MISSISSIPPI STATE UNIVERSITY EXTENSION

Understanding Farm Asset Depreciation and Tax Implications

Long-term assets that are used over multiple years, such as tractors, trucks, or combine harvesters, have a resale value that will be less than what was paid for that asset initially. The difference between the initial value of the asset and the current value stems from various factors, including wear-and-tear, reduced expected life, and so on. The difference– or the reduction in asset value– is called depreciation. Depreciation is an accounting procedure in which the anticipated decline over time in an asset value is reflected.

Determining depreciation is sometimes complicated because different assets depreciate at different rates. While the most popular depreciation approach is the straight-line depreciation approach, the Internal Revenue Service (IRS) requires certain assets to be depreciated using the declining balance approach. In certain cases, a farmer has the option to choose different depreciation methods.

So why does the depreciation method matter? Depending on the depreciation method selected, the annual tax amount owed can differ. While depreciation is not an actual cash expense, annual depreciation expense is deducted to calculate the net farm profit, and that profit amount is subject to taxation. Thus, when the depreciation expense is large, net farm profit will decrease and the amount of taxes owed may decrease accordingly.

This becomes more relevant especially when a farmer spends a significant amount of money to purchase or build a new long-term asset. When there is a major purchase of a large piece of equipment, the farmer may have a reduced cash balance for the year and face liquidity problems. Selecting depreciation methods, such as double declining balance or 150 percent declining balance approaches, can result in a greater depreciation expense in the early years, providing more room for cash reservation because more money can be saved from taxation in the early years of ownership. In this publication, we examine the specific rules of depreciation provided by the IRS and three different depreciation methods.

IRS Depreciation Rules

The IRS has established percentage tables that incorporate the applicable convention and depreciation method, which is used for taxation documents such as Schedule F Form 1040 Profit or Loss from Farming (IRS 2021a). Item 14 of the Schedule F form is for depreciation expense, which is deducted to calculate net farm profit or loss. Farmers are required to calculate depreciation expense using the Modified Accelerated Cost Recovery System (MACRS), which is a depreciation system used for tax purposes provided by the IRS (IRS 2021b; IRS 2021c).

Depending on the asset type and expected life, either the General Depreciation System (GDS) or the Alternative Depreciation System (ADS) can be used under MARCS. GDS is generally used, but ADS might be required under the following conditions:

- All property used predominantly in a farming business and placed in service in any tax year during which an election not to apply the uniform capitalization rules to certain farming costs is in effect.
- Listed property used 50 percent or less in qualified business use.

Table 1. Depreciation Method Given Type of Property

System/Method	Type of Property
GDS using 150% DB	All 15- and 20-year property; Farm or Nonfarm 3-, 5-, 7-, and 10-year property[1]
GDS using SL	Nonresidential real property; Residential rental property; Trees or vines bearing fruits or nuts; All 3-, 5-, 7-, 10-, 15-, and 20-year property[2]
ADS using SL	Any property that meets one of the ADS criteria discussed above.
GDS using 200% DB	Nonfarm 3-, 5-, 7-, and 10-year property; Farm 3-, 5-, 7-, and 10-year property placed in service after 2017

[1] If farm property obtained after 2017 the 150% DB method is no longer required
[2] 15- or 20-year farm property must use GDS using 150% DB, GDS using SL, or ADS using SL

- Any tax-exempt use property.
- Any tax-exempt bond-financed property.
- Any property imported from a foreign country for which an Executive Order is in effect because the country maintains trade restrictions or engages in other discriminatory acts.
- Any tangible property used predominantly outside the United States during the year.

2021 IRS Publication 225 provides depreciation periods for farm assets, separated between GDS and ADS (IRS 2021c). Table 1 outlines which method to use depending on the type of the asset. Note that DB refers to the declining balance approach and SL refers to the straight-line approach.

As shown in Table 1, GDS is used in most cases. Even when ADS is required, ADS only follows the straight-line approach and thus the calculation is not more complicated.

For certain assets, a farmer may elect GDS or ADS depending on the conditions outlined previously. Table 2 shows the recovery periods (depreciation period or the expected life) of an asset, separated for GDS and ADS. For example, if a farmer has a grain bin and that bin does not meet any of the ADS criteria, the farmer may use 7 years as the recovery period. If the grain bin does meet the ADS criteria, the farmer must use 10 years as the recovery period.

Depreciation Methods

Once a depreciation method is selected it is important to understand how depreciation is calculated for a given method since this can impact your tax burden. The following shows how straight-line and declining balance approaches calculate depreciation along with examples and comparisons between the two methods.

Straight-line (SL) Approach

Straight-line depreciation is the most commonly used depreciation method. The annual depreciation amount is calculated by dividing the purchase price of an asset, minus its salvage value, by the useful life of the asset or the recovery periods from Table 2.

Table 2. Depreciation Periods for Long-Term Assets

Asset	GDS	ADS
Agricultural structures (single purpose)	10	15
Automobiles	5	5
Calculators and copiers	5	6
Cattle (dairy or breeding)	5	7
Communication equipment	7	10
Computer and peripheral equipment	5	5
Drainage facilities	15	20
Farm buildings	20	25
New farm machinery and equipment	5	10
Used farm machinery and equipment	7	10
Fences (agricultural)	7	10
Goats and sheep (breeding)	5	5
Grain bin	7	10
Hogs (breeding)	3	3
Horses (age when placed in service)		
Breeding and working (12 years or less)	7	10
Breeding and working (more than 12 years)	3	10
Racing horses (more than 2 years)	3	12
Horticultural structures (single purpose)	10	15
Logging machinery and equipment	5	6
Nonresidential real property	39	40
Office furniture, fixtures, and equipment (not calculators, copiers, or typewriters)	7	10
Paved lots	15	20
Residential rental property	27.5	40
Tractor units (over-the-road)	3	4
Trees or vines bearing fruits or nuts	10	20
Truck (heavy duty, unloaded weight 13,000 lbs. or more)	5	6
Truck (actual weight less than 13,000 lbs.)	5	5
Water wells	15	20

Table 3. Depreciation Expense Example Comparison Between Straight-Line, Declining Balance Using 150%, and Declining Balance Using 200%

Year	Straight-Line	150% Declining Balance	200% Declining Balance
1	$1,800	$3,000	$4,000
2	$1,800	$2,100	$2,400
3	$1,800	$1,470	$1,440
4	$1,800	$1,029	$864
5	$1,800	$1,401	$296
Total	$9,000	$9,000	$9,000

Salvage value refers to the expected resale value of an asset after its useful life.

Annual Depreciation = (Purchase Price of an Asset-Salvage Value) / (Recovery Periods)

Example 1: Assume that you just purchased an automobile for $10,000. Based on MACRS depreciation periods, you expect the asset to last five years. After five years, you expect to sell the asset at $1,000. Then, under the straight-line approach, the annual depreciation amount is $1,800, which will be the same across the entire five years of its useful life:

Annual Depreciation = ($10,000-$1,000) / 5= 1,800

The main benefits of SL include consistency and convenience. It is easy to calculate, and the depreciation amount does not change over the years. In this example, the annual depreciation amount for the next five years is fixed at $1,800.

Declining Balance (DB) Approach

Under the declining balance approach, the depreciation amount is the greatest at the beginning of the asset's useful life and the amount decreases over time. The equation is:

Annual Depreciation = (1.5 or 2) / (Recovery Periods) * Value of asset at the beginning of the year

where the value of the asset at the beginning of the year is equal to the value of the asset at the beginning of the previous year minus the depreciation amount of last year. When using 150% DB, use 1.5 for the numerator. If 200% DB is to be used, use 2 for the numerator. The annual depreciation amount at the last year of the asset's useful life is the simple difference between the asset value at the beginning of the final year minus the salvage value.

Example 2: We are going to assume that the asset has the same purchase value, salvage value, and recovery periods as Example 1. However, we are going to see what happens to the depreciation expense amount under the declining balance approach using the 200% rule. For the declining balance approach using the 150% rule, you can simply switch 2 to 1.5 in the numerator.

For Year 1, the value of an asset is equal to the purchase price of $10,000. Thus, the annual depreciation amount for Year 1 is:

Depreciation Year 1 = 2/5 * $10,000 = $4,000

Therefore, the asset depreciated by $4,000 in year 1. For Year 2, the depreciation expense that occurred at Year 1 reflects the reduction in the asset's value. Thus, the value of the automobile at the beginning of Year 2 is $6,000 ($10,000-$4,000=$6,000). The annual depreciation amount for Year 2 is calculated by:

Depreciation Year 2 = 2/5 * $6,000 = $2,400

In Year 2, the annual depreciation expense is now $2,400. The value of the automobile at the beginning of Year 3 is $3,600 ($6,000-$2,400=$3,600). This is repeated for Years 3 and 4, with the annual depreciation expenses being $1,440 and $864, respectively. At the end of Year 4, the asset value should be equal to $1,296.

For Year 5, the depreciation expense is the difference between the asset value at the beginning of Year 5 minus the salvage value because this will be the final year of useful life. In this example the salvage value was $1,000. So, the Year 5 depreciation amount is the difference between $1,296 and $1,000, or $296. Table 3 provides an annual depreciation expense summary for this example using different depreciation methods.

Note that the total accumulated depreciation expenses are equal to $9,000 regardless of which method is used. In general, under the declining balance approach, the annual depreciation expense decreases over time. Compared to the straight-line approach where annual depreciation expense is the same over the life of the asset. The declining balance approach can be particularly helpful when making a significant purchase, reducing tax burdens in the early years of ownership.

The following example shows how different depreciation methods can impact your tax burden. Assume that a farmer is subject to an 18% income tax and their annual farm profit excluding depreciation expense is $100,000. Because depreciation expense is an expense that reduces net farm profit, a greater depreciation expense will result in a lower taxable income.

For years 1 through 5, the farm tax amount will look like this:

Table 4. Differences in Annual Tax Expense Between Depreciation Methods

Year	Straight-Line	150% Declining Balance	200% Declining Balance
1	(100,000-1,800)*0.18 = 17,676	(100,000-3,000)*0.18 = 17,460	(100,000-4,000)*0.18 = 17,280
2	(100,000-1,800)*0.18 = 17,676	(100,000-2,100)*0.18 = 17,622	(100,000-2,400)*0.18 = 17,568
3	(100,000-1,800)*0.18 = 17,676	(100,000-1,470)*0.18 = 17,735.4	(100,000-1,440)*0.18 = 17,740.8
4	(100,000-1,800)*0.18 = 17,676	(100,000-1,029)*0.18 = 17,814.8	(100,000-864)*0.18 = 17,844.5
5	(100,000-1,800)*0.18 = 17,676	(100,000-1,401)*0.18 = 17,747.8	(100,000-296)*0.18 = 17,946.7

Under the straight-line approach, the tax amount would be $17,676 in Year 1. If they elected 200% declining balance approach, however, the tax amount would be $17,280 or a decrease of $396 relative to the straight-line approach.

Almost always, the declining balance approach provides greater tax benefits in the early years compared to the straight-line approach. However, the straight-line approach can have greater tax benefits as the asset reaches the end of its useful life. For instance, the Year 5 tax expense is the greatest for the 200% declining balance approach at $17,946.70 compared to $17,676 for the straight-line approach and $17,747.80 for the 150% declining balance approach.

The only difference between GDS and ADS is the depreciation years. If ADS is to be applied, use the years in the last column of Table 2.

As discussed, if a farmer makes a major purchase, they likely have a reduced cash balance for the year. Selecting the DB method can help the farmer to save more on tax in the early years at the expense of greater tax expense in later years. It is important for farmers to understand how these different depreciation methods can impact their tax burden throughout the lifetime of the asset, and determine which depreciation method will help maintain a financially resilient farm business.

References

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