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G82-591 Bushel Rents for Nebraska Cropland

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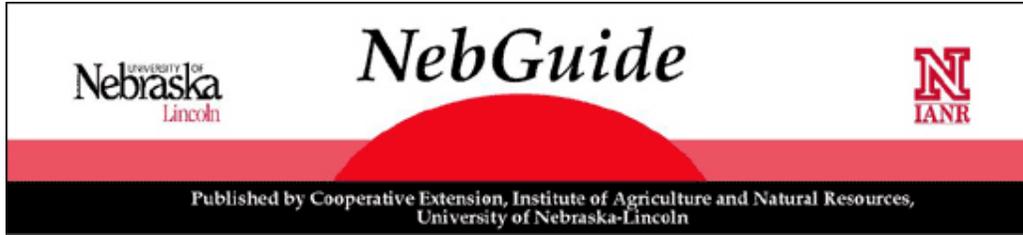


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Jose, H. Douglas, "G82-591 Bushel Rents for Nebraska Cropland" (1982). *Historical Materials from University of Nebraska-Lincoln Extension*. 635.

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Bushel Rents for Nebraska Cropland

The purpose of this NebGuide is to help tenants and landowners assess bushel rents and to arrive at agreements which are economically sound and fair to both.

H. Doug Jose, Extension Farm Management Specialist

- [The Landowner's Situation](#)
- [The Tenant's Situation](#)
- [Establishing a Bushel Rent](#)
- [What's a Fair Bushel Rent?](#)
- [What is the Impact of Poor Yields?](#)

Crop share or cash rent arrangements have been used in most farm leases in Nebraska for many years. Recently, the bushel rent approach has gained favor in the state, especially with landowners. These rental arrangements are sometimes also called flexible cash rents or standing rents.

The purpose of this NebGuide is to help tenants and landowners assess bushel rents and to arrive at agreements which are economically sound and fair to both.

The Landowner's Situation

The landowner ultimately makes the decision on the type of rental plan. This decision is based on the degree of involvement in the management decisions desired; the degree of risk desired; the bargaining power that can be imposed and the economic advantage the landowner can gain.

The *advantages* of bushel rents for the landowner are:

1. The landowner does not have to be involved in management decisions such as seed selection, the type and rate of fertilizer applied, the herbicides and pesticides used and when to apply them, how much and when to irrigation and what tillage practices to use.
2. There is no disagreement on the actual yield. The landowner never has reason to question the tenant's honesty.
3. Reduced conflict with the tenant on the timeliness of operations.
4. The landowner can use the number of bushels as a bidding device to achieve a higher rent.
5. The landowner does not have to make any marketing decisions unless the crop is actually accepted rather than the cash equivalent.

The *disadvantages* to the landowner are:

1. Negotiations may be longer and more difficult than with a crop share. It make take considerable time and effort to determine the highest bidder.
2. In above-average years, the realized income may be less than with a crop share arrangement. This applies to years of both high yield and high prices.
3. The tenant may take less care of the land than with a crop share arrangement; for example, causing degradation of the land due to erosion.
4. The landlord takes the risk of low crop prices.

The Tenant's Situation

The prospective tenant's desire to acquire more cropland is based on excess machinery capacity or unutilized labor, or on management and financial ability to crop more land to increase the operator's labor and management return. The rental method preferred by the tenant depends on his willingness and ability to bear risk; his urgency to acquire control of more land; and the preference of the agency providing the tenant's operating capital.

The *advantages* of bushel rents for the tenant are:

1. Complete control of all managerial decisions. No discussion of decisions with the landowner is required, reducing the possible friction between them.
2. Less detailed records of actual crop expenses are required than with crop share leases.
3. Rentals can be bid up to acquire tracts of land that are adjacent to those already farmed or to acquire tracts on which the tenant can afford to accept a higher risk than would be accepted with other lease arrangements, principally crop share arrangements.

The *disadvantages* to the tenant are:

1. The tenant accepts all the production and price risk. There is little opportunity in bushel rents to allow flexibility for abnormal weather or insect problems.
2. The rent may be bid up beyond the tenant's ability to pay, particularly if yields and/or product prices are lower than expected.
3. Bushel rents may force the tenant to change the cropping pattern to a different crop or crop mix, or may force him to grow only one crop rather than a crop mix, thus reducing the ability to diversify.

Establishing a Bushel Rent

There are a number of ways to establish the bushel rent rate. These include: 1) the market approach; 2) the landowner's cost or desired returns approach; 3) the landowners net share approach; and 4) the amount the tenant can afford to pay.

The negotiation process to establish a rate is initiated by suggesting a rental based on one of the above four methods of calculation. It is necessary to understand the approach used and its implications in order to reach an agreement that is fair to both parties and is conducive to their long run business survival. While no one method is the best for all concerned, the procedures of the four methods offer useful guidelines for both the landowner and the prospective tenant to establish a fair rental. The final agreement depends on bargaining power, the specific situation and the willingness or unwillingness of the two parties to bear risk. For example, a prospective tenant who has excess machinery capacity and under-employed labor might be willing to bid more than one who would have to purchase larger machinery or hire additional labor to crop more land.

Let's use a gravity irrigationd corn situation in central Nebraska to illustrate the calculations for each of the four methods of computing a bushel rent. The costs for this enterprise are summarized in *Table I*.

Table I. Estimated 1981 costs per acre, central Nebraska, corn for grain, gravity irrigation, diesel, 150 ft. head.

INPUT	COST
Seed	\$ 19.80
Fertilizer and chemicals	55.00
Fuel for drying	11.14
Fuel for field operations	14.57
Fuel for irrigation	35.79
Machinery repairs	12.89
Machinery fixed costs	43.97
Irrigation repairs	5.27
Irrigation fixed costs	70.13
Interest on operating capital	13.40
Labor	16.89
Real estate taxes	13.00
Interest on land	78.00
Overhead and management charge	22.39
TOTAL	\$412.24

1. **The Market Approach.** Use of this method depends on the knowledge of the going rate in the community. The base rent in the area must be adjusted for land productivity and other factors such as the cost and availability of irrigation water. The other three approaches are more detailed and are designed to better reflect the economic realities of a particular situation. While the detailed methods serve as guidelines in the negotiation process, the local market conditions will be the final arbitrator.
2. **The Landowner's Cost or Desired Return Approach.** In this method, the landowner calculates the cost of ownership, including depreciation, repairs on improvements, insurance and real estate taxes as well as the foregone interest in the land investment. In the gravity irrigation corn example, it is assumed the landowner owns the irrigation system and the tenant will pay for the operating costs. The costs of the landowner are as follows:

Irrigation fixed costs (depr., interest, insurance)	\$70.12 per acre
Real estate taxes	13.00
Interest on land investment: \$2088 per acre value @ 4%	83.52
	\$166.64

The long run return to land in Nebraska has been about 4 percent, and the average reported value of gravity irrigation cropland for central Nebraska for 1981 was \$2088 per acre. The owner might prefer to look at a return on investment for comparable investment opportunities. These investments would have to have the same liquidity, safety of principal and appreciation potential as farm real estate to be directly comparable. A long run return greater than 4 percent would be a reasonable expectation for non-

farm investments. The investor, however, has made the commitment to a farm real estate investment and the return expectations for land rental should be based on the long term return to land rather than on the long run return to non-farm investments.

If the expected price for corn is set at \$3.15 per bushel, the equivalent bushel rent is: $\$166.64 \div \$3.15 = 53$ bushels.

3. **The Landowner's Share Approach.** Any type of land lease agreement should have a relationship to the contribution each party makes to produce a crop and the risks incurred by each. The share approach is based on the premise that bushel rents should be related to share rents. With a share rental, the tenant and landowner share both the price risks and the yield risk. The yield risk is covered exclusively by the tenant with the bushel rent. Logically, the bushel rent should be less than the equivalent share rent since the landowner's share of the yield or weather risk has been shifted to the tenant. This has not occurred in many instances. In fact, the demand for land has been so strong that bushel rents have been bid up above the equivalent share rents.

The typical share arrangement in the area is again the basis of establishing the equivalent bushel rent. The typical share rent in central Nebraska is a 60-40 share, with the landlord paying 40 percent of the fertilizer and chemical costs, fuel for drying and fuel for irrigation.* The tenant pays for the seed, fuel for field operations, machinery and repairs and labor.

Let's assume the landowner owns all the irrigation equipment.

The costs of the landowner are then:

	Fertilizer and chemicals	\$22.00
	Fuel for drying	4.46
	Fuel for irrigation	14.32
4.	Irrigation fixed costs	70.12
	Interest on operating capital	3.54
	Real estate taxes	13.00
	Land charge	45.00
		\$173.44

There are two components of current land values--annual earnings and appreciation. The landowner's contribution in a share arrangement should be based on the portion of the land value attributable only to annual earnings. In the cost summary above, \$45.00 is used as the land charge. This is the average cash rental for the central area for dry cropland with no irrigation development, and represents the earnings contribution of the land to the landowner. The fixed costs of the irrigation development are included, which represents the earnings contribution of the irrigation development to the owner.

The equivalent bushel rent is: $\$173.44 \div \$3.15 = 55$ bushels

*For more information on share rent arrangements, See NebGuide G85-746 *Common Type Leases in Nebraska*.

5. **Amount Tenant Can Afford to Pay.** The basic criterion used to determine an affordable rent is--what rent can the tenant pay and still meet all the cash flow commitments? Some of the fixed costs in *Table I* may not be cash costs to the tenant. For example, depreciation and interest on machinery investment are fixed costs that must be met in the long run, but are not short run cash costs. On the other hand, machinery loan payments are cash flow commitments that must be met each year. The cash flow commitments the

tenant must meet each year are: 1) Cash production costs including seed, fertilizer, fuel, repairs and interest on operating capital; 2) family living costs; and 3) loan payments.

Items 2 and 3 are not included in *Table I* as only the costs of the resources directly used in the production of the corn crop are included. The cost of all labor is charged in *Table I* regardless of whether it is unpaid family labor or hired labor. Family living costs are essentially a cash cost to the operator that must come out of the gross farm income. The management charge and the itemized labor cost can be considered the contribution to family income.

It may not be critical for the tenant to cover all the "book costs," such as depreciation, if the rental agreement is for only one year. Any outstanding machinery loan payments, however, must be made. Also, if the renting of additional land requires purchasing larger machinery, the rented land must carry its fair share of any machinery loans. While machinery fixed costs are "book costs," machinery loan payments are a real cash obligation.

For this analysis, we'll assume the tenant's situation was as follows:

1. Purchased a new combine and paid \$55,000 difference, which was financed at 14% for 4 years.
Annual loan payment = \$17,150
2. The tenant will crop a total of 600 acres with the additional rented land. The loan payment per acre then will be: $\$17,150 \div 600 = \28.58 per year.

The cash commitments per acre are:

Cash Production Costs (see *Table I*)

---Seed	\$ 19.80	
---Fertilizer and chemicals	55.00	
---Fuel	61.50	
---Repairs	18.16	
---Interest on operating capital	13.39	
-----Subtotal		\$167.84
Loan payment		28.58
Direct labor costs (@ \$5/hr)		16.89
Farm overhead		10.00
Management charge (for family living costs)		14.00
Total cash required		\$237.31

Yield required to cover cash requirements at \$3.15 per bushel = $\$237.31 \div \$3.15 = 75$ bushels

Let's assume the expected yield is 135 bushels: Bushels available to pay rent and break even with average conditions = $135 - 75 = 60$ bushels.

This is really a one-year approach. The operator who enters into a longer agreement, such as a three to five year lease, must make sure the costs allocated include the desired return for labor, equipment use, and management. The total cost of machinery replacement or depreciation must be covered in the long run.

What's a Fair Bushel Rent?

Bushel rents were calculated using three different approaches for the case situation in central Nebraska. These provide a starting point for the negotiation between the landowner and the tenant. They are summarized below:

Landowners cost and desired return approach	53 bushels
Landowners net share approach	55 bushels
Tenant's ability to pay approach	60 bushels

An estimate of the rental using the market approach was not available from a formal survey. Informal surveys indicate actual bushel rents paid range from 50 to 70 bushels. It is important to know the market rate in your specific community rather than relying on a state average.

What is the Impact of Poor Yields?

Even under irrigation situations, crop yields can and do vary. Average farm yields may be higher than the 135 bushels expected yield shown above or, as proven in 1980, they can be much lower. Let's look at the good year and bad year yield situations:

Good year 145 bushels per acre

Poor year 105 bushels per acre

To analyze the impact of yield variation, we'll calculate the bushels available to pay for rent and still break even. The bushels available for rent will equal the total yield minus the number of bushels required to cover the cash outlay commitments. In the previous example, 75 bushels were required to cover the cash outlay. The bushels available for rent would be:

Good year = $145 - 75 = 70$ bushels

Poor year = $105 - 75 = 30$ bushels

These are break-even levels with all cash costs being covered, including an allowance for family living expenses. It does not have a margin for savings or further investment.

If yields have a normal variation with an average of 135 bushels per acre, we know the yield will be 135 or higher 50 percent of the time and below 135 bushels 50 percent of the time. That's what an average is! We also know from the statistical distribution that the yield will be 122 bushels or more 84 percent of the time. How does this influence the rent paid? Let's assume this 84 percent confidence level yield of 122 bushels in the calculations.

Yield	122 bushels
Bushels to cover cash outlay	75 bushels
Bushels available to pay rent	47 bushels

To be 84 percent sure of being able to cover all costs including the rent, the tenant should not pay more than 47 bushels rent.

If yields are distributed normally, there is only a 16 to 20 percent chance of the "good year" situation occurring. Different areas will have somewhat different yield patterns. Rainfall and hail patterns may result in the yields being clustered above or below the 135 expected average. Your experience will give you a feel for how the yields are distributed for your farm. The mean and the distribution of yields will probably also change over time as new varieties and other technology is introduced.

One other feature of this analysis needs to be pointed out. It was assumed the prospective tenant would have a machinery loan of \$28.58 per acre. If the operator has no outstanding loans during the year the land is rented,

the break-even rental would be higher. In this case it would be increased by: $\$28.58 \div \$3.15 = 9$ bushels.

While the going market rate in the area sets the pace, prospective tenants should be aware of their individual situation and what that means for the ability to pay. A neighbor may out-bid you for a tract of land, not because he is a better manager, but because of a different debt structure and family situation.

A set of worksheets is provided for you to work through different situations. Consider *different prices* as well as *different costs* to update the calculations suggested here to current conditions.

BUSHEL RENT WORKSHEET

I. Calculating break-even rent

cash commitments per acre

Seed \$ _____
 Fertilizer & chemicals _____
 Fuel _____
 Repairs _____
 Subtotal _____ \$ _____

Interest on operating capital* _____

Machinery loan payments _____

Labor costs _____ hrs.x \$ _____ per hr. _____

Farm overhead allocated per acre _____

Management charge _____

Other family living costs _____

Total cash required \$ _____ (1)

Expected Selling Price \$ _____ per bushel (2)

Yield to cover cash required = (1) w (2) =

_____ w _____ = _____ bushels (3)

Expected yield in average year _____ (4)

Break-even rent that can be paid = (4) - (3) =

_____ - _____ = _____ bushels (5)

II. Calculating chances of meeting cash obligations.

Expected selling price \$ _____ per bushel (6)

Bushels required to cover cash commitments at this price (1) w (6) _____ bu. (7)

--Your estimate of what you have to bid to get the land _____ bu.(8)

Total bushels to break even (7) + (8) _____ bu. (9)

Your estimate of:

- 1) Chances of obtaining the break-even yield (9) this year _____% (10)
- 2) Chances of selling price being at least equal to expected price _____% (11)
- Chances of breaking even = (10) as decimal x (11) as a decimal
- . _____ x . _____ = . _____ (12)
- or _____ %

*Operating capital = costs of seed, fertilizer, chemicals, fuel, and repairs.

Interest = Operating capital × portion of year interest is paid × interest rate. From previous example, interest \$154.46 × 2/3 yr. × 13% = \$13.39.

File G591 under: FARM MANAGEMENT

E-3, Leases & Contracts

Issued March 1982; 12,000 printed.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Elbert C. Dickey, Director of Cooperative Extension, University of Nebraska, Institute of Agriculture and Natural Resources.

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