receive a percentage of future benefits from cover crops, as the farmer pays a percentage of crop revenue to the landowner. As a result, farmers are less likely to adopt cover crops on variable cash rent farmland as compared to share rent farmland.

Implications and Policy Recommendations

Farmers are more likely to adopt cover crops on owned farmland than on rented farmland because of uncertainties of farming the land when future benefits may accrue. This feature is important as 60% of farmland is rented in Illinois. The majority of rental farmland is controlled by farms over 1,000 acres (see farmdoc Daily, July 6, 2021). For widespread adoption to occur, commercially-sized farms must be targeted, or at least not disadvantaged.

Public policies that encourage cover crops and other conservation adoption practices need to consider rental incentive issues if widespread adoption on rented farmland is desired. Again, the pool of owned farmland is less than 50% of farmland in Illinois and most other Midwest states.

Similar incentive problems could occur with the development of carbon markets. Those agreements likely are long-term, and uncertainties surrounding future control of the land may reduce farmer incentives to adopt on rented farmland.

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