Virginia Cooperative Extension

Farm Business Management Update
December 2011 - January 2012

Farm Business Management Update is a joint effort of the Agricultural and Applied Economics faculty and the area farm management educators. Subject matter areas include timely information on farm management, marketing, tax management, finance, credit, labor, agricultural law, agri-business, estate planning, 4-H economic education, natural resources, and CRD. Please feel free to reproduce any article. However, please cite the title, author(s), date, and this newsletter.

Farm Business Management Update is electronically accessible via the Virginia Cooperative Extension World Wide Web site (www.ext.vt.edu/news/index.html). To see the articles listed in the reverse chronological order, look under the listing of "Newsletters," then select "Farm Business Management Update."

Gordon E. Groover
groover@vt.edu
Extension Economist
Farm Management and Farm Management Coordinator

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The Management Calendar

By Gordon Groover (groover@vt.edu), Extension Economist, Farm Management, Department of Agricultural and Applied Economics, Virginia Tech

Farm business managers should consider putting the following activities on their management calendar for December and January.

- Before the end of the year (calendar tax year filers), follow up on end-of-year tax management strategies recommended by your tax advisor. Additional information can be found in IRS publication 225 Farmer's Tax Guide at http://www.irs.gov/pub/irs-pdf/p225.pdf. Hard copies of Farmer's Tax Guide can be obtained from many of your public libraries.
- Begin closing out the farm books by collecting information for the farm net worth statement. Around the first of the year when you need to walk off all that holiday food, take a notepad or try out the new camera and/or cell phone as you walk around the farm. Record the number and approximate value of all the farm assets (cattle, tractors, machinery, buildings, inventories of grains and feedstuffs, chemicals, etc.) that can be organized on the asset side of the balance sheet. Be sure to save the notes, recording, or, better yet, place the notes or recording in a safe location (safety deposit box or fireproof box) for possible insurance claims. Review your end-of-year bank statements or contact your lender for current listings for all personal and business liabilities. You now have all the information you need to complete a market value net worth statement.
- If you are using cash accounting methods for tax purposes (computerized business records or hand-kept), you need to make sure your actual records match the deposits and check dates for all claimed income and expenses. A quick check of the records will help address any problems that might arise at tax time.
- Plan to get all tax records summarized and to your tax advisor by February 1, 2012, and check with your Virginia Cooperative Extension's farm business management agent on farm-related changes in state and federal taxes. A listing of Virginia tax credits can be found at the following site: http://www.tax.virginia.gov/site.cfm?alias=TaxCredit. Make sure your tax advisor is aware of these credits. An abbreviated list of credits for agriculture and forestry are listed below.
    - Agricultural Best Management Practices Credit
    - Biodiesel Fuels Credit
    - Credit for Taxes Paid to Another State
    - Conservation Tillage Equipment Credit
    - Fertilizer and Pesticide Application Equipment Credit
    - Land Preservation Credit Provisions Prior to 2007
    - Land Preservation Credit Provisions for 2007 and After
    - Long-Term Care Insurance Credit
    - Riparian Waterway Buffer Credit
- Use 2011 financial and production records to develop projected budgets, cash flow, and income statements for 2012. If you are using Quicken or QuickBooks, use the automated feature to create a budget based on last year as a starting place

to create a detailed budget to reflect your expected costs and returns for 2012. If you are using the Virginia Cooperative Extension "Farm Record Book: Expenses and Receipts," the back pages provide forms to summarize all your financial data.

- Depending on the type of farm, begin working on a marketing plan for 2012 by collecting information on prices and world market situations.
- Keep up-to-date on the release of economic, crop conditions and estimates, world agricultural situation and outlook, and many other USDA reports by looking at the USDA report calendar at http://www.usda.gov/wps/portal/usda/usdahome?navid=AGENCY_REPORTS.
- Check on crop insurance policies by visiting the Risk Management Agency website at http://www.rma.usda.gov/ to find an agent and view the multitude of policies (crops, livestock, forages, vegetables nursery, clams, and more) that are available in your area.
- Close out and summarize livestock and/or crop records for 2011, noting problems that must be addressed when making cropping, feeding, and breeding decisions during 2012. Compare 2011 records to previous years looking for strengths and weaknesses.
- Review 2011's crop, hay, and livestock records for labor problems, bottlenecks, and down times. Include all employees in spotting and planning to correct labor bottlenecks. Draw up a labor flow chart listing estimated times and identify employees who will be responsible for major tasks. This is very important if you have expanded acreage, livestock numbers, and/or replaced an employee or changed the number of employees.
- Schedule regular meetings with all workers and family members to discuss work activities as you gear up for the spring push. Make sure all workers feel free to suggest ways to improve efficiency. Think about creating an employee handbook for important information on pesticide safety, farm bio-security, and safe operations of machinery and equipment.

Selective information that might be useful to farmers and their advisors:

- The Virginia's Use Value Assessment Program web site has been updated for Tax Year 2012 (TY) and includes estimates based on capitalized rental rates and net income, details at http://usevalue.agecon.vt.edu/.
- Time to order your Virginia Cooperative Extension "Farm Record Book: Expenses and Receipts" (Publication 446-017). This 120-page record book provides an organized way of keeping track of annual financial, labor and personnel, and production-related records. It provides forms for many categories of expenses, receipts, labor, and financial summaries to meet the needs of most agriculturally-related businesses using cash accounting methods. Column headings are included for major items with some columns remaining blank for your own headings. Forms are arranged to facilitate transferring totals to income tax forms (Schedule F, tax deprecation, and Form 4797) and to help complete end-of-the-year analysis. Virginia Cooperative Extension "Farm Record Book: Expenses and Receipts" is available from Virginia Cooperative Extension for $12.00. Call your local extension office and request the order form VCE

Publication 446-016, print the form at www.ext.vt.edu/pubs/agecon/446-016/446-016.pdf, or contact me at (540) 231-5850.

- Timber taxes are not the same as farm taxes. If you plan to sell timber or have recently sold timber, visit the National Timber Tax Website at www.timbertax.org.
- An article titled "Move Over Brother; the Farmer's Daughter is Coming Home to the Farm, Too!" by Julia Nolan Woodruff, former OSU Extension Educator, is an additional resource for families planning the transition of their farm business. This article appeared in the October issue of the "Ohio Ag Manager:" http://ohioagmanager.osu.edu/financial-management/move-over-brother-the-farmer%E2%80%99s-daughter-is-coming-home-to-the-farm-too/.
- Need help understanding and using financial statements? The Center for Farm Financial Management has created a new online workshop series to help agricultural producers and/or anyone who works with them to understand and use common financial statements and measures. The website, Interpreting Financial Statements and Measures (IFSaM), is intended to teach producers the basics of interpreting the four major financial statements and the 21 financial measures recommended by the Farm Financial Standards Council. IFSaM is a series of online videos that producers can work through at their own pace. Each session provides benchmarks, based on actual farms, that producers can use to evaluate their own financial position and their financial performance. Case farm examples are used to bring the data to life. There are also optional "test your knowledge" quizzes at the end of each session. In total, there is over 2 ½ hours of information. Best of all, it's free. This series was created with funding from the North Central Risk Management Education Center. IFSaM is located at http://ifsam.cffm.umn.edu/.
- If you are interested in improving your management skills, take a look at the on-line products and courses from RightRisk. RightRisk is an innovative risk research and education effort to help farmers and ranchers understand and explore risk management decisions and evaluate the effects of those decisions. One product you should view is "*Getting on Track: Better Management Through Basic Financial Statements*," a free online course just posted to the RightRisk (http://rightrisk.org/) web site. The course covers:
    - Cash Flow Statements
    - Balance Sheets
    - Income Statements
    - Statement of Owner Equity
    - Where Do I Go From Here?
- Fertilizer Outlook and Soil Fertility were topics of an Adobe Connect organized by Matt Yancey, Crop and Soil Environmental Sciences Extension Agent. The session was held in mid-November. Presentations were: 1) Building and Maintaining Soil Fertility in Times of High Input Costs by Dr. Chris Teutsch; and 2) Fertilizer Outlook by Dr. Gary Schnitkey, University of Illinois. The presentations can be viewed online at http://connect.ag.vt.edu/p58xkv2v7ce/. Dr. Teutsch's presentation is first and runs for about 49 minutes; Dr. Schnitkey's begins around 00:49:30.

- The cover story in the *Region Focus* magazine published by the Richmond Federal Reserve Bank is "Why Aren't We Creating More Jobs?" With unemployment above 9 percent for more than two years, policymakers are grappling with how to create jobs. But many proposals, such as more fiscal stimulus, temporary tax breaks, and subsidies for private hiring, may not have the punch that their supporters hope. See this article at: www.richmondfed.org/publications/research/region_focus/2011/q3/q3.cfm?WT.mc_id=110007
- A new publication from USDA Economic Research Service that will be of interest to many involved in agriculture:
    - *Local Foods Marketing Channels Encompass A Wide Range of Producers*. The size of the U.S. local food market was $4.8 billion in 2008. Local food marketing channels varied with farm size, region of the country, and proximity to population centers. Operators of small and medium-sized farms with local food sales spent more hours farming and are more likely to list farming as their primary occupation than similarly sized farms without local food sales. See www.ers.usda.gov/AmberWaves/December11/Features/LocalFoodMarketing.htm
    - *Changing Farming Practices Accompany Major Shifts in Farm Structure.* While the number of farms and land in farms has remained relatively stable over the past 3 decades, agricultural productivity has grown significantly. Changes in the way farmers produce and market agricultural commodities have allowed many farmers to increase the size of their operations, facilitating technological and organizational changes that, in turn, have helped increase productivity. On net, these changes in farm structure and practices have resulted in a smaller environmental footprint for the average unit of output produced. See www.ers.usda.gov/AmberWaves/December11/Features/FarmingPractices.htm.
- A must read for all of us involved in agriculture is the current issue of "Choices," published by the Agricultural and Applied Economics Association and can be found at www.choicesmagazine.org/. In this issues are three themes:
    - *Innovating Policy for Chesapeake Bay Restoration:* Insufficient progress in achieving water quality goals for the Chesapeake Bay has led to demands for more effective measures to address agricultural pollution. The responses by federal and state agencies call for ramping up existing programs. These articles highlight opportunities for improving policy outcomes through new approaches.
    - *Critical Issues for Agricultural Cooperatives.* This set of articles delineates current challenges and needs within the cooperative community. The insights were gained from a panel of cooperative leaders and USDA and academic experts representing a wide range of agricultural commodities. Critical issues relating to the external environment, strategy, finance, governance, communication and new cooperative development are highlighted.

- *Should Soft Drinks be Taxed More Heavily?* These articles consider whether sweetened soda should be subject to increased taxation, and whether caloric-sweetened beverage consumption will decline in the face of tax increases—and by how much. Multidisciplinary authors examine the lessons from tobacco taxation, beverage substitution effects, the role of advertising, and the complexity of the food-obesity nexus.

Should Farmers Invest in IRA's to Save Income Taxes?

By Peter Callan (peter.callan@vt.edu), Extension Agent, Farm Business Management, Northern District

USDA estimates average net cash income for farm businesses is projected to be $82,800 in 2011, nearly 17 percent above the 2010 estimate of $71,000. With prices expected to approach record levels for major crops and some livestock, farmers are anticipating high income tax liabilities when they file their 2011 tax returns. Farmers have routinely prepaid operating expenses (seed, fertilizer, chemical, feed etc.) and purchased new equipment as a means of reducing their tax liabilities. Historically, farmers have reinvested in their businesses with little thought of diversifying their investments into nonfarm assets. An Individual Retirement Account (IRA) is a savings plan that provides the taxpayer (farmer) with tax advantages for setting aside money for retirement and diversifies investments.

There are two types of IRAs for retirement saving. Traditional IRAs are funded with before-tax contributions and the Roth IRAs are funded with after-tax contributions. A taxpayer can open and make a contribution to a traditional IRA and/or a Roth IRA if the taxpayer (or if filing a joint return, their spouse), receives taxable compensation (e.g. earned income - wages, salaries, commissions, self-employment income – net earnings from schedule F or C) during the year. The Internal Revenue Service (IRS) has stated that the following types of income are not considered compensation: earnings and profits from property (e.g. rental income), interest and dividend income, pension or annuity income and Conservation Reserve Program (CRP) payments reported on Form 1040SE, line 1b. A taxpayer whose age is more than age 70 ½ years by December 31, 2011 cannot make a contribution to a traditional IRA. Regardless of the age of the taxpayer, contributions can be made to a Roth IRA. Contributions to traditional and Roth IRAs can be made at any time during the year and up to the due date for filing a tax return for that year, not including extensions. For tax year 2011, contributions must be made by April 17, 2012.

The amount contributed to an IRA is based on the amount of taxable income received by the taxpayer during the year. In 2011, the maximum contribution for a traditional IRA and Roth IRA is the lesser of $5,000 or 100% earned income ($6,000 age 50 or older). For example, a farmer with $4,000 in earned income (net schedule F after depreciation) would be limited to a maximum contribution of $4,000 to an IRA. The maximum contribution to a spousal traditional or Roth IRA (for a spouse with little or no earned income in 2011) is the lesser of $5,000 or 100% of combined earned income ($6,000 age

50 or older). A taxpayer may contribute 100% of earned income to either a traditional IRA, a Roth IRA, or split between both types of IRAs up to the annual contribution limit.

The benefit of a traditional IRA is that the contributions are tax-deductible in the year that the taxpayer makes the contribution. For example, the taxable income for a couple is $90,000 in 2011 and each spouse contributes $5,000 in a traditional IRA. They will be able to deduct the contributions from their income taxes. Thus they will pay tax on $80,000 in income to the IRS. Assuming that the couple is in the marginal 25% tax bracket (Federal) and their IRA contributions are $10,000, they will save $2,500 in Federal income taxes in 2011. The earnings generated by a traditional IRA are tax differed. The tax deductible contributions and earnings are taxable as ordinary income when they are withdrawn from the account after age 59 ½. The IRS will assess a 10% early withdrawal penalty for distributions made before the farmer reaches age 59 ½ from the IRA.

Like traditional IRAs, Roth IRAs offer tax-deferred earnings. Earnings grow tax-free. There is no tax upon withdrawal, so long as the taxpayer held the account for at least five years and is over the age of 59½. Contributions to a Roth IRA are never tax deductible. The taxpayer must have earned income equal to or greater than their contribution. In order to contribute to a Roth IRA, their Adjusted Gross Income (AGI) must be below certain income levels, e.g. $177,000 for married filing jointly or qualifying widow(er) in 2011. Withdrawals of earnings in a Roth IRA prior to age 59½ are generally subject to ordinary income taxes and an additional 10% penalty.

IRA contributions can be used to purchase a variety of investments (stocks, bonds, certificates of deposits etc.) which are sold by banks, insurance companies, brokers and mutual funds. Tax advisors, loan officers and friends are excellent sources of references to find an investment advisor who will help the farmers meet their goals and risk tolerance. Frequently, investment advisors will discuss the topic of compound interest (return) with their clients in making a plan to invest IRA contributions.

Compound interest occurs when interest is earned on a principal sum along with any accumulated interest on that sum. In other words, you earn interest on interest. Time magnifies the effects of compounding. Thus, you will make more money the longer your investment is able to work for you. Table 1 illustrates the impact of compound interest rates on the future value of a $5,000 deposit to an interest bearing account. Example: $5,000 invested today could increase in value ten-fold if invested for 30 years at 8 percent.

Table 1. Future Value of a $5,000 Investment in an Interest Bearing Account

	Interest Rates				
	2%	4%	6%	8%	10%
Years					
5	$5,520.40	$6,083.26	$6,691.13	$7,346.64	$8,052.55
10	$6,094.97	$7,401.22	$8,954.24	$10,794.62	$12,968.71
20	$7,429.74	$10,955.62	$16,035.68	$23,304.79	$33,637.50
30	$9,056.81	$16,216.99	$28,717.46	$50,313.28	$87,247.01
40	$11,040.20	$24,005.10	$51,428.59	$108,622.61	$226,296.28

IRA accounts provide farmers the opportunity to diversify and invest in income-producing assets (e.g. certificates of deposit, mutual funds etc.), and not depend entirely on their farm assets for retirement income. Farmers who make IRA contributions early in their careers are afforded the opportunity to reap major increases in the value of their contributions through the impact of compound interest. Income tax savings may occur in either the current tax year or when withdrawn during the retirement years. For more information on IRA's, see IRS publication 590 http://www.irs.gov/pub/irs-pdf/p590.pdf or contact your tax advisor.

How Much Does That Hay Cost and What Should I Charge?

By Gordon Groover (groover@vt.edu), Extension Economist, Farm Management, Department of Agricultural and Applied Economics, Virginia Tech

Introduction

Popular press and other media outlets are saturated with simple and very complex strategies on how to price a product or service. Yet they all start with four basic concepts: 1) know your cost of production; 2) know the prevailing market price; 3) produce what your customer wants; and 4) sell quality products at reasonable prices and with quality service. Producing hay as a cash crop is a challenge to meet all the items above when weather, labor shortages, high land costs, and so on work to reduce both the quantity and quality of the hay you have for sale. This paper is designed to help you consider some of the major issues in developing a hay enterprise and to target those of you who are looking to diversify or add another part-time enterprise to your farm operation. If you plan to make hay sales the major/full-time enterprise of your farm business, you should develop a detailed business plan.

Know Your Cost-of-Production

My uncle was quoted saying, "that guy could sell snowballs to Eskimos," about someone he knew. The obvious implication was that the man was a salesman and could find a way to convince a customer that his product, snow, regardless of it abundance, had special characteristics and the customer must buy this product. Even the best salesperson cannot overcome the problem of costs. The best marketing and pricing strategies and the

ultimate customer service will eventually fail if you do not know and control your cost of production and price your product accordingly. Bankrupt airlines, booksellers, and banks are excellent examples.

Cost of production starts with a sound production and financial record keeping system. To determine the costs per ton of hay, you need to know the yield and costs. Knowing yield sounds simple, yet keeping accurate yield records requires that hay from each field be recorded and that you weigh loads or estimate weights. Consider ways to weigh wagons. If you live near a site with truck scales, weigh a few sample loads and use the results to better estimate yields. Consider purchasing a set of portable scales (less $2,500) that you can use to weigh all hay crops. A side benefit of accurate yields is that you can document nutrient removal for your nutrient management plan. Producing just small rectangular bales requires more labor, but with the aid of a bale counter you know how many bales you've produced and can weigh a random sample of say 5% (on small farm scales) to estimate the average bale weight. You'd multiply the average weight times the bales per acre to give total tonnage.

Acreage -- For fear of seemingly being out of touch, I ask this simple question. "Do you know how many acres are in each field you farm?" Production recommendation (fertilizer, pesticides, and seeding rates), cost, returns, and profitability measures are all based on the assumption that acreages are known. So if you do not know your current acreages or if you are leasing a new farm make sure to measure the acreage. Then use these acreages to determine yield, costs, returns, and profit per acre for each field and for the farm's hay enterprise.

Defining a few words and explaining how they are used when making decisions will aid your understanding.

> **Fixed costs** (also known as sunk costs) are items that do not vary with level of use. The most common are 1) depreciation[1], interest, taxes, and insurance on equipment and machinery; and 2) depreciation, insurance, taxes, and maintenance on buildings. Fixed costs do not change with the level of use. For example, if hay equipment is used on an additional 30 acres, the interest, taxes, or insurance charge do not change. However, fixed cost measured on the basis or either per acre or per ton of hay harvested decreases as more hay is harvested.
>
> **Variable costs** (also known as out-of-pocket costs) increase with use: an increase in the tons of hay harvested will certainly result in more fuel consumed and higher repair costs. If a farmer stops making hay altogether, variable costs will drop to near zero, but fixed costs will remain essentially unchanged.

[1] Depreciation in this document will refer to a reduction in value or obsolescence of an asset over time (not tax depreciation).

Long-run decisions are made based on all costs being covered; that is, the income from hay sales will exceed the fixed and variable costs of machinery and equipment, hay production, storage, labor, management, and return on investment. These costs are important when you start a new venture requiring additional investments.

Short-run decisions are made day-to-day, year-to-year to help improve the profitability or reduce the losses of an on-going venture. Short-run decisions consider only variable costs: as long as the income from hay sales are greater than the total variable costs to produce that hay, the farmer is better off continuing to produce hay. What happens when the income from hay sales no longer cover the variable costs to produce that ton of hay? Then the farm business has reached the "**shut down**"or the "**I quit**" point. This situation implies that continuing to produce hay will lead to insufficient funds to pay for fuel, labor, fertilize, and so on.

The question that you should be able to answer after reading this article is, "Have I reached the 'I quit' point for nitrogen fertilized grass hay, given the current costs of fertilizer and fuel?"

Man Verses the Machine

Many farmers would prefer to substitute machinery for labor as when you look at the adoption rate of large round balers over the last 30 years. Yet almost all hay sold to the horse industry is in small bales. This begs the question, "Do I have to hire and manage labor to put up hay?" The answers are you could or you could use some of the bale automation systems. There are three main classes of bale automation systems.

1. In-field bale pick-up systems that are PTO driven or self-propelled. Bales are accumulated in a large stack (four or more tons) that are transported back to a barn or dropped in the field as a unit. If the bale wagon is not used to dump the bales in the barn as a unit, the bales must be mechanically loaded using a hay grapple unit and hauled back to storage. This equipment complement can cost from $55,000 to over $150,000 and may not be the best choice with small fields distributed over a large distance. Due to costs, I choose not to discuss this system.
2. Bale accumulators – this unit is towed behind the baler and catches each bale and assembles them into a small unit (less than 1,000 lbs). The bale-unit is then discharged into the field for pick-up with a front-end loader attachment (grapple unit) and each unit is placed on a wagon for transport to storage. The grapple unit is used to stack the hay in the barn. Costs for grapple and accumulator range from $15,000 to $25,000.
3. Bale accumulator/bander – this unit is also towed behind the baler and catches each bale consolidating the bales into a unit (21-18 bales about 1,000 lbs). The unit is bound using metal bands, like bundles of 2x4's at the lumber yard. The bale unit is approximately 8' long x 4.5' tall x 3.5' wide. Units are loaded and unloaded using a fork lift attachment for a front-end loader. The units will fit in

most 6 and 8 foot pickup beds making sales to end-consumers less time consuming. Costs for the unit and fork lift attachment are around $80,000.

Do these types of investments make sense? Push the pencil or spreadsheet to estimate annual costs and labor saving.

What Does It Cost to Grow Mixed-Hay and Alfalfa Hay?

Budgeting: To answer the question, "What does it cost to grow mixed-hay and alfalfa hay?" some of the basics of budgeting must be explained. The purpose of a budget is to list the annual qualities and prices of inputs involved in the production of hay. The sum of the income items less total expense leaves an estimate of net income or returns to land, risk, and management. Since the sales price is often the most variable, most budgets concentrate on the cost of inputs like fertilizer. The breakdown of major budget categories and explanations are listed in Table 1.

Table 1. Example Abbreviated Budget for 1 Acre
1. **Gross Receipts** = quality sold * price
Bales of hay * $/ton (120 bales * $4.00/bale = $480)
2. **Pre-Harvest Variable Costs**
Units of inputs * $/unit (150 lbs of N * $0.75/lb)
3. **Harvest Variable Costs**
Fuel, Lubrication, and Repairs per acre * $/ac ($65/ac * 1 ac)
4.**Total Variable Costs** – sum of lines 2-3
Sum of all costs
5. **Machinery Fixed Costs** (Based On New Equipment Cost)
Ownership costs per acre – prorated to over the typical life of the equipment (depreciation taxes, insurance, interest on investment)
6. **Other Costs**
General Overhead Costs
7. **Total Costs** – sum of lines 4, 5, & 6
8. **Projected Net Returns** – line 1- line 7 Returns to land, risk, and management

Gross Receipts: Gross receipts are the sales price of a bale or ton of hay times the estimated production units. Hay sold into the equine industry will have to be marketed based on quality, so that hay from different fields may not have the same value and should be reflected as separate items or as an average price representation quality from poor to excellent (Table 2). The yield should indicate long-term average yields, not just the best of the last 10 years.

Table 2. Example Gross Receipts for Mixed-Grass and Alfalfa Hay							
		Mixed-Grass - 3 ton yield			Alfalfa - 5 ton yield		
Gross Receipts	Units	Yield	Price	Total	Yield	Price	Total
Lower quality hay	Ton	1.25	$90.00	$112.50	1.25	$125.00	$156.25
Higher quality hay sold in 50 lb bales	Bales	70	$5.00	$350.00	150	$5.00	$750.00
Total Receipts				**$462.50**			**$906.25**
Average Receipts per ton				**$154.17**			**$181.25**

Pre-harvest Variable Costs

The current budget estimates of pre-harvest variable costs for mixed-hay are shown in Table 3 and alfalfa in Table 4. The level of complexity increases when you move to the pre-harvest costs. In the case of hay, the cost of establishing the crop is more expensive than the year-to-year maintenance and needs to be prorated over the life of the crop. Calculating establishment costs requires a separate budget (please see the Virginia Cooperative Extension web site for hay establishment budgets (www.pubs.ext.vt.edu/category/enterprise-budgets.html). The total is prorated over seven years for grass hay and five years for alfalfa. The remaining items are a listing of the estimated units of inputs like fertilizer, lime, herbicides, and so on, priced at rates that are reflective of 2011. Most farmers use a line-of-credit to finance the needed cash flow in the spring before crops are sold in the summer and or fall. The production interest charged on the line of credit is calculated on the total pre-harvest costs for six months at the going short term interest rate. The total of these expenses yields the total pre-harvest expenses per acre, per ton, or per bale, depending on what units are used to measure production.

Comparing Tables 3 and 4, the first item you should notice is the very high cost of fertilizer making the variable costs per ton for alfalfa ($50) less than mixed-hay ($91.38). Normally, alfalfa hay would cost more to produce than mixed-hay. Given the reversal in costs, many assumptions or commonly held beliefs no longer hold true with these major changes in prices of fertilizer inputs. However, from a prospective of efficient management, the use of legumes in grass hays to provide adequate levels of nitrogen would drop the costs of grass hays to a level lower than alfalfa. Producing mixed hay to reduce total costs versus pure grass or alfalfa may be a limiting factor in selling mixed hay to the equine industry. The remainder of the pre-harvest costs for mixed-hay makes up a small proportion of the costs. For alfalfa additional inputs, e.g. pesticides, herbicides, and higher levels of lime to maintain a higher soil Ph, are required to maintain a healthy and quality stand over the 5 year life.

Table 3. Mixed-hay Pre-harvest Variable Costs - Based on 3 ton yield from 2 cuts

Pre-Harvest Variable Costs	Units	Per Acre	Price $	Total $
Prorated Establishment Cost	7 yrs	1.00	37.64	37.64
Nitrogen	Lbs	150.00	0.77	115.50
Phosphate	Lbs	51.00	0.74	37.74
Potash	Lbs	186.00	0.65	120.90
Fertilizer Application	Acre	1.00	7.25	7.25
Other Costs	Acre	1.00	15.00	15.00
Production Interest[2]	Dollar Rate	148.20	0.06	8.89
Total Pre-Harvest Costs				**342.92**
Total Pre-Harvest Costs per Ton				**114.31**
Total Pre-Harvest Costs per 50 lb Bale				**2.86**

Table 4. Alfalfa Hay Pre-harvest Variable Costs - Based on 5 ton yield from 4 cuts

Pre-Harvest Variable Costs	Units	Per Acre	Price $	Total $
Prorated Establishment Cost	5 yrs	1.00	83.41	83.41
Nitrogen	Lbs	0.00	0.77	0.00
Phosphate	Lbs	75.00	0.74	55.50
Potash	Lbs	300.00	0.65	195.00
Fertilizer Application	Acre	1.00	7.25	7.25
Lime prorated	Ton	0.33	42.50	14.03
Pesticides & Herbicides	Acre	1.00	54.61	54.61
Other Costs	Acre	1.00	14.89	14.89
Production Interest[5]	Dol.	212.35	0.06	12.74
Total Pre-Harvest Costs				**437.43**
Total Pre-Harvest Costs per ton				**87.49**
Total Pre-Harvest Costs per 50 lb Bale				**2.19**

Harvest Variable Costs

The first step in addressing the fixed costs is to select the harvest equipment. Then the costs must be annualized over the life of each piece of equipment. Calculating annual fixed costs for the machinery complements requires allocating those costs over the life of the farm machinery. Allocation of fixed costs is accomplished by using the capital recovery method. The capital recovery method sets up a payment schedule to fully recover the value of the machinery and interest on the investment over the life of the

[2] Production interest is calculated on costs that are used prior to fall at the annual interest rate to reflect only 6 months of interest the total costs are divided in half.

equipment. Capital recovery is based on the assumption that when the machinery is worn-out or obsolete, enough money will be available to fully replace the machinery with equivalent but updated technology. This paper is not intended to give you all the details of calculating all fixed costs, so check with your local extension office about machinery costs resources. Contact me at groover@vt.edu if you would like a capital recovery form to help in calculating machinery fixed costs. Table 5 shows the fixed harvest and total fixed costs for mixed-grass and alfalfa hay.

Table 5 provides a summary of the fixed and variable costs discussed in the previous sections. Costs are based on current input prices and **new** machinery. Used machinery may cut the total fixed costs as much as 40 percent. Conversely; used machinery may increase annual repair costs. As pointed out, alfalfa hay has lower total costs than mixed-hay in this example. For mixed-hay, total costs are higher because of the higher fertilizer (mostly nitrogen) costs per ton of forage harvested. Thus, with current prices and yields alfalfa is a more profitable crop over mixed hay.

Table 5. Example Harvest and Fixed Costs for Mixed-Grass and Alfalfa Hay

Harvest Costs	**Mixed-Grass - 3 ton yield**	**Alfalfa - 5 ton yield**
Fuel and Lube	21.38	42.76
Repairs	11.86	23.72
Harvest labor	38.86	77.29
Twine	5.25	8.75
Total Harvest Costs	$77.35	$152.52
Total Harvest Costs per ton	$25.78	$30.50
Total Variable Costs	$382.63	$589.95
Total Variable Costs per ton	$127.54	$117.99
Total Fixed Costs	$65.91	$125.28
Total Costs	$448.54	$715.23
Total Costs per ton	$149.51	$143.05
Returns to all budgeted costs	13.97	191.02

Estimating Labor Costs

An important factor for farmers selling small square bales is labor costs and availability. Table 6 provides estimates of labor across the spectrum from round balers to hand labor. The results in Table 6 point the labor savings you would have to help pay for the bale handling equipment. For example, if you are currently hand harvesting hay and want to consider a bale bander, the savings per acre of mixed hay harvested is $70.20 ($90-$19.80). Thus, if you harvested 100 acres annually you would have $7,020 per year to help cover the capital costs of owning the bander. Is that true? Well depends on what you pay your workers, if they are family, salary workers, etc.

Table 6. Labor Costs Estimates*	Round baler	Accumulator	Bale Bander	Hand labor
Harvest and storage hours per ton	0.58	1.2	0.66	3.0
Labor costs $ per hour	10.00			
Total harvest labor costs per ton $	**5.8**	**12.00**	**6.6**	**30.00**
Mixed-hay labor costs per acre based on 3 ton yield $	17.4	36.00	19.80	90
Alfalfa labor costs per acre based on 5 ton yield $	29.00	60.00	33.00	150
*Labor usage estimates are driven by many factors and local conditions; for example, field size, experience, training, skills, and so on. The values in this table are rough estimates derived from machinery time in field.				

Know the Prevailing Market Price

The prevailing market price is a question not a fact. You can say with a fair amount of certainty what market price of #2 yellow corn grain allows both buyers and sellers to gauge the market conditions and know the prevailing price. Yet when you ask, "What's the price of a ton of hay?" the certainty quickly diminishes. Some regions have well established hay markets and some do not. There is also the problem of Eastern hay markets not reporting prices based on established grades and standards. In addition, hay is a bulky (specifically round bales) product that makes transportation costs by traditional methods higher than for grains. In contrast, Great Plains and West have established markets for hay based on specific standards and hay packages (large square bales) that make transportation less costly. Yet in the East, the cost of hay to either the buyer and/or seller is not clearly communicated. The terminal or local market price reflects the long-run efficient cost on making a ton of hay. Therefore, farmers cannot easily look on the internet and see both the local price and historical prices of hay and say, "I can grow hay for less than that" or the converse, "I cannot grow hay for that price." In both cases you are making choices based only on your knowledge of your own costs of producing a ton of hay. To get an estimate of local hay prices, check all sources of information, e.g. newspapers, local feed dealers, local hay brokers, internet sales for large loads from the west, and so on. The asking price may not be the sale price, so you'll need to check as many sources as time permits. Also, pay close attention to all the attributes that effect price and costs; for example, quality measures (relative feed value, crude protein, TDN, net energy, NDF/ADF), delivery charges or discount if picked up at the farm, who unloads, quantity for sale, payment requirements, cutting time 1st, 2nd, etc., bale packages (rectangular, square, or round), customer satisfaction policy, and priced by bale or ton. When you sell hay, you are assuming all the functions of a commodity market. That is, specific grades and standards regulated by a third party; for example, corn grain - 56 lb. bushes at 15.5 percent moisture with less than a specific percentage of foreign matter, broken kernels, and so on. The current market structure for hay does not provide these services; therefore, as a hay seller, you must address many of these functions for your customer base. Now you have an estimate of what the long-term costs are in your area,

the break-even price. If you cannot produce hay for less than this price, your hay enterprise will not make profit.

Setting a Price[3]

Ok, you know your total cost of production and have estimated the prevailing market price for alfalfa hay at $5.00 per 50 lb. bale and you now want to know how you should price that hay. The first step is to know your breakeven prices. Total variable costs (fertilizer, repairs, fuel, etc) are $117.99 per ton (Table 5). This amount defines your rock bottom price. What does this mean? This is the cash cost of producing that ton of hay. Unless you can average more than $117.99 per ton, you are losing more money by growing hay rather than by letting the farm lie idle.

What about the other costs--machinery and equipment and storage? Both of these items are associated with capital investments and will be an expense to your farm business regardless of the enterprise. In the long-run, you must cover these costs for the farm business to remain viable; however, in the short-run these fixed costs may or may not be paid each year. The breakeven costs for all costs (fixed and variable) in this alfalfa example must average more than $143.05 per ton or $2.87 per 50lb. bale. This estimate is for hay at the farm. Getting the hay to the customer (loading, transportation, marketing, phone calls, bad checks, collecting sales tax, etc.) will add to this cost.

Produce What Your Customer Wants

The old adage in sales is "the customer is always right." Knowing your customer is the most important factor in marketing. First, start local; do your homework on the type of hay wanted and in what form and quantities (weekly, monthly, annually). Contact local horse owners who buy hay; contact smaller feed dealers and tack shops. Ask if they are satisfied with their local supplier and what services are very important from a supplier; for example, monthly delivery and/or forage test results. Analyze this information to determine if you can supply the hay and additional services and still cover your costs.

The customer is always right is a good goal but is not always achievable. In the horse business, timothy is the sought-after hay. Many Mid-Atlantic farmers growing timothy have difficulty maintaining viable timothy stands compared to other forage crops like orchardgrass. The result is simply that your costs of producing a ton of timothy hay will be greater than other hays. Know your breakeven costs and other prevailing prices, then push the pencil to see if your breakeven timothy costs are greater than the prevailing prices. This comparison should give you an estimate of net returns from timothy—at least on paper. Do the same for other hays (orchardgrass, orchardgrass/clover, alfalfa) that might be somewhat less desirable than timothy. Compare the estimated breakevens and net returns from all the hay crops, and choose the crop that will have the greatest potential net returns. You must also consider the risk of failure or shorter stand life of

[3] Included in this article is an excerpt from chapter 8 of the 2006 publication, "Direct Answers for Direct Marketing." This paper provides an excellent discussion of pricing and breakeven pricing.

each crop and discount your estimated breakeven costs to reflect that. For example, if an orchardgrass stand averages a useful life of seven years on your farm and timothy may last only three years and the risk of an establishment failure for timothy is greater, you should think about increasing prorated establishment costs by 40 – 50 percent. The final issue is to work with your customers to demonstrate that there is little to no difference between timothy and other hays grown locally. This long-term educational effort may require discounting or the "try it and you might like it" approach. The focus should be on service that meets the needs of your customers so that they are willing to forego the "timothy only" demands.

Establishing and Keeping a Sound Customer Base

Unlike other commodities, there is no structured market for hay. If you do not create and maintain a customer base, it is unlikely that you will survive in the hay business. Other than "the customer is always right," the next major issue is to provide service to the customer. Services need to be tailored to the individual customer and might range from individuals who buy only on price to individuals that want hay delivered only on Friday afternoons and stacked in the barn. The real question is, "Can you find a way to meet each customer's need without excessive cost?" Ask your customers to comment on what's important to them by sending them a thank you note and include a stamped postcard with a few questions that will help you understand their hay needs. Depending on their technological adoption, consider using text messages, Tweets, Facebook, etc., as a means to follow up on the sale. To create a client base, offer your current customers a discount on their next load if they help you get new customers near their farm. Think creatively about how to meet your customers' needs.

To meet the needs of your customers make sure you maintain a quality product and have documentation, which may include a forage test. Be honest about the product and your policies and expect the same from your customers. To make sure your customers understand your business practices, write them down and give them to all potential and new customers. You will help reduce any misunderstandings. In your business policy, also discuss how you would resolve problems of dissatisfaction with your hay or service. It could be a simple statement that your customers have a right to inspect the hay at your farm, and once it is delivered full payment is required before unloading.

Finally, "the customer is always right," but you do not have to sell to them. If you have a written statement of business practices, you can also have a statement of customer expectations. A bounced check now requires full payment with interest in cash before you load the truck with the next load to that customer.

Summary

How much should I charge for a bale of hay? First know your costs of production and charge accordingly. Identify customers, know their needs, strive to meet the product quality and service required to keep and expand your customer base.

Corn Planter Unit Calibration Recommended to Maximize Profits

By Peter Callan (peter.callan@vt.edu), Extension Agent, Farm Business Management, Northern District

Corn growers are constantly looking for ways to maximize profit. Planter condition is one of the most controllable variables that influence profitability. Research studies have shown that planter maintenance impacts the quality of stand establishment. In 2000, Doerge and Hall conducted a study which showed an average yield improvement of 4.2 bu/acre due to planter calibration. At some locations, the advantage for calibration exceeded 20 bu/acre.[4] A research study conducted at Purdue showed yield losses in the range of 7 to 15 bu/acre were observed in uneven stands.[5]

One way for corn growers to potentially increase yields with minimal input costs is by improving within-row plant spacing uniformity. Proper planter maintenance, adjustment, and speed result in optimal seed placement. Replacement of worn-out parts e.g. finger sets, brushes, backing plates, disks, coulters, etc., and the calibration of planter units play a major role in maintaining consistent seed placement and depth which impact spacing between plants. Uniform stands reduce competition between plants and take advantage of sunlight to maximize yields.

Fine tuning planter seed meters will position producers to grow uniform stands that will maximize profits. The yield increase needed to just offset the cost of planter meter calibration for a 600-acre corn grower using a 12-row planter is only 0.5 bu/acre (Doerge and Hall, 2000). Table 1 shows that recalibration management decision is valid over a range of corn prices and calibration costs. Industry representatives recommend that planter units be recalibrated every 75-100 acres/row unit or every three years.

Table 1. Increased Yield Required to Cover Recalibration

	Cost of Recalibration per Unit				
	$60	$90	$120	$150	$180
Corn Value $/Bu.	Increased Yield Needed to Cover Costs Bushels				
$3.00	0.20	0.30	0.40	0.50	0.60
$4.00	0.15	0.23	0.30	0.38	0.45
$5.00	0.12	0.18	0.24	0.30	0.36
$6.00	0.10	0.15	0.20	0.25	0.30
$7.00	0.09	0.13	0.17	0.21	0.26

[4] Doerge, T.A. and T.E. Hall. 2000. The value of planter calibration using the MeterMax system. *Crop Insights* 10(23):1-4, Pioneer Hi-Bred International, Inc., Johnston, IA.

[5] Nielsen, R.L. 1997. Stand establishment variability in corn. AGRY-91-1 (rev. 1997), Department of Agronomy, Purdue University, West Lafayette, IN.

The farm level impact on profitability can be quite significant. A producer who plants 300 acres of corn each year with a six row planter should calibrate his planter every two years. The following example shows the benefits of recalibrating a corn planter.

Assumptions for this example are:

- 6 row planter
- 300 acres corn planted
- Recalibration cost $35/unit
- Replacement parts $85/unit
- Corn price $5.50/bu
- Increased yield due to unit recalibration 4 bu/acre

Revenue	
($5.50/bu X 4 bu/acre increased yield) * 300 acres =	$6,600
Expense	
(Calibration $35/unit + repairs $85/unit) * 6 units =	<$720>
Net Profit	**$5,880**

Non-uniformity in corn stands places a grower's sizable investment in their planter, seed and other inputs at risk of lower returns. Many times producers forget the impact that skips (missing plants), doubles, triples, and inconsistent plant spacing have on reducing corn yields. Replacement of worn-out parts and recalibration of planter units is an easy way to minimize production risk and maximize yields and profits. Best wishes for a safe and profitable 2012!

Looking Back, Looking Ahead

By Matthew I. Miller (mamille6@vt.edu), Extension Agent, Farm Business Management, Southwest District

As Thanksgiving festivities conclude and the chain stores decorate for Christmas, the agriculture community can utilize this time to assess 2011 and plan for 2012.

The evaluation of a calendar year seems pretty simple. Was it too hot, too dry, or too wet? What was the success of your cropping options? What did the calf crop weigh? How many cows left the herd, etc.? Once the obvious is stated then the bigger issue becomes why? Why did my cattle not perform? Why was my hay crop disappointing? Why did I not improve my *bottom line profitability*? It is easy at this time to blame outside issues such as the weather, the markets, etc., but often the real answers lie deeper and more internal to management. This is the time of year to ask "What could I have done better in 2011? Should I have managed soil fertility better? Should I have invested in better genetics? Should I have spent more time managing input costs and what did I do that hurt the output and subsequent profit side of my operation?" These questions and often the answers are the real management decisions keen producers ask and derive. All of us can improve in some aspect of our operation, so now is a great time to be critical of where you fell short. The old condition of barn blindness can often cloud this issue and

thus often outside unbiased input may be needed. Often Cooperative Extension is best positioned to provide an honest and open minded assessment of what may have been done differently in the last 12 months. Take the time to visit with your local agent or team of agents to direct attention to your operation's areas of needed improvement.

Now is also a great time to pat yourself on the back and ask what you did right, what worked and what you should repeat. It's easy to have a glass half empty attitude in farming but often the glass is more than half full. What were your successes in 2011 and how can you repeat them? Were they a function of your management or good fortune? Ascertaining the root of your success is critical to replicating the same in 2012. Ascertaining the root of your success and passing that information on to subsequent generations is also a main factor in a family farm's ability to succeed multiple generations. Beware! – That may mean the younger generation will actual be comfortable in taking the reins of management.

Finally, as we wrap up the calendar year we must look in to our crystal ball and do our best to prepare for 2012. What we know is that the agriculture community is more tied to global issues than ever before. How will that impact us in 2012 and how can we best buffer against this increasing volatility? World markets continue to swing wildly and that will continue to bounce commodity market prices with great fluctuation. This presents great challenges whether we plan to market commodities or purchase inputs. Where are your risk management tools and which ones are best to protect your operation? In addition, now is the time to assess what you need to accomplish in 2012. What are the main focus points in your operation? Do you address your natural resources, do you grow your operation to take advantage of economies of scale, or do you become more specialized in focus? Every operation is different; no one answer fits all, but everyone needs to take the time to think about what lies ahead in 2012 and how best you can manage these challenges and how these challenges may be opportunities. The U.S. agriculture industry is poised to be the shining beacon in a weak U.S. economy. Protein producers are seeing record prices and commodity supplies will remain tight for the foreseeable future. That said, sloppy management yields sloppy results and now is the time to fine tune your operation to better capture the upside of the market and prepare for tougher times when they come, and we all know they will come.

We look forward to helping you in your management decisions. Our success as an organization is measured by your success as a farming community. Happy Holidays and Best Wishes for a happy and bountiful 2012.

The Governor's Conference on Agricultural Trade

Mark your calendars to attend "The Governor's Conference on Agricultural Trade" to be held in Richmond at the Omni Hotel, March 13-14, 2012. The conference registration starts at 10:00 a.m. on March 13th with the Governor's Keynote Address at Noon.
A few additional highlights of the conference:

- The United States-Korea Free Trade Agreement (KORUS FTA)
- One of the world's leading lenders to agriculture will give their prospective of the changing economic conditions and demand for food/fiber.
- The "how to panel" is always a success with speakers telling what they do and how it works in the real world
- Understanding policy/politics of 2012 Farm Bill
- The Embassy Panel gives participants a view of US Ag from their countries prospective

SAVE THE DATE – March 13 & 14, 2012

The Governor's Conference on Agricultural Trade

Omni Hotel, Richmond, VA

Organized by the Virginia Department of Agriculture & Consumer Services, the Virginia Farm Bureau Federation, the Virginia Port Authority, and the Virginia Tech Department of Agricultural and Applied Economics

For the 4th year in a row the conference organizers are excited to offer this outstanding workshop on the international trade of agricultural goods. We are especially honored that Governor McDonnell, who has been an ardent advocate for and a staunch promoter of increasing Virginia exports, has agreed to add his name to this important event.

An outstanding lineup of speakers is already scheduled for 2012.
Past presenters have included:
The Honorable Robert McDonnell, Governor of Virginia
Ambassador Islam Siddiqui, Chief Agriculture Negotiator, USTR
Larry Pope, CEO, Smithfield Foods
The Honorable Todd Haymore, Secretary of Agriculture & Forestry
Bob Stallman, President, American Farm Bureau Federation
Jerry Bridges, Executive Director, Virginia Port Authority

REGISTRATION OPENS IN DECEMBER, 2011

For information on sponsorship opportunities, questions, assistance, or to be added to mailing list, contact:
Brenda at 804.290.1155 or brenda.fleming@vafb.com or
Spencer at 804.290.1153 or spencer.neale@vafb.com

Calendar of Events

December

7-8	Income Tax Seminar. Chesapeake. General Session. Contact Income Tax School Registrar by phone at (540) 231-3306 or by email at vttax@vt.edu.
12-13	Income Tax Seminar. Richmond II. General Session. Contact Income Tax School Registrar by phone at (540) 231-3306 or by email at vttax@vt.edu.

January

4	Introductory Tax Preparation Seminar. Roanoke. Contact Income Tax School Registrar by phone at (540) 231-3306 or by email at vttax@vt.edu.
5	Introductory Tax Preparation Seminar. Falls Church. Contact Income Tax School Registrar by phone at (540) 231-3306 or by email at vttax@vt.edu.
6	Introductory Tax Preparation Seminar. Richmond. Contact Income Tax School Registrar by phone at (540) 231-3306 or by email at vttax@vt.edu.
23	Corn Planter Unit Calibration Clinic (9:30 AM – 2:00 PM). Mt. Pony Farms, 33200 Zachary Taylor Highway (across from Commonwealth Park on Route 522), Culpeper. Contact Peter Callan by phone at (540) 727-3435 or by email at peter.callan@vt.edu.

February

17	Farm Transition Workshop: Overview of Farm Transition (9:30 AM – 4:00 PM). Alberta Campus, Southside Virginia Community College, 109 Campus Drive, Alberta (434) 949-1000. Contact Vernon Heath by phone at (804) 829-5675 or by email at vheath@vt.edu or Ann Ragland by phone at (434) 949-6185 or by email at vcevsu2006@yahoo.com.

March

13-14	The Governor's Conference on Agricultural Trade. Omni Hotel, Richmond. Contact Brenda Fleming by phone at (804) 290-1155 or by email at brenda.fleming@vafb.com or Spencer Neale by phone at (804) 290-1153 or by email at spencer.neale@vafb.com.