Farm Business Management Reports		EB1922E
	# The Effect of the "No-Burn Ban" on the Economic Viability of Producing Bluegrass Seed in Select Areas of Washington State	
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	Online at: http://farm.mngt.wsu.edu/	

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The Effect of the "No-Burn Ban" on the Economic Viability of Producing Bluegrass Seed in Select Areas of Washington State

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Introduction

In 1997, the Washington State Department of Ecology announced that a "no-burn" ban on grass residue from the production of grass seed would be phased in over a three year period throughout the state of Washington. Under this decree, starting in 1997, one-third of the acreage used for the production of grass seed would no longer be allowed to be burned as a postharvest production practice. In 1998, two-thirds of the acreage used for the production of grass seed would no longer be allowed to be burned, and in 1999, none of the acreage used for the production of grass seed would be allowed to be burned. At the time of this announcement it was feared by many producers within the state that the effect of this "no-burn" ban would have serious consequences on the economics of producing bluegrass seed throughout the state. The purpose of this report is to evaluate some of the economic consequences of the "no-burn" ban in Garfield County, the Rockford area of Spokane County and parts of the Columbia Basin.

The procedure used to collect the necessary data in each of these areas was to sit down with a group of grass seed growers and determine the production practices and the yields they were receiving when they were allowed to burn grass seed residue as a postharvest practice and compare these results with the production practices and yields they are getting (or predicting to get) under the no-burn ban on grass seed residue. No standardization among the three areas was attempted. In each of the three areas, the data were taken as given by the respective producer committee. Therefore, in calculating cost of production figures differences in the type of inputs and the cost of inputs exist among the three areas of production. Since each producer does some things different from their neighbors, the comparisons derived from these producer groups do not necessarily fit any particular farm, but are representative of the practices being used in the area. The initial cost estimates for Garfield and Spokane counties were derived using the WSU budget generator, Farm Enterprise Budget Simulator (FEBS). From these results, Excel spreadsheet templates were developed so that yield, price, and other assumptions could easily be changed and the resulting effects of these changes on break-even prices could be easily and quickly analyzed. The producer committee that provided the data for the Columbia Basin budgets provided the data in a different format than that provided by the Garfield County and Spokane County producers. The Columbia Basin producers provided data in terms of total cost per operation, without first calculating these costs by use of the FEBS budget generator. Therefore, the spreadsheet templates for the Columbia Basin are a somewhat different format than those for Garfield and Spokane counties. These spreadsheets were used in generating the results of this report.

The results for all situations presented are in terms of the "break-even" price necessary to cover all costs, including "opportunity" costs. Thus, in calculating the total cost for each year of production, if the price of bluegrass seed is a factor in determining the total cost, such as it is in

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determining the value of a share rent, it is the break-even price used to calculate this cost. The "over-all" break-even price for the production life of the enterprise is determined by taking a weighted average of the break-even prices of each of the individual production years.

It should also be noted that by the using the spreadsheet templates developed for this study, that for most situations, it is quite easy to change price, yield, and cost assumptions and derive new total cost and break-even price figures. Thus, if you would like to obtain a copy of these Excel spreadsheet templates, as presented in Appendixes I, II and III, you can do so by contacting:

Department of Agricultural Economics
Washington State University
P.O. Box 646210
Pullman, Washington 99164-6210

Furthermore, the detailed FEBS budget generator results for the initial Garfield and Spokane County burn and no-burn alternatives can also be obtained from the above address.

You can also go to the WSU farm management web site at http://farm.mngt.edu.wsu/ and by clicking on "Publication Lists," "Irrigated Crops" or "Nonirrigated Crops," and then clicking on EB1922E, The Effect of the "No-Burn Ban" on the Economic Viability of Producing Bluegrass in Select Areas of Washington State, this publication will appear on the screen and can be printed if so desired. Furthermore, by clicking on "Publication Lists," "Unpublished," and then on Understanding and Using WSU Crop Enterprise Budgets a manuscript will appear on screen to be reviewed and/or printed, which will help you more fully understand the substance of the budgets developed in this report.

Comparisons for Garfield County

The amount of rainfall received by different areas of Garfield County varies significantly within the county. Thus, the average production of bluegrass seed varies significantly throughout Garfield County. The budgets presented in this report for Garfield County are reasonable cost estimates at what it costs to grow grass seed in Garfield County and not necessarily the costs for any one particular producer. Thus, the initial conditions and assumptions for the traditional production practices developed under the "burn" and "no-burn" alternatives for Garfield County are the following:

1. These budgets are "economic" budgets in that they include all "opportunity costs." As such, all labor is valued at $12 per hour, all capital (borrowed or equity) incurs a 10% interest cost, and the cost of land is valued for what it would cost if it were to be rented.

2. Land rent is assumed to be 1/3 the crop with the landowner paying 1/3 the fertilizer cost and his/her own cleaning and bagging cost on the 1/3 of the crop received as a rent payment.

3. It takes one year to establish the grass seed field with no production during the establishment year.

4. For the initial "burn" cost estimates it was assumed that there were five years of production before the grass was taken out of production. The production estimates were 450 pounds for the first year of production, 600 pounds for the second through fourth year of production, and 500 pounds for the fifth year of production.

5. For the initial "no-burn" cost estimates it was assumed that there were three years of production before the grass was taken out of production. The production estimates were 450 pounds for the first year of production, 600 pounds for the second year of production, and 450 pounds for the third year of production. Under the initial budgets assumptions it is assumed there is 1.25 tons of bluegrass seed residue and that all residue is baled and stacked at the edge of the field at a cost of $31 per ton. From that point, the residue is disposed of at no cost to the producer.

6. Throughout the budgets, it is assumed that the fertilizer company supplies, as part of the cost of the fertilizer (both liquid and dry), the fertilizer applicator and transport of the fertilizer to the field to which the fertilizer is to be applied.

7. The price of fuel is assumed to be $1.50/gallon for gasoline and $1.20/gallon for diesel.

The spreadsheet templates for the establishment year and each year of the initial "burn" and "no-burn" alternatives are presented in Appendix I. These templates show the production practices used by each of these initial alternatives.

Under the "no-burn" alternative, two ending year of production scenarios are presented. Under scenario #1, after the residue is raked, baled and stacked, the field is sprayed with Roundup in the fall and again in the spring before preparing for the following crop. Under scenario #2, after the residue is raked, baled and stacked, the field is plowed in the fall and disced, cultivated and harrowed in the spring before preparing for the following crop.

Summary of Results

A summary of the results for the post harvest burn alternative under different yield assumptions is presented in Table 1. Since some producers produce seed for more than five years off the same field, a production period of both five and seven years are presented. Under the initial assumptions it was assumed that there was one year of establishment and production levels of 450 pounds of clean seed in year one, 600 pounds of clean seed in years two through four, and 500 pounds of clean seed in year five. Under these assumptions, the break-even price for producing a pound of bluegrass seed is 61.5¢ per pound. If the production period is increased by two years with yield levels of 600 pounds for each additional year, the break-even price for producing bluegrass seed becomes 58.2¢ per pound. As can be seen in Table 1, as the yields decrease the price per pound needed to break even increases. It needs to be noted that since all opportunity costs are included in these break-even estimates and since land costs are based on a share rent arrangement, as the yield levels decrease and the cost per pound of production increases, land cost increase as the break-even price increases.

Table 1. Summary of Break-Even Prices for Postharvest Burn Situation under Different Yield and Production Life Assumptions for Producing Bluegrass Seed in Garfield County.

Production Year(s):	Year 1	Middle Years	Ending Year
Production Level #1:	450 lbs.	600 lbs.	500 lbs.
Break-even price/lb.:			
5 production years = 61.5¢			
7 production years = 58.2¢			
Production Year(s):	Year 1	Middle Years	Ending Year
Production Level #2:	450 lbs.	550 lbs.	500 lbs.
Break-even price/lb.:			
5 production years = 64.0¢			
7 production years = 60.9¢			
Production Year(s):	Year 1	Middle Years	Ending Year
Production Level #3:	450 lbs.	500 lbs.	450 lbs.
Break-even price/lb.:			
5 production years = 67.8¢			
7 production years = 64.7¢			
Production Year(s):	Year 1	Middle Years	Ending Year
Production Level:	450 lbs.	450 lbs.	450 lbs.
Break-even price/lb.:			
5 production years = 71.2¢			
7 production years = 68.4¢			

The fact that land cost increase as the break-even price increase may seem strange to some people. However, one must remember that it is one-third the crop that is the cost of renting the land, (minus one-third the fertilizer cost and one-third the cost of cleaning and bagging the seed) and not actual dollars. Thus, as the price of bluegrass seed goes up, so does the value of the one-third crop share. Thus, by referring to Appendix I template "Per Acre Cost For Producing Bluegrass Seed Using Postharvest Field Burning in Garfield County, First Production Year," on page 25, production is 450 pounds per acre and the break-even price is calculated to be 72¢ per pound. The dollar value of land cost under this situation is calculated as:

(1/3 crop x break-even price) - 1/3 fertilizer expense - 1/3 bagging and cleaning expense

For the given situation, land costs are calculated to be

(150 lbs. x $0.72) - ($35.00/3) - ($56.25/3) = $77.54

Using this land cost, the total cost of production equals $323.88. Thus, the break-even price is

$323.88/450 lbs. = .7197 or 72¢ per pound of bluegrass seed produced

If, on the other hand, we look solely at one-third the crop as the cost of renting the land (minus one-third the fertilizer cost and one-third the cost of cleaning and bagging the seed), and not in terms of actual dollars, the same break-even price will be derived. For instances, if under the given situation we give no value to the cost of land but look at our returns as two-thirds the crop (300 lbs.) and our cost as the listed production cost ($323.88) minus land cost ($77.54), reimbursement for one-third the fertilizer cost ($11.67) and for one-third the cost of bagging and cleaning ($18.75), the total production cost for the 300 pounds of bluegrass seed returned to the producer is

$323.88 - 77.54 - 11.67 - 18.75 = $215.92

Again, this results in a break-even price of

$215.92/300 lbs. = .7197 or 72¢ per pound of bluegrass seed produced

If a producer owned land and wanted to use a fixed land cost figure, the land cost figure in the actual spreadsheet templates could be changed to a fixed value and new break-even values could be calculated. However, in this study we used the opportunity cost approach because in most situations in the dryland areas of Garfield and Spokane counties producers that rent land pay 1/3 of the crop to the land owner, and that producers who own their land could receive 1/3 of the crop if they were to rent their land to others rather than farm it themselves. In the Columbia Basin part of this study, where in the Columbia Basin land rent is typically a cash rent, fixed rent rates are used for the land costs.

A summary of the results for the postharvest no-burn situation under different grass seed yield assumptions, residue prices, and production years of 3 and 5 years is presented in Table 2. Under the initial assumptions it was assumed that there would be one year of establishment and three

Table 2. Summary of Break-Even Prices for No Postharvest Burn Situation under Different Yield, Residue Price and Production Life Assumptions for Producing Bluegrass in Garfield County.

Production Year(s):	Year 1	Middle Year(s)	Ending Year
Production Level #1:	450 lbs.	600 lbs.	450 lbs.
		Break-even price/lb.	
3 production years		Ending Year Scenario #1	Ending Year Scenario #2
Residue price, -$10/ton		91.1¢	89.7¢
Residue price, $ 0/ton		87.4¢	86.0¢
Residue price, $10/ton		83.6¢	82.2¢
Residue price, $20/ton		79.9¢	78.5¢
Residue price, $31/ton		75.7¢	74.4¢
5 production years			
Residue price, -$10/ton		79.5¢	78.8¢
Residue price, $ 0/ton		76.0¢	75.3¢
Residue price, $10/ton		72.6¢	71.8¢
Residue price, $20/ton		69.1¢	68.3¢
Residue price, $31/ton		65.3¢	64.5¢
Production Year(s):	Year 1	Middle Years	Ending Year
Production Level #2:	450 lbs.	550 lbs.	450 lbs.
		Break-even price/lb.	
3 production years		Ending Year Scenario #1	Ending Year Scenario #2
Residue price, -$10/ton		93.6¢	92.2¢
Residue price, $ 0/ton		89.8¢	88.3¢
Residue price, $10/ton		85.9¢	84.5¢
Residue price, $20/ton		82.0¢	80.6¢
Residue price, $31/ton		77.7¢	76.3¢
5 production years			
Residue price, -$10/ton		83.2¢	82.3¢
Residue price, $ 0/ton		79.5¢	78.7¢
Residue price, $10/ton		75.8¢	75.0¢
Residue price, $20/ton		72.1¢	71.3¢
Residue price, $31/ton		68.1¢	67.3¢

Table 2. (continued)

Production Year(s):	Year 1	Middle Year(s)	Ending Year
Production Level #3:	450 lbs.	500 lbs.	450 lbs.
		Break-even price/lb.	
3 production years		Ending Year Scenario #1	Ending Year Scenario #2
Residue price, -$10/ton		96.4¢	94.9¢
Residue price, $ 0/ton		92.3¢	90.9¢
Residue price, $10/ton		88.3¢	86.9¢
Residue price, $20/ton		84.3¢	82.8¢
Residue price, $31/ton		79.9¢	78.4¢
5 production years			
Residue price, -$10/ton		87.2¢	86.4¢
Residue price, $ 0/ton		83.3¢	82.5¢
Residue price, $10/ton		79.4¢	78.6¢
Residue price, $20/ton		75.5¢	74.7¢
Residue price, $31/ton		71.2¢	70.4¢

Production Year(s):	Year 1	Middle Years	Ending Year
Production Level #4:	450 lbs.	450 lbs.	450 lbs.
		Break-even price/lb.	
3 production years		Ending Year Scenario #1	Ending Year Scenario #2
Residue price, -$10/ton		99.3¢	97.7¢
Residue price, $ 0/ton		95.1¢	93.6¢
Residue price, $10/ton		90.9¢	89.4¢
Residue price, $20/ton		86.8¢	85.2¢
Residue price, $31/ton		82.2¢	80.7¢
5 production years			
Residue price, -$10/ton		91.9¢	91.0¢
Residue price, $ 0/ton		87.7¢	86.8¢
Residue price, $10/ton		83.5¢	82.6¢
Residue price, $20/ton		79.4¢	78.5¢
Residue price, $31/ton		74.8¢	73.9¢

years of production with grass seed yields of 450 pounds the first year, 600 pounds the second year and 450 pounds the third year. It was also assumed that there were 1.25 tons of grass residue per acre that were raked, baled, and stacked at the edge of the field at a cost of $31 per ton. Under the initial assumptions, it was assumed that this residue was removed from the side of the field at no cost to the producer. Under these initial assumptions, if in the last year of production, after the residue is raked, baled and stacked, the field is sprayed with Roundup in the fall and again in the spring (scenario #1), the break-even price for producing a pound of bluegrass seed is 87.4¢ per pound. If, on the other hand, in the last year of production, after the residue is raked, baled and stacked, the field is plowed in the fall, and disced, cultivated and harrowed in the spring (scenario #2), the cost of producing a pound of bluegrass seed is 86¢ per pound. However, a market for bluegrass seed residue (straw) is developing, and as shown in Table 2, as the price of residue increases, the break-even price for bluegrass seed decreases. At the time of interviewing the producers in Garfield County, they were receiving approximately $10 per ton for their bluegrass seed residue which reduces their break-even price under the initial no-burn assumptions by 3.8¢ per pound.

By further examining Table 2, one can see the effect that different yield levels, residue prices and increased production lives have upon the break-even price of producing bluegrass seed in Garfield County.

Comparisons for Spokane County

The amount of rainfall received by different areas of Spokane County varies significantly within the county. Thus, the average production of bluegrass seed varies significantly throughout Spokane County. The budgets presented in this report for Spokane County are reasonable cost estimates at what it costs to grow grass seed in Spokane County and not necessarily the costs for any one particular producer. Thus, the initial conditions and assumptions for the traditional production practices developed under the "burn" and "no-burn" alternatives for Spokane County are the following:

1. These budgets are "economic" budgets in that they include all "opportunity costs." As such, all labor is valued at $16.80 per hour, all capital (borrowed or equity) incurs a 10% interest cost, and the cost of land is valued for what it would cost if it were to be rented.

2. Land rent is assumed to be 1/3 the crop with the landowner paying 1/3 the fertilizer cost and his/her own cleaning and bagging cost on the 1/3 of the crop received as a rent payment.

3. It was assumed that it took one year to establish the grass seed field with no production during the establishment year.

4. For the "burn" alternative it was assumed that there were seven years of production before the grass was taken out of production. The production estimates were 650 pounds of clean seed the first year of production, 750 pounds for the second through fourth year of production, and 650 pounds for the fifth through the seventh year of production.

5. For the "no-burn" alternative it was assumed that there were four years of production before the grass was taken out of production. The production estimates were 650 pounds of clean seed for the first year of production, 750 pounds for the second year of production, 400 pounds for the third year of production and 350 pounds for the fourth year of production.

6. For all years, for both the burn and no-burn alternatives, it was assumed that clean seed yield was 65% of the field run seed.

7. The price of fuel is assumed to be $1.50/gallon for gasoline and $1.20/gallon for diesel.

The spreadsheet templates for the establishment year and each year of the initial "burn" and "no-burn" alternatives are presented in Appendix II.

As with Garfield County, for Spokane County there are two different ending year of production scenarios for the "no-burn" situation. Under scenario #1, after the residue is raked, baled and stacked, the field is sprayed with Roundup in the spring before being prepared for the following crop. Under scenario #2, the residue is left on the ground and the field is disced, plowed, disced twice, and harrowed three times in the fall before being prepared for the following crop.

Summary of Results

A summary of the results for the postharvest burn alternative in Spokane county under different yield assumptions is presented in Table 3. Under the initial assumptions it was assumed that there was one year of establishment and production levels of 650 pounds of clean seed in year one, 750 pounds of clean seed in years two through four, and 650 pounds of clean seed in years five through seven. Under this situation, the break-even price for producing a pound of bluegrass seed is 58.1¢ per pound. The break-even prices for other production yield assumptions can also be seen in Table 3.

A summary of the results for the no postharvest burn alternative under different grass seed yield and residue prices assumptions is presented in Table 4. Under the initial assumptions it was assumed that there would be one year of establishment and four years of production with grass seed yields of 650 pounds the first year, 750 pounds the second year, 400 pounds the third year, and 350 pounds the fourth year. It was also assumed that there were 1.50 tons of grass residue per acre that were raked, baled, and stacked at the edge of the field at a cost of $31 per ton. Under the initial assumptions, it was assumed that the residue was removed from the side of the field at no cost to the producer. Under this initial situation, the break-even price for producing a pound of bluegrass seed is 96.9¢ per pound if in the last year of production, after the residue is raked, baled, and stacked, the field is sprayed with Roundup in the spring before being prepared for the following crop (scenario #1). If in the last year of production, after the residue is left on the field with the field being disced, plowed, disced twice, and harrowed three times in the fall before being prepared for the following crop (scenario #2), the cost of producing a pound of bluegrass seed is 96.8¢ per pound. However, a market for bluegrass seed residue (straw) is developing, and as shown in Table 4, as the price of residue increases the break-even price for bluegrass seed decreases. Since under scenario #2 the residue is plowed under in year 4 and not raked, baled, and stacked, scenario #2 does not benefit as much from increased residue prices as does scenario #1. At the time of interviewing the producers in Spokane County, some producers were receiving $31 per ton, or more, for their bluegrass seed residue. If, under the initial assumptions, producers receive $31 per ton for their residue straw, the cost for producing bluegrass seed under scenario #1 drops from 96.9¢ per pound to 83.9¢ per pound. Under scenario #2, the cost of producing bluegrass seed drops from 96.8¢ per pound to 87.1¢ per pound.

By further examining Table 4, one can see the effect that different yield levels and residue prices have upon the break-even price of producing bluegrass seed in Spokane County.

Table 3. Summary of Break-Even Prices for Postharvest Burn Situation under Different Yield Assumptions for Producing Bluegrass Seed in Spokane County.

Production Years	Year1	Years 2-4	Years 5-6	Year 7
Production Level #1	650 lbs.	750 lbs.	650 lbs.	650 lbs.
Break-even price/lb. = 58.1¢				
Production Level #2	550 lbs.	650 lbs.	650 lbs.	550 lbs.
Break-even price/lb. = 64.4¢				
Production Level #3	550 lbs.	650 lbs.	550 lbs.	550 lbs.
Break-even price/lb. = 66.6¢				
Production Level #4	500 lbs.	550 lbs.	550 lbs.	500 lbs.
Break-even price/lb. = 73.7¢				

Table 4. Summary of Break-Even Prices for No Postharvest Burn Situation Under Different Yield Assumptions and Residue Prices for Producing Bluegrass Seed in Spokane County.

Production Years	Year 1	Year 2	Year 3	Year 4
Production Level #1	650 lbs.	750 lbs.	400 lbs.	350 lbs.
	B-E price/lb.	B-E price/lb.		
Residue Price	Ending Year Scenario #1	Ending Year Scenario #2		
$ 0/ton	96.9¢	96.8¢		
$10/ton	92.7¢	93.7¢		
$20/ton	88.5¢	90.5¢		
$31/ton	83.9¢	87.1¢		
$40/ton	80.1¢	84.2¢		

Production Years	Year 1	Year 2	Year 3	Year 4
Production Level #2	650 lbs.	700 lbs.	500 lbs.	400 lbs.
	B-E price/lb.	B-E price/lb.		
Residue Price	Ending Year Scenario #1	Ending Year Scenario #2		
$ 0/ton	93.4¢	93.3¢		
$10/ton	89.4¢	90.3¢		
$20/ton	85.4¢	87.3¢		
$31/ton	81.0¢	84.0¢		
$40/ton	77.4¢	81.3¢		

Table 4. (continued)

Production Years	Year 1	Year 2	Year 3	Year 4
Production Level #3	650 lbs.	650 lbs.	400 lbs.	350 lbs.
	B-E price/lb.	B-E price/lb.		
Residue Price	Ending Year Scenario #1	Ending Year Scenario #2		
$ 0/ton	100.7¢	100.6¢		
$10/ton	96.3¢	97.3¢		
$20/ton	91.9¢	94.0¢		
$31/ton	87.1¢	90.4¢		
$40/ton	83.1¢	87.4¢		

Production Years	Year 1	Year 2	Year 3	Year 4
Production Level #4	600 lbs.	650 lbs.	400 lbs.	350 lbs.
	B-E price/lb.	B-E price/lb.		
Residue Price	Ending Year Scenario #1	Ending Year Scenario #2		
$ 0/ton	102.7¢	102.6¢		
$10/ton	98.2¢	99.3¢		
$20/ton	93.7¢	95.9¢		
$31/ton	88.8¢	92.2¢		
$40/ton	84.7¢	89.1¢		

Comparisons for the Columbia Basin

The cost of producing bluegrass seed in the Columbia Basin presented in this section is for bluegrass seed grown under center pivot irrigation. As such, variations in production among producers are not as prevalent as in the dryland production areas of Garfield and Spokane counties. In addition, being under irrigation allows the producers in the Columbia Basin the opportunity to grow some of the more elite proprietary varieties of bluegrass seed. These elite proprietary varieties of bluegrass seed typically command a greater price than the common varieties generally grown in the dryland areas of Garfield and Spokane counties. The budgets presented in this report for the Columbia Basin present a postharvest burn alternative that was prevalent before the postharvest no-burn ban was put into effect and two postharvest no-burn scenarios that are currently being used in the Columbia Basin. Since under irrigation, producers are more flexible as to what they can or cannot do than are dryland producers, while the two no-burn alternatives are representative of production practices in the Columbia Basin, they by no means represent the entire array of production practices currently being used in the Columbia Basin.

It should also be pointed out that the producer committee that provided the data for the Columbia Basin budgets provided this data in a different format than that provided by the Garfield County and Spokane County producers. The Columbia Basin producers provided data in terms of total cost per operation, without having these costs calculated by the FEBS budget generator as was done for the Garfield and Spokane County alternatives. Therefore, the spreadsheet templates for the Columbia Basin, as presented in Appendix III, are in a somewhat different format than those for Garfield and Spokane counties.

The initial conditions and assumptions for the production practices developed under the "burn" and "no-burn" scenarios for the Columbia Basin are the following:

1. These budgets are "economic" budgets in that they include all "opportunity costs." As such, all capital (borrowed or equity) incurs a 10% interest cost and the cost of land is valued at $300 per acre, what it would cost if it were to be cash rented. In addition, a management fee of $50 per acre is included. In neither the Garfield County nor the Spokane County cost estimates was a management fee included.

2. For the postharvest "burn" alternative it was initially assumed that production began in the first year and that there were three years of production before the grass was taken out of production. The production estimates were 1,100 pounds the first year of production, 1,200 pounds for the second year of production and 1,100 pounds for the third year of production. It was also assumed that there were no returns from grazing cattle or sheep on the bluegrass seed residue.

3. For the postharvest "no-burn/grazing" alternative (as originally recommended by DOE), the producer plants the crop in year 1, grazes the postharvest residue at the end of year one, and then, without reseeding, produces another crop the following year. The initial production estimates for this alternative are 1,100 pounds the first year of production and 770 pounds the second year of production. It was also assumed that there were 2.5 tons of grass residue per acre that were raked, baled, stacked, and covered at the edge of the field at a cost of $35 per ton.

4. For the postharvest "no-burn/recrop" alternative, the producer plants a crop in year 1, may or may not graze the postharvest residue at the end of year one, and then tears out the current crop and replants for the following year. The initial production estimates for this scenario are 1,100 pounds the first year of production and 1,100 pounds the second year of production. It was also assumed for the initial situation that no revenues were made from grazing, but that there was 2.5 tons of residue per acre that were raked, baled, stacked, and covered at the edge of the field at a cost of $35 per ton.

5. All operational cost estimates provided by the Columbia Basin producer committee included labor and fuel costs.

Summary of Results

A summary of the results for the postharvest burn situation in the Columbia Basin, under different yield assumptions, is presented in Table 5. Under the initial assumptions the production levels were 1,100 pounds of clean seed in year one, 1,200 pounds of clean seed in year two, and 1,100 pounds of clean seed in year three. Under these production levels, and assuming no revenues from grazing, the break-even price for producing a pound of bluegrass seed is 93.2¢ per pound. If $20 per acre is added as a return to grazing, the break-even price for producing a pound of bluegrass seed drops to 92.0¢ per pound. Table 5 also presents break-even prices at different yield levels and, in one situation, where the production life is increased to four years. Note that since land costs in the Columbia Basin are typically a cash rent and not based on a share rent arrangement, as the yield levels vary and the cost per pound of production varies, land costs remain constant and do not vary as the break-even price varies, as is the case with share rental agreements.

A summary of the results for the no postharvest burn and graze alternative (as originally proposed by the Department of Ecology) under different grass seed yields, grazing revenues, and residue price assumptions is presented in Table 6. Under the initial assumptions there would be two years of production with grass seed yields of 1,100 pounds the first year and 770 pounds the second year. It was also assumed that there were 2.5 tons of grass residue per acre that were raked, baled, stacked, and covered at the edge of the field at a cost of $35 per ton. Residue was removed from the side of the field at no cost to the producer and there are no revenues from grazing due to the fact that for effective results from grazing, the grass needs to be grazed very short and to get cattlemen to do this often means not charging them to graze the bluegrass fields. Under these assumptions the break-even price for producing a pound of bluegrass seed is $1.22 per pound.

However, a market for bluegrass seed residue (straw) is developing and, as shown in Table 6, as the price of residue increases, the break-even price for bluegrass seed decreases. Under the same initial assumptions, as mentioned above, with the exception of a price of $20 per ton (the price for residue most Columbia Basin producers were getting for residue straw at the time of the data collection) being received for the bluegrass seed residue, the break-even price for producing a pound of bluegrass seed drops from $1.22 per pound to $1.17 per pound. If $35 per ton is to be received for bluegrass seed residue, the break-even price for producing a pound of bluegrass seed decreases to $1.13 per pound. Table 6 also presents break-even prices at different yield levels, residue price levels and returns for grazing. In one alternative the production life is increased from two to three years.

Table 5. Summary of Break-Even Prices for Postharvest Burn Situation under Different Yield and Grazing Fee Assumptions for Producing Bluegrass Seed in the Columbia Basin.

Production Years		Year 1	Year 2	Year 3	Year 4
Production Level #1		1,100 lbs.	1,200 lbs.	1,100 lbs.	
Grazing fees[1]	Break-even price/lb.				
$ 0/acre	93.2¢				
$10/acre	92.6¢				
$20/acre	92.0¢				
Production Level #2		1,200 lbs.	1,300 lbs.	1,200 lbs.	
Grazing fees[1]	Break-even price/lb.				
$ 0/acre	87.0¢				
$10/acre	86.5¢				
$20/acre	85.9¢				
Production Level #3		1,000 lbs.	1,100 lbs.	1,000 lbs.	
Grazing fees[1]	Break-even price/lb.				
$ 0/acre	100.5¢				
$10/acre	99.8¢				
$20/acre	99.2¢				
Production Level #4		1,100 lbs.	1,200 lbs.	1,100 lbs.	1,100 lbs.
Grazing fees[1]	Break-even price/lb.				
$ 0/acre	92.8¢				
$10/acre	92.3¢				
$20/acre	91.9¢				

[1]For years 1 and 2, only.

Table 6. Summary of Break-Even Prices for No Postharvest Burn and Graze Situation under Different Yield and Grazing Fee Assumptions for Producing Bluegrass Seed in the Columbia Basin.

Production Years		Year 1	Year 2			
Production Level #1		1,100 lbs.	770 lbs.			
Residue price/ton	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.
$ 0	$0	$1.22	$10	$1.21	$20	$1.20
$10	$0	$1.20	$10	$1.19	$20	$1.18
$20	$0	$1.17	$10	$1.16	$20	$1.15
$30	$0	$1.14	$10	$1.13	$20	$1.12
$35	$0	$1.13	$10	$1.12	$20	$1.11
$40	$0	$1.12	$10	$1.11	$20	$1.10
Production Years		Year 1	Year 2			
Production Level #2		1,100 lbs.	990 lbs.			
Residue price/ton	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.
$ 0	$0	$1.11	$10	$1.10	$20	$1.09
$10	$0	$1.09	$10	$1.08	$20	$1.07
$20	$0	$1.07	$10	$1.06	$20	$1.05
$30	$0	$1.04	$10	$1.03	$20	$1.02
$35	$0	$1.03	$10	$1.02	$20	$1.01
$40	$0	$1.02	$10	$1.01	$20	$1.00

Table 6. (continued)

Production Years		Year 1	Year 2	Year 3		
Production Level #3		1,100 lbs.	770 lbs.	770 lbs.		
Residue price/ton	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.
$ 0	$0	$1.27	$10	$1.26	$20	$1.25
$10	$0	$1.24	$10	$1.23	$20	$1.22
$20	$0	$1.21	$10	$1.20	$20	$1.19
$30	$0	$1.18	$10	$1.17	$20	$1.16
$35	$0	$1.17	$10	$1.16	$20	$1.15
$40	$0	$1.16	$10	$1.14	$20	$1.13
Production Years		Year 1	Year 2	Year 3		
Production Level #4		1,100 lbs.	990 lbs.	990 lbs.		
Residue price/ton	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.
$ 0	$0	$1.11	$10	$1.10	$20	$1.09
$10	$0	$1.09	$10	$1.08	$20	$1.07
$20	$0	$1.06	$10	$1.05	$20	$1.04
$30	$0	$1.04	$10	$1.03	$20	$1.02
$35	$0	$1.03	$10	$1.02	$20	$1.01
$40	$0	$1.02	$10	$1.01	$20	$1.00

A summary of the results for the no postharvest burn and recrop alternative under different grass seed yields, grazing revenue and residue prices assumptions is presented in Table 7. Under the initial assumptions there would be two years of production with grass seed yields of 1,100 pounds each year. It was also assumed that there was 2.5 tons of grass residue per acre that were raked, baled, stacked and covered at the edge of the field at a cost of $35 per ton and that were removed from the side of the field at no cost to the producer. Under the assumption of no revenues from grazing, the break-even price for producing a pound of bluegrass seed is $1.17 per pound. However, as shown in Table 7, if $20 per ton is to be received for the bluegrass seed residue, the break-even price for producing a pound decreases from $1.17 per pound to $1.12 per pound. If $35 per ton is to be received for the bluegrass seed residue, the break-even price for producing a pound of bluegrass seed decreases to $1.09. Table 7 also presents break-even prices at different yield levels and in situations in which the production life is increased up to three years.

A cost not included in these budget estimates, but one frequently mentioned by the growers, was that not being allowed to burn had essentially cut the crop rotation period from three to two years. Although this loss of a longer rotational period is hard to measure, it is a significant factor when coming to overall farm planning and the ability to produce a higher percentage of the more profitable crops within a farm's crop rotation plan.

Summary and Conclusions

The cost of producing bluegrass seed in Garfield County, Spokane County, and the Columbia Basin under the no-burn ban on postharvest bluegrass seed residue depends primarily on the production life of an established bluegrass seed field, the expected annual yields, and the price that can be obtained for bluegrass seed residue (straw). Since producers in these areas have been producing under the "no-burn" ban for only a few years, estimates as to the production life of established fields and annual yields are based on limited experience, and thus, subject to a greater variation than estimates presented for the "burn" alternatives.

In Garfield County, the initial assumptions for the postharvest burn alternative assumed there was one year of establishment and five years of production. The production levels were 450 pounds of clean seed in production year one, 600 pounds of clean seed in years two through four and 500 pounds of clean seed in year five. Given these assumptions, the break-even price for producing a pound of bluegrass seed calculated out to be 61.5¢ per pound. For the postharvest no-burn alternative, the initial assumptions were that there was one year of establishment and three years of production with grass seed yields of 450 pounds in production year one, 600 pounds in year two and 450 pounds in year three. It was also assumed that 1.25 tons of grass seed residue were produced annually. Given these assumptions and that of the grass seed residue being removed from the side of the field at no cost to the producer, the break-even price for producing a pound of blue grass seed is calculated to be 86¢. If $10 per ton for residue is received, as was the case at the time of meeting with the producer committee, a break-even price of slightly over 82¢ per pound of bluegrass seed results. Thus, under current conditions in Garfield County, it is estimated that the cost of producing bluegrass seed under the "no-burn ban" has increased the cost per pound of production by 20¢ or more.

Table 7. Summary of Break-Even Prices for No Postharvest Burn and Recrop Situation under Different Yield and Grazing Fee Assumptions for Producing Bluegrass Seed in the Columbia Basin.

Production Years		Year 1	Year 2			
Production Level #1		1,100 lbs.	1,100 lbs.			
Residue price/ton	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.
$ 0	$0	$1.17	$10	$1.16	$20	$1.15
$10	$0	$1.15	$10	$1.14	$20	$1.13
$20	$0	$1.12	$10	$1.11	$20	$1.10
$30	$0	$1.10	$10	$1.09	$20	$1.08
$35	$0	$1.09	$10	$1.08	$20	$1.07
$40	$0	$1.08	$10	$1.07	$20	$1.06
Production Years		Year 1	Year 2			
Production Level #2		990 lbs.	990 lbs.			
Residue price/ton	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.
$ 0	$0	$1.28	$10	$1.27	$20	$1.26
$10	$0	$1.25	$10	$1.24	$20	$1.23
$20	$0	$1.23	$10	$1.22	$20	$1.21
$30	$0	$1.20	$10	$1.19	$20	$1.18
$35	$0	$1.19	$10	$1.18	$20	$1.17
$40	$0	$1.18	$10	$1.17	$20	$1.16

Table 7. (continued)

Production Years		Year 1	Year 2		Year 3	
Production Level #3		1,100 lbs.	1,100 lbs.		1,100 lbs.	
Residue price/ton	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.
$ 0	$0	$1.19	$10	$1.18	$20	$1.17
$10	$0	$1.16	$10	$1.15	$20	$1.14
$20	$0	$1.14	$10	$1.13	$20	$1.12
$30	$0	$1.12	$10	$1.11	$20	$1.10
$35	$0	$1.11	$10	$1.10	$20	$1.09
$40	$0	$1.09	$10	$1.08	$20	$1.08
Production Years		Year 1	Year 2		Year 3	
Production Level #4		990 lbs.	990 lbs.		990 lbs.	
Residue price/ton	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.	Grazing fees/acre	Break-even price/lb.
$ 0	$0	$1.30	$10	$1.29	$20	$1.28
$10	$0	$1.27	$10	$1.26	$20	$1.25
$20	$0	$1.25	$10	$1.24	$20	$1.23
$30	$0	$1.22	$10	$1.21	$20	$1.20
$35	$0	$1.21	$10	$1.20	$20	$1.19
$40	$0	$1.20	$10	$1.19	$20	$1.18

In Spokane County, the results were similar to those of Garfield County. The initial assumptions for the postharvest burn alternative assumed there was one year of establishment and seven years of production. The production levels were 650 pounds of clean seed in production year one, 750 pounds of clean seed in years two through four, and 650 pounds of clean seed in years five through seven. Given these assumptions, the break-even price for producing a pound of bluegrass seed is slightly more than 58¢ per pound. For the postharvest no-burn alternative, the initial assumptions were that there was one year of establishment and four years of production with grass seed yields of 650 pounds in production year one, 750 pounds in year two, 400 pounds in year three and 350 pounds in year four. It was also assumed that 1.25 tons of grass seed residue was produced annually. Given these assumptions and that of the grass seed residue being removed from the side of the field at no cost to the producer, the break-even price for producing a pound of blue grass seed is slightly less than 97¢. If $31 per ton for residue is received, as was the case at the time of meeting with the producer committee, a break-even price of approximately 84¢ per pound of bluegrass seed results. Thus, under current conditions in Spokane County, it is estimated that the cost of producing bluegrass seed under the "no-burn ban" has increased the cost per pound of production by 25¢ or more.

In the Columbia Basin, bluegrass seed is grown under irrigation, thus, the variation in production among producers is not as prevalent as in the dryland production areas of Garfield and Spokane counties. In addition, irrigation allows producers in the Columbia Basin the opportunity to grow some of the more elite proprietary varieties of bluegrass seed. The initial assumptions for the postharvest burn alternative assumed that in the year of establishment there is production of 1,100 pounds of seed per acre. It was further assumed that after the establishment year there were two additional years of production of 1,200 pounds and 1,100 pounds per acre, respectively. Given these assumptions, the break-even price for producing a pound of bluegrass seed is slightly more than 93¢ per pound. For the postharvest "no-burn/graze" alternative (originally proposed by the Department of Ecology), the initial assumptions were that there was one year of establishment, during which time 1,100 pounds of seed per acre is produced and one following year in which 770 pounds per acre of seed is produced. It was also assumed that 2.5 tons of residue per acre are produced and that returns from grazing is negligible due to the fact that for effective results from grazing the grass needs to be grazed very short, and to get cattlemen to do this often means not charging them to graze the bluegrass fields. Given these assumptions, and that of the grass seed residue being removed from the side of the field at no cost to the producer and that no returns are made from grazing, the break-even price for producing a pound of blue grass seed is $1.22. If $20 per ton for residue is received, as was the case at the time of meeting with the producer committee, a break-even price of $1.17 per pound of bluegrass seed results. Thus, under the no-burn/graze alternative, it is estimated that the cost of producing bluegrass seed under the "no-burn ban" has increased the cost per pound of production by approximately 24¢ or more.

For the postharvest "no-burn/recrop" alternative, the initial assumptions were that the bluegrass field was seeded in the first year of production, during which time 1,100 pounds of seed per acre are produced, and in the following year the field was plowed under and replanted in which 1,100 pounds per acre of seed are produced. It was also assumed that 2.5 tons of residue per acre are produced and that returns from grazing are negligible. Given these assumptions, and that of the grass seed residue being removed from the side of the field at no cost to the producer and that no

returns are made from grazing, the break-even price for producing a pound of blue grass seed is $1.17. If $20 per ton for residue is received, as was the case at the time of meeting with the producer committee, a break-even price of $1.12 per pound of bluegrass seed results. Thus, under the no-burn/recrop alternative, it is estimated that the cost of producing bluegrass seed under the "no-burn ban" has increased the cost per pound of production by approximately 19¢ or more.

In all areas, a cost not included in these budget estimates is that not being allowed to burn had essentially cut the crop rotation periods. Although this loss of a longer rotational period is hard to measure, it is a significant factor for overall farm planning and the ability to produce a higher percentage of the more profitable crops within a farm's crop rotation plan.

Appendix I

Spreadsheet Template

for

Garfield County

Per Acre Cost of Establishing Bluegrass in Garfield County Using No-Till Operations Following a Spring Grain Crop

Operation	Month	Fixed Cost	Variable Cost	Material Cost	Total Cost	Comments
		$	$	$	$	
Spray Roundup	Fall	1.42	2.83	5.12	9.37	16 ozs. Roundup
Spray Roundup 50%	March	0.71	1.41	3.20	5.32	20 ozs. Roundup/applied acre
Seed (2X)	March	6.37	8.19	6.22	20.78	7.5 lbs. grass seed
Spray 133%	May	1.90	3.66	16.32	21.88	1 pint Buctrul/applied acre
						4 ozs. Banvil/applied acre
Flail (2X)	June	23.00	15.70		38.70	
Spot Spray 10%	August	0.41	0.79	5.00	6.20	0.5 gal. Tordon/applied acre
Fertilize	October	1.27	1.63	30.00	32.90	300 lbs. 30-0-0-6
Pickup Use	Annual	2.37	5.67		8.04	
Machine Shed & Shop	Annual	7.32			7.32	
Operating Interest	Annual		5.14		5.14	
Overhead	Annual		5.54		5.54	5% of variable cost
TOTAL COST		44.77	50.56	65.86	161.19	

Total Cost - 1/3 Fertilizer Cost	**151.19**

Per Acre Cost For Producing Bluegrass Seed Using Postharvest Field Burning in Garfield County First Production Year

Lbs. of Yield (Field Run):	692.31
Lbs. of Clean Seed :	450
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Price Received per Lb. of Clean Seed:	$0.720

Operation	Month	Fixed Cost	Variable Cost	Material Cost	Total Cost	Comments
		$	$	$	$	
Spray	March	1.42	2.83	5.42	9.67	1 pt. 2-4-D; 4 ozs. Banvil
Swath	March	4.26	6.33	0.00	10.59	
Combine	July	21.54	12.97	0.00	34.51	
Transport Seed	July	0.00	10.38	0.00	10.38	692 lbs.field run seed @ .015/lb
Clean & Bag Seed	July	0.00	56.25	0.00	56.25	450 lbs.clean seed @ .125/lb
Burn	Sept	0.00	8.00	0.00	8.00	Open field burn @ $8/acre
Fertilizer	Fall	1.27	1.63	35.00	37.90	350 lbs. 30-0-0-6 (liquid)
Spray 50%	Fall	0.71	1.39	7.80	9.90	10 ozs. Sencor/applied acre
Pickup Use	Annual	2.37	5.68	0.00	8.05	
Machine Shed & Shop	Annual	7.32	0.00	0.00	7.32	
Operating Interest	Annual		5.90		5.90	
Overhead	Annual		7.98		7.98	5% of variable cost
Land Cost	Annual	77.54			77.54	Net Land Rent
Amort. Estabmt. Cost	Annual	39.88			39.88	5 years @ 10%
TOTAL COST		156.32	119.35	48.22	323.88	

Number of Production Years	**5**
Interest Rate	**0.10**
Amortized Establishment Cost	**39.88**

Breakeven	**0.720**

Per Acre Cost For Producing Bluegrass Seed Using Postharvest Field Burning in Garfield County Middle Production Years

Lbs. of Yield (Field Run):	923.08
Lbs. of Clean Seed :	600
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Price Received per Lb. of Clean Seed:	$0.583

		Fixed	Variable	Material	Total	
Operation	**Month**	**Cost**	**Cost**	**Cost**	**Cost**	**Comments**
		$	$	$	$	
Spray	March	1.42	2.83	5.42	9.67	1 pt. 2-4-D; 4 ozs. Banvil
Swath	March	4.26	6.33	0.00	10.59	
Combine	July	21.54	12.98	0.00	34.52	
Transport Seed	July	0.00	13.85	0.00	13.85	923 lbs.field run seed @ .015/lb
Clean & Bag Seed	July	0.00	75.00	0.00	75.00	600 lbs.clean seed @ .125/lb
Burn	Sept	0.00	8.00	0.00	8.00	Open field burn @ $8/acre
Fertilizer	Fall	1.27	1.63	35.00	37.90	350 lbs. 30-0-0-6 (liquid)
Spray 50%	Fall	0.71	1.41	7.80	9.92	10 ozs. Sencor/applied acre
Pickup Use	Annual	2.37	5.67	0.00	8.04	
Machine Shed & Shop	Annual	7.32	0.00	0.00	7.32	
Operating Interest	Annual		6.08		6.08	
Overhead	Annual		9.10		9.10	5% of variable cost
Land Cost	Annual	79.93			79.93	Net Land Rent
Amort. Estabmt. Cost	Annual	39.88			39.88	5 years @ 10%
TOTAL COST		158.71	142.88	48.22	349.80	

Breakeven	**0.583**

Per Acre Cost For Producing Bluegrass Seed Using Postharvest Field Burning in Garfield County Last Production Year

Lbs. of Yield (Field Run):	769.23
Lbs. of Clean Seed :	500.00
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Price Received per Lb. of Clean Seed:	$0.635

Operation	Month	Fixed Cost	Variable Cost	Material Cost	Total Cost	Comments
		$	$	$	$	
Spray	March	1.42	2.82	5.42	9.66	1 pt. 2-4-D; 4 ozs. Banvil
Swath	March	4.26	6.33	0.00	10.59	
Combine	July	21.54	12.97	0.00	34.51	
Transport Seed	July	0.00	11.54	0.00	11.54	769 lbs.field run seed @ .015/lb
Clean & Bag Seed	July	0.00	62.50	0.00	62.50	500 lbs.clean seed @ .125/lb
Burn	Sept	0.00	8.00	0.00	8.00	Open field burn @ $8/acre
Spray Roundup	Fall	1.42	2.82	5.12	9.36	16 ozs.Roundup .32/ounce
Pickup Use	Annual	2.37	5.68	0.00	8.05	
Machine Shed & Shop	Annual	7.32	0.00	0.00	7.32	
Spray Roundup	Spring	1.42	2.82	16.00	20.24	50 ozs. Roundup .32/ounce
Operating Interest	Annual		3.58		3.58	
Overhead	Annual		7.28		7.28	5% of variable cost
Land Cost	Annual	85.00			85.00	Net Land Rent
Amort. Estabmt. Cost	Annual	39.88			39.88	5 years @ 10%
TOTAL COST		164.64	126.33	26.54	317.51	

Breakeven
0.635

Total Breakeven for Burn
0.615

Per Acre Cost For Producing Bluegrass Seed Using No Postharvest Field Burning in Garfield County First Production Year

Lbs. of Yield (Field Run):	692.31
Lbs. of Clean Seed :	450
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Price Received per Lb. of Clean Seed:	$0.942
Tons of Residue:	1.25
Price of Residue:	$0

Operation	Month	Fixed Cost	Variable Cost	Material Cost	Total Cost	Comments
		$	$	$	$	
Spray	March	1.42	2.83	5.42	9.67	1 pt. 2-4-D; 4 ozs. Banvil
Spray 25%	March	0.00	1.25	5.01	6.26	6 ozs. Tilt, aerial applied
Swath	March	4.44	8.33	0.00	12.77	
Combine	July	21.54	12.98	0.00	34.52	
Transport Seed	July	0.00	10.38	0.00	10.38	692 lbs. field run seed @ .015/lb
Clean & Bag Seed	July	0.00	56.25	0.00	56.25	450 lbs.clean seed @ .125/lb
Rake, Bale, Stack	July	0.00	38.75	0.00	38.75	1.25 tons @ $31/ton
Harrow (2x)	July	2.16	2.45	0.00	4.61	
Fertilize	Fall	1.27	1.63	35.00	37.90	350 lbs. 30-0-0-6
Spray 50%	Fall	0.71	1.41	7.80	9.92	10 ozs. Sencor
Pickup Use	Annual	2.37	5.67	0.00	8.04	
Machine Shed & Shop	Annual	7.32	0.00	0.00	7.32	
Operating Interest	Annual		5.78		5.78	
Overhead	Annual		10.05		10.05	5% of variable cost
Land Cost	Annual	110.88			110.88	Net Land Rent
Amort. Estabmt. Cost	Annual	60.80			60.80	3 years @ 10%
TOTAL COST		212.91	157.76	53.23	423.90	

Breakeven
0.942

Number of Production Years	**3**
Interest Rate	**0.10**
Amortized Establishment Cost	**60.80**

Per Acre Cost For Producing Bluegrass Seed Using
No Postharvest Field Burning in Garfield County
Middle Production Year(s)

Lbs. of Yield (Field Run):	923.08
Lbs. of Clean Seed :	600
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Price Received per Lb. of Clean Seed:	$0.750
Tons of Residue:	1.25
Price of Residue:	$0

Operation	Month	Fixed Cost	Variable Cost	Material Cost	Total Cost	Comments
		$	$	$	$	
Spray	March	1.42	2.83	5.42	9.67	1 pt. 2-4-D; 4 ozs. Banvil
Spray 25%	March	0.00	1.25	5.01	6.26	6 ozs. Tilt, aerial applied
Swath	March	4.44	8.33	0.00	12.77	
Combine	July	21.54	12.97	0.00	34.51	
Transport Seed	July	0.00	13.85	0.00	13.85	923 lbs.field run seed @ .015/lb
Clean & Bag Seed	July	0.00	75.00	0.00	75.00	600 lbs.clean seed @ .125/lb
Rake, Bale, Stack	July	0.00	38.75	0.00	38.75	1.25 tons @ $31/ton
Harrow (2x)	July	2.16	2.46	0.00	4.62	
Fertilize	Fall	1.27	1.63	35.00	37.90	350 lbs. 30-0-0-6
Spray 50%	Fall	0.71	1.41	7.80	9.92	10 ozs. Sencor
Pickup Use	Annual	2.37	5.68	0.00	8.05	
Machine Shed & Shop	Annual	7.32	0.00	0.00	7.32	
Operating Interest	Annual		5.97		5.97	
Overhead	Annual		11.17		11.17	5% of variable cost
Land Cost	Annual	113.28			113.28	Net Land Rent
Amort. Estabmt. Cost	Annual	60.80			60.80	3 years @ 10%
TOTAL COST		215.30	181.29	53.23	449.83	

Breakeven
0.750

Per Acre Cost For Producing Bluegrass Seed Using No Postharvest Field Burning in Garfield County Last Production Year (Scenario #1)

Lbs. of Yield (Field Run):	692.31
Lbs. of Clean Seed :	450
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Price Received per Lb. of Clean Seed:	$0.970
Tons of Residue:	1.25
Price of Residue:	$0

Operation	Month	Fixed Cost	Variable Cost	Material Cost	Total Cost	Comments
		$	$	$	$	
Spray	March	1.42	2.83	5.42	9.67	1 pt. 2-4-D; 4 ozs. Banvil
Spray 25%	March	0.00	1.25	5.01	6.26	6 ozs. Tilt, aerial applied
Swath	March	4.44	8.33	0.00	12.77	
Combine	July	21.54	12.98	0.00	34.52	
Transport Seed	July	0.00	10.38	0.00	10.38	692 lbs.field run seed @ .015/lb
Clean & Bag Seed	July	0.00	56.25	0.00	56.25	450 lbs.clean seed @ .125/lb
Rake, Bale, Stack	July	0.00	38.75	0.00	38.75	1.25 tons @ $31/ton
Fertilize	Fall	1.27	1.63	25.00	27.90	250 lbs. 30-0-0-6
Spray Roundup	Fall	1.42	2.83	5.12	9.37	16 ozs. Roundup
Spray Roundup	Spring	1.42	2.83	16.00	20.25	50 ozs. Roundup
Pickup Use	Annual	2.37	5.67	0.00	8.04	
Machine Shed & Shop	Annual	7.32	0.00	0.00	7.32	
Operating Interest	Annual		5.61		5.61	
Overhead	Annual		10.29		10.29	5% of variable cost
Land Cost	Annual	118.47			118.47	Net Land Rent
Amort. Estabmt. Cost	Annual	60.80			60.80	3 years @ 10%
TOTAL COST		220.46	159.64	56.55	436.65	

Breakeven
0.970

Total Breakeven for No Burn Scenario 1
0.874

Per Acre Cost For Producing Bluegrass Seed Using No Postharvest Field Burning in Garfield County Last Production Year (Scenario #2)

Lbs. of Yield (Field Run):	692.31
Lbs. of Clean Seed :	450
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Price Received per Lb. of Clean Seed:	$0.925
Tons of Residue:	1.25
Price of Residue:	$0

		Fixed	Variable	Material	Total	
Operation	**Month**	**Cost**	**Cost**	**Cost**	**Cost**	**Comments**
		$	$	$	$	
Spray	March	1.42	2.83	5.42	9.67	1 pt. 2-4-D; 4 ozs. Banvil
Spray 25%	March	0.00	1.25	5.01	6.26	6 ozs. Tilt, aerial applied
Swath	March	4.44	8.33	0.00	12.77	
Combine	July	21.54	12.97	0.00	34.51	
Transport Seed	July	0.00	10.38	0.00	10.38	692 lbs.field run seed @ .015/lb
Clean & Bag Seed	July	0.00	56.25	0.00	56.25	450 lbs.clean seed @ .125/lb
Rake, Bale, Stack	July	0.00	38.75	0.00	38.75	1.25 tons @ $31/ton
Plow	Sept	8.51	10.12	0.00	18.63	
Disc	Spring	5.71	6.94	0.00	12.65	
Cultivate	Spring	3.07	2.56	0.00	5.63	
Harrow	Spring	1.37	1.28	0.00	2.65	
Pickup Use	Annual	2.37	5.68	0.00	8.05	
Machine Shed & Shop	Annual	7.32	0.00	0.00	7.32	
Operating Interest	Annual		3.32		3.32	
Overhead	Annual		8.55		8.55	5% of variable cost
Land Cost	Annual	119.97			119.97	Net Land Rent
Amort. Estabmt. Cost	Annual	60.80			60.80	3 years @ 10%
TOTAL COST		236.52	169.22	10.43	416.17	

Breakeven
0.925

Total Breakeven for No Burn Scenario 2
0.860

Appendix II

Spreadsheet Template

for

Spokane County

Per Acre Cost of Establishing Bluegrass in Spokane County Using No-Till Operations Following a Spring Grain Crop

Operation	Month	Fixed Cost	Variable Cost	Material Cost	Total Cost	Comments
		$	$	$	$	
Plow	Fall	10.46	10.18	0.00	20.64	
Cleanup 10%	Fall	0.33	0.38	0.00	0.71	
Spray Roundup	March	0.82	1.27	4.40	6.49	16 ozs. Roundup + additives
Harrow (2X)	April	2.73	2.54	0.00	5.27	
Harrow	April	0.88	0.87	0.00	1.75	
Roll (2X)	April	5.53	2.88	0.00	8.41	
Seed/Fertilize	April	7.22	3.48	27.62	38.32	4 lbs. grass seed, 125 lbs. 16-20-0-0
Spray Roundup	May	0.82	1.27	4.40	6.49	16 ozs. Roundup + additives
Spray	June	0.82	1.27	26.47	28.56	.76 ozs. Beacon, 24 oz. Buctril, 1 qt. crop oil
Chop Grass	August	5.53	4.81	0.00	10.34	
Spot Spray 10%	Sept	0.83	1.32	0.84	2.99	1 qt. 2-4-D and 4 oz. Clarity/applied acre
Chop Grass 10%	Sept	0.55	0.48	0.00	1.03	
Fertilize	Fall	1.27	6.95	35.00	43.22	350 lbs. 29.5-0-4-5
Erosion Control	Fall	0.00	5.00	0.00	5.00	$5.00 per acre
Service Truck	Annual	0.75	1.42	0.00	2.17	
4x4 Pickup	Annual	2.37	6.73	0.00	9.10	
Machine Shed & Shop	Annual	5.96	0.00	0.00	5.96	
Shop Tools	Annual	1.36	0.00	0.00	1.36	
Operating Interest	Annual	0.00	7.52	0.00	7.52	
Overhead	Annual	0.00	7.86	0.00	7.86	5% of variable cost
TOTAL COST		48.23	66.23	98.73	213.19	

Total Cost - 1/3 Fertilizer Cost	**$ 196.31**

Per Acre Cost For Producing Bluegrass Seed Using Postharvest Field Burning in Spokane County First Year Production

Lbs. of Yield (Field Run):	1000.00
Lbs. of Clean Seed :	650
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Insurance Cost per Lb. of Clean Seed:	$0.010
Price Received per Lb. of Clean Seed:	$0.645

Operation	Month	Fixed Cost	Variable Cost	Material Cost	Total Cost	Comments
		$	$	$	$	
Spray	Apr	0.00	5.75	15.00	20.75	Herbicides, aerial applied
Spot Spray	May	0.15	2.98	2.00	5.13	Herbicides
Swath	July	12.26	5.97	0.00	18.23	
Combine/Spray 10%	July	20.03	20.72	0.84	41.59	1 qt. 2-4-D and 4 ozs. Clarity/applied acre
Transport	July	0.00	15.00	0.00	15.00	1000 lbs. field run seed
Clean & Bag	July	0.00	81.25	0.00	81.25	650 lbs. clean seed
Insurance	July	0.00	6.50	0.00	6.50	650 lbs. clean seed
Fertilize	Fall	1.27	6.95	35.00	43.22	350 lbs. 29.5-0-4-5
Erosion Control	Fall	0.00	2.00	0.00	2.00	$2 per acre
Burn	Fall	0.00	10.00	0.00	10.00	$10 per acre
Service Truck	Annual	0.75	1.42	0.00	2.17	
4x4 Pickup	Annual	2.37	6.73	0.00	9.10	
Machine Shed & Shop	Annual	5.96	0.00	0.00	5.96	
Shop Tools	Annual	1.36	0.00	0.00	1.36	
Operating Interest	Annual		6.80		6.80	
Overhead	Annual		11.25		11.25	5% variable cost
Land Cost	Annual	98.94			98.94	Net land rent
Amort. Est. Cost	Annual	$40.32			40.32	7 years, 10% interest
TOTAL COST		183.41	183.32	52.84	419.57	

Number of Production Years	**7**
Interest Rate	**0.10**
Amortized Establishment Cost	**$40.32**

Breakeven	**0.645**

Per Acre Cost For Producing Bluegrass Seed Using Postharvest Field Burning in Spokane County Second through Fourth Years Production

Lbs. of Yield (Field Run):	1153.85
Lbs. of Clean Seed :	750
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Insurance Cost per Lb. of Clean Seed:	$0.010
Price Received per Lb. of Clean Seed:	$0.557

Operation	Month	Fixed Cost	Variable Cost	Material Cost	Total Cost	Comments
		$	$	$	$	
Spray 50%	Apr	0.00	2.87	7.50	10.37	Herbicides, aerial applied
Spot Spray	May	0.15	2.98	2.00	5.13	Herbicides
Swath	July	12.26	5.97	0.00	18.23	
Combine/Spray 10%	July	20.03	20.72	0.84	41.59	1 qt. 2-4-D and 4 oz. Clarity/applied acre
Transport	July	0.00	17.25	0.00	17.25	1150 lbs. field run seed
Clean & Bag	July	0.00	93.75	0.00	93.75	750 lbs. clean seed
Insurance	July	0.00	7.50	0.00	7.50	750 lbs. clean seed
Fertilize	Fall	1.27	6.95	35.00	43.22	350 lbs. 29.5-0-4-5
Burn	Fall	0.00	10.00	0.00	10.00	$10 per acre
Service Truck	Annual	0.75	1.42	0.00	2.17	
4x4 Pickup	Annual	2.37	6.73	0.00	9.10	
Machine Shed & Shop	Annual	5.96	0.00	0.00	5.96	
Shop Tools	Annual	1.36	0.00	0.00	1.36	
Operating Interest	Annual		6.42		6.42	
Overhead	Annual		11.40		11.40	5% of variable cost
Land Cost	Annual	93.76			93.76	Net land rent
Amort. Est. Cost	Annual	$40.32			40.32	7 years, 10% interest
TOTAL COST		178.24	193.96	45.34	417.53	

Breakeven	**0.557**

Per Acre Cost For Producing Bluegrass Seed Using Postharvest Field Burning in Spokane County Fifth through Sixth Years Production

Lbs. of Yield (Field Run):	1000.00
Lbs. of Clean Seed :	650
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Insurance Cost per Lb. of Clean Seed:	$0.010
Price Received per Lb. of Clean Seed:	$0.614

Operation	Month	Fixed Cost	Variable Cost	Material Cost	Total Cost	Comments
		$	$	$	$	
Spray 50%	Apr	0.00	2.87	7.50	10.37	Herbicide, aerial applied
Spot Spray	May	0.15	2.98	2.00	5.13	Herbicide
Swath	July	12.26	5.97	0.00	18.23	
Combine/Spray 10%	July	20.03	20.72	0.84	41.59	1 qt. 2-4-D and 4 oz. Clarity/applied acre
Transport	July	0.00	15.00	0.00	15.00	1000 lbs. field run seed
Clean & Bag	July	0.00	81.25	0.00	81.25	650 lbs. clean seed
Insurance	July	0.00	6.50	0.00	6.50	650 lbs. clean seed
Fertilize	Fall	1.27	6.95	35.00	43.22	350 lbs. 29.5-0-4-5
Burn	Fall	0.00	10.00	0.00	10.00	
Service Truck	Annual	0.75	1.42	0.00	2.17	
4x4 Pickup	Annual	2.37	6.73	0.00	9.10	
Machine Shed & Shop	Annual	5.96	0.00	0.00	5.96	
Shop Tools	Annual	1.36	0.00	0.00	1.36	
Operating Interest	Annual		6.29		6.29	
Overhead	Annual		10.60		10.60	5% of variable cost
Land Cost	Annual	92.17			92.17	Net land rent
Amort. Est. Cost	Annual	$40.32			40.32	7 years, 10% interest
TOTAL COST		176.65	177.28	45.34	399.27	

Breakeven	**0.614**

Per Acre Cost For Producing Bluegrass Seed Using Postharvest Field Burning in Spokane County Final Year of Production

Lbs. of Yield (Field Run):	1000.00
Lbs. of Clean Seed :	650
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Insurance Cost per Lb. of Clean Seed:	$0.010
Price Received per Lb. of Clean Seed:	$0.538

Operation	Month	Fixed Cost	Variable Cost	Material Cost	Total Cost		Comments
		$	$	$	$		
Spray 50%	Apr	0.00	2.87	7.50	10.37		Herbicide, custom aerial
Spot Spray	May	0.15	2.98	2.00	5.13		Herbicide
Swath	July	12.26	5.97	0.00	18.23		
Combine	July	18.86	19.93	0.00	38.79		
Transport	July	0.00	15.00	0.00	15.00		1000 lbs. field run seed
Clean & Bag	July	0.00	81.25	0.00	81.25		650 lbs. clean seed
Insurance	July	0.00	6.50	0.00	6.50		650 lbs. clean seed
Burn	Fall	0.00	10.00	0.00	10.00		
Spray Roundup	Spring	0.82	1.27	4.40	6.49		16 ozs. Roundup + additives
Service Truck	Annual	0.75	1.42	0.00	2.17		
4x4 Pickup	Annual	2.37	6.73	0.00	9.10		
Machine Shed & Shop	Annual	5.96	0.00	0.00	5.96		
Shop Tools	Annual	1.36	0.00	0.00	1.36		
Operating Interest	Annual		3.02		3.02		
Overhead	Annual		8.54		8.54		5% of variable cost
Land Cost	Annual	87.24			87.24		Net land rent
Amort. Est. Cost	Annual	$40.32			40.32		7 years, 10% interest
TOTAL COST		170.10	165.48	13.90	349.48		

Breakeven	**0.538**

Total Breakeven for Burn Scenario	**0.581**

Per Acre Cost For Producing Bluegrass Seed Using No Postharvest Field Burning in Spokane County First Year Production

Lbs. of Yield (Field Run):	1000.00
Lbs. of Clean Seed :	650
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Insurance Cost per Lb. of Clean Seed:	$0.010
Price Received per Lb. of Clean Seed:	$0.802
Tons of Residue:	1.50
Price of Residue:	$0

		Fixed	Variable	Material	Total		
Operation	**Month**	**Cost**	**Cost**	**Cost**	**Cost**		**Comments**
		$	$	$	$		
Spray	April	0.00	5.75	15.00	20.75		Herbicides, custom aerial
Spot Spray	May	0.15	2.98	2.00	5.13		Herbicides
Swath	July	12.26	5.97	0.00	18.23		
Combine	July	19.93	20.29	0.00	40.22		
Transport Seed	July	0.00	15.00	0.00	15.00		1000 lbs.field run seed
Clean & Bag Seed	July	0.00	81.25	0.00	81.25		650 lbs.clean seed
Insurance	July	0.00	6.50	0.00	6.50		650 lbs. clean seed in storage
Rake, Bale, Stack	July	0.00	46.50	0.00	46.50		1.5 tons residue
Chop Grass	Sept.	5.53	4.81	0.00	10.34		
Spray 50%	Sept.	0.82	1.27	7.50	9.59		Herbicides
Harrow (2x)	Sept.	2.73	2.54	0.00	5.27		
Fertilize	Fall	1.27	6.95	50.00	58.22		500 lbs. 29.5-0-4-5
Erosion Control	Fall	0.00	2.00	0.00	2.00		$2 per acre
Service Truck	Annual	0.75	1.42	0.00	2.17		
Shop Tools	Annual	1.36	0.00	0.00	1.36		
Machine Shed & Shop	Annual	5.96	0.00	0.00	5.96		
4x4 Pickup	Annual	2.37	6.73	0.00	9.10		
Operating Interest	Annual		9.08		9.08		
Overhead	Annual		14.68		14.68		5% of variable cost
Land Cost	Annual	142.76			142.76		Net Land Rent
Amortized Estab. Cost	Annual	61.93			61.93		
TOTAL COST		257.83	233.72	74.50	566.04		

Breakeven
0.871

Number of Production Years	**4**
Interest Rate	**0.10**
Amortized Establishment Cost	**61.93**

Per Acre Cost For Producing Bluegrass Seed Using No Postharvest Field Burning in Spokane County Second Year Production

Lbs. of Yield (Field Run):	1153.85
Lbs. of Clean Seed :	750
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Insurance Cost per Lb. of Clean Seed:	$0.010
Price Received per Lb. of Clean Seed:	$0.721
Tons of Residue:	1.50
Price of Residue:	$0

Operation	Month	Fixed Cost	Variable Cost	Material Cost	Total Cost	Comments
		$	$	$	$	
Spray	April	0.00	5.75	15.00	20.75	Herbicides, aerial applied
Spot Spray	May	0.15	2.98	2.00	5.13	Herbicides
Swath	July	13.80	7.47	0.00	21.27	
Combine	July	19.93	20.29	0.00	40.22	
Transport Seed	July	0.00	17.31	0.00	17.31	1154 lbs. field run seed
Clean & Bag Seed	July	0.00	93.75	0.00	93.75	750 lbs. clean seed
Insurance	July	0.00	7.50	0.00	7.50	750 lbs. clean seed in storage
Rake, Bale, Stack	July	0.00	46.50	0.00	46.50	1.5 tons residue
Chop Grass	Sept.	5.53	4.81	0.00	10.34	
Spray 50%	Sept.	0.82	1.27	7.50	9.59	Herbicides
Harrow (2x)	Sept.	2.73	2.54	0.00	5.27	
Fertilize	Fall	1.27	6.95	50.00	58.22	500 lbs. 29.5-0-4-5
Service Truck	Annual	0.75	1.42	0.00	2.17	
Shop Tools	Annual	1.36	0.00	0.00	1.36	
Machine Shed & Shop	Annual	5.96	0.00	0.00	5.96	
4x4 Pickup	Annual	2.37	6.73	0.00	9.10	
Operating Interest	Annual		9.05		9.05	
Overhead	Annual		15.44		15.44	5% of variable cost
Land Cost	Annual	144.81			144.81	Net land rent
Amort. Est. Cost	Annual	61.93			61.93	4 years, 10% interest
Total Cost		261.41	249.76	74.50	585.67	

Breakeven
0.781

Per Acre Cost For Producing Bluegrass Seed Using No Postharvest Field Burning in Spokane County Third Year Production

Lbs. of Yield (Field Run):	615.38
Lbs. of Clean Seed :	400
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Insurance Cost per Lb. of Clean Seed:	$0.010
Price Received per Lb. of Clean Seed:	$1.191
Tons of Residue:	1.50
Price of Residue:	$0

Operation	Month	Fixed Cost	Variable Cost	Material Cost	Total Cost	Comments
		$	$	$	$	
Spray	April	0.00	5.75	15.00	20.75	Herbicides, custom aerial
Spot Spray	May	0.15	2.98	2.00	5.13	Herbicides
Swath	July	13.80	7.47	0.00	21.27	
Combine	July	19.93	20.29	0.00	40.22	
Transport Seed	July	0.00	9.23	0.00	9.23	615 lbs. field run seed
Clean & Bag Seed	July	0.00	50.00	0.00	50.00	400 lbs. clean seed
Insurance	July	0.00	4.00	0.00	4.00	400 lbs. seed in storage
Rake, Bale, Stack	July	0.00	46.50	0.00	46.50	1.5 tons residue
Chop Grass	Sept.	5.53	4.81	0.00	10.34	
Spray 50%	Sept.	0.82	1.27	7.50	9.59	Herbicides
Harrow (2x)	Sept.	2.73	2.54	0.00	5.27	
Fertilize	Fall	1.27	6.95	50.00	58.22	500 lbs. 29.5-0-4-5
Service Truck	Annual	0.75	1.42	0.00	2.17	
Shop Tools	Annual	1.36	0.00	0.00	1.36	
Machine Shed & Shop	Annual	5.96	0.00	0.00	5.96	
4x4 Pickup	Annual	2.37	6.73	0.00	9.10	
Operating Interest	Annual		8.59		8.59	
Overhead	Annual		12.65		12.65	5% of variable cost
Land Cost	Annual	139.14			139.14	Net land rent
Amort. Est. Cost	Annual	61.93			61.93	4 years, 10% interest
TOTAL COST		255.74	191.18	74.50	521.43	

Breakeven
1.304

Per Acre Cost For Producing Bluegrass Seed Using No Postharvest Field Burning in Spokane County Fourth and Last Production Year (Scenario #1)

Lbs. of Yield (Field Run):	538.46
Lbs. of Clean Seed :	350
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Insurance Cost per Lb. of Clean Seed:	$0.010
Price Received per Lb. of Clean Seed:	$1.042
Tons of Residue:	1.50
Price of Residue:	$0

Operation	Month	Fixed Cost	Variable Cost	Material Cost	Total Cost	Comments
		$	$	$	$	
Spray	April	0.00	5.75	15.00	20.75	Herbicides, custom aerial
Spot Spray	May	0.15	2.98	2.00	5.13	Herbicides
Swath	July	13.80	7.47	0.00	21.27	
Combine	July	19.93	20.29	0.00	40.22	
Transport Seed	July	0.00	8.08	0.00	8.08	540 lbs. field run seed
Clean & Bag Seed	July	0.00	43.75	0.00	43.75	350 lbs. clean seed
Insurance	July	0.00	3.50	0.00	3.50	350 lbs. clean seed in storage
Rake, Bale, Stack	July	0.00	46.50	0.00	46.50	1.5 tons residue
Spray	Spring	1.55	2.11	4.40	8.06	16 ozs. Roundup + additives
Service Truck	Annual	0.75	1.42	0.00	2.17	
Shop Tools	Annual	1.36	0.00	0.00	1.36	
Machine Shed & Shop	Annual	5.96	0.00	0.00	5.96	
4x4 Pickup	Annual	2.37	6.73	0.00	9.10	
Operating Interest	Annual		2.57		2.57	
Overhead	Annual		8.63		8.63	5% of variable cost
Land Cost	Annual	120.86			120.86	Net land rent
Amort. Est. Cost	Annual	61.93			61.93	4 years, 10% interest
TOTAL COST		228.66	159.77	21.40	409.84	

Breakeven
1.171

Total Breakeven for No Burn Scenario 1
0.969

Per Acre Cost For Producing Bluegrass Seed Using No Postharvest Field Burning in Spokane County Fourth and Last Production Year (Scenario #2)

Lbs. of Yield (Field Run):	538.46
Lbs. of Clean Seed :	350
Transport Cost per Lb. of Field Run Seed:	$0.015
Cleaning Cost per Lb. of Clean Seed:	$0.125
Insurance Cost per Lb. of Clean Seed:	$0.010
Price Received per Lb. of Clean Seed:	$1.165
Tons of Residue:	0.00
Price of Residue:	$0

Operation	Month	Fixed Cost	Variable Cost	Material Cost	Total Cost		Comments
		$	$	$	$		
Spray	April	0.00	5.75	15.00	20.75		Herbicides, custom aerial
Spot Spray	May	0.15	2.98	2.00	5.13		Herbicides
Swath	July	13.80	7.47	0.00	21.27		
Combine	July	19.93	20.29	0.00	40.22		
Transport Seed	July	0.00	8.08	0.00	8.08		540 lbs. field run seed
Clean & Bag Seed	July	0.00	43.75	0.00	43.75		350 lbs. clean seed
Insurance	July	0.00	3.50	0.00	3.50		350 lbs. clean seed in storage
Disc	Fall 2000	4.95	4.13	0.00	9.08		
Plow	Fall 2000	10.46	10.18	0.00	20.64		
Disc (2X)	Fall 2000	9.89	8.26	0.00	18.15		
Harrow (3X)	Fall 2000	2.64	2.63	0.00	5.27		
Service Truck	Annual	0.75	1.42	0.00	2.17		
Shop Tools	Annual	1.36	0.00	0.00	1.36		
Machine Shed & Shop	Annual	5.96	0.00	0.00	5.96		
4x4 Pickup	Annual	2.37	6.73	0.00	9.10		
Operating Interest	Annual		4.01		4.01		
Overhead	Annual		7.31		7.31		5% of variable cost
Land Cost	Annual	120.21			120.21		Net land rent
Amort. Est. Cost	Annual	61.93			61.93		4 years, 10% interest
TOTAL COST		254.40	136.48	17.00	407.89		

Breakeven
1.165

Total Breakeven for No Burn Scenario 2
0.968

Appendix III

Spreadsheet Template

for the

Columbia Basin

Per Acre Cost of Producing Bluegrass Seed in the Columbia Basin under Center Pivot Burn Situation:

	Year One	Year Two	Year Three	Comments:
Lbs. of Yield (Field Run):	1466.67	1600.00	1466.67	
Lbs. of Clean Seed (% of Field Run):	75.00%	75.00%	75.00%	
Lbs. of Clean Seed:	1100.00	1200.00	1100.00	
Transport Cost per Lb. of Field Run Seed:	0.0068	0.0068	0.0068	
Cleaning Cost per Lb. of Clean Seed:	0.15	0.15	0.15	
Insurance Cost per Lb. of Clean Seed:	0.00	0.00	0.00	
Tons of Residue:	0.00	0.00	0.00	
Price Received per Ton of Residue:	0.00	0.00	0.00	
Receipts from Grazing:	10.00	10.00		
Interest Rate:	10.00%	10.00%	10.00%	
Production Costs:				
Burn Wheat Stubble (July):	1.50			
Disk - 2 times over (August):	20.00			
Plant and Fertilize (August):	65.00			Application, $15; Seed, 4 lbs. @ $5/lb; Fertilizer, $30
Fertigate (September):	7.50	7.50	7.50	Fertilizer cost
Spray (September):	13.50			Application, $5; 1 qt. Roundup @ $8.50/qt.
Fertilize (October):	85.00	85.00	85.00	Application, $5; Fertilizer, $80
Spray (October):	15.00			Application, $5; Broadleaf Herbicide, $10
Fertilize (February):	23.00	23.00	23.00	Application, $5; Fertilizer, $18
Spray (March):	20.00	20.00	20.00	Application, $5; Broadleaf Herbicide, $15
Fertigate (April):	7.50	7.50	7.50	Fertilizer cost
Herbigate (April):	14.00	14.00	14.00	Herbigator, $3; Rust & Mildew Control, $11
Herbigate (May):	14.00	14.00	14.00	Herbigator, $3; Rust & Mildew Control, $11
Swath (June):	25.00	25.00	25.00	
Combine (July):	65.00	65.00	65.00	
Trucking (July):	9.97	10.88	9.97	$.0068 per Lb. of Field Run Seed
Cleaning (July):	165.00	180.00	165.00	$.15 per Lb. of Clean Seed
Burn Grass Residue (July):	1.50	1.50	1.50	
Spot Spraying (Season):	30.00	30.00	30.00	Labor, $25; Chemicals, $5
Irrigation (Season):	96.50	96.50	96.50	Water, $40; Power, $25; Repairs, $10; Labor & Mgt, $20; Insurance, $1.50
Management (Season):	50.00	50.00	50.00	
Land Rent (Annual):	300.00	300.00	300.00	
Interest (Annual):	51.45	46.49	45.70	Interest on 1/2 Total Production Costs
Overhead (Annual):	54.02	48.82	47.98	Utilities, Legal, Accounting, etc.
Total Production Cost:	1134.44	1025.19	1007.66	
Receipts from Residue:				
Receipts from Grazing:	10.00	10.00	0.00	
Total Production Cost - Receipts:	1124.44	1015.19	1007.66	
Break-even Price per Year:	1.02	0.85	0.92	
Break-even Price for the 3 Years:	0.93			

Per Acre Cost of Producing Bluegrass Seed in the Columbia Basin under Center Pivot No-Burn/Grazing Situation:

	Year One	Year Two	Comments:
Lbs. of Yield (Field Run):	1466.67	1026.67	
Lbs. of Clean Seed (% of Field Run):	75.00%	75.00%	
Lbs. of Clean Seed:	1100.00	770.00	
Transport Cost per Lb. of Field Run Seed:	0.0068	0.0068	
Cleaning Cost per Lb. of Clean Seed:	0.15	0.15	
Insurance Cost per Lb. of Clean Seed:	0.00	0.00	
Tons of Residue:	2.50	2.50	
Price Received per Ton of Residue:	0.00	0.00	
Receipts from Grazing:	0.00	0.00	
Interest Rate:	10.00%	10.00%	
Production Costs:			
Burn Wheat Stubble (July):	1.50		
Disk - 2 times over (August):	20.00		
Plant and Fertilize (August):	65.00		Application, $15; Seed, 4 lbs. @ $5/lb; Fertilizer, $30
Fertigate (September):	7.50	7.50	Fertilizer cost
Spray (September):	13.50		Application, $5; 1 qt. Roundup @ $8.50/qt.
Fertilize (October):	85.00	85.00	Application, $5; Fertilizer, $80
Spray (October):	15.00		Application, $5; Broadleaf Herbicide, $10
Fertilize (February):	23.00	23.00	Application, $5; Fertilizer, $18
Spray (March):	20.00	20.00	Application, $5; Broadleaf Herbicide, $15
Fertigate (April):	7.50	7.50	Fertilizer cost
Herbigate (April):	14.00	14.00	Herbigator, $3; Rust & Mildew Control, $11
Herbigate (May):	14.00	14.00	Herbigator, $3; Rust & Mildew Control, $11
Herbigate (May):		14.00	Herbigator, $3; Rust & Mildew Control, $11
Swath (June):	25.00	25.00	
Combine (July):	65.00	65.00	
Trucking (July):	9.97	6.98	$.0068 per Lb. of Field Run Seed
Cleaning (July):	165.00	115.50	$.15 per Lb. of Clean Seed
Remove Residue (July):	87.50	87.50	2.5 Tons @ $30/Ton + $5/Ton for Cover
Spot Spraying (Season):	30.00	30.00	Labor, $25; Chemicals, $5
Irrigation (Season):	96.50	96.50	Water, $40; Power, $25; Repairs, $10; Labor & Mgt, $20; Insurance, $1.50
Management (Season):	50.00	50.00	
Land Rent (Annual):	300.00	300.00	
Interest (Annual):	55.75	48.07	Interest on 1/2 Total Production Cost except
Overhead (Annual):	58.54	50.48	Utilities, Legal, Accounting, etc.
Total Production Cost:	1229.26	1060.03	
Receipts from Residue:	0.00	0.00	
Receipts from Grazing:	0.00	0.00	
Total Production Cost - Receipts:	1229.26	1060.03	
Break-even Price per Year:	1.12	1.38	
Break-even Price for the 2 Years:	1.22		

Per Acre Cost of Producing Bluegrass Seed in the Columbia Basin under Center Pivot No-Burn/Recrop Situation:

	Year One	Following Years	Comments:
Lbs. of Yield (Field Run):	1466.67	1466.67	
Lbs. of Clean Seed (% of Field Run):	75.00%	75.00%	
Lbs. of Clean Seed:	1100.00	1100.00	
Transport Cost per Lb. of Field Run Seed:	0.0068	0.0068	
Cleaning Cost per Lb. of Clean Seed:	0.15	0.15	
Insurance Cost per Lb. of Clean Seed:	0.00	0.00	
Tons of Residue:	2.50	2.50	
Price Received per Ton of Residue:	0.00	0.00	
Receipts from Grazing:	0.00	0.00	
Interest Rate:	10.00%	10.00%	
Production Costs:			
Burn Wheat Stubble (July):	1.50		
Rotovate (August):		63.00	
Plow (August):		25.00	
Disk - 2 times over (August):	20.00	20.00	
Plant and Fertilize (August):	65.00	65.00	Application, $15; Seed, 4 lbs. @ $5/lb; Fertilizer, $30
Fertigate (September):	7.50	7.50	Fertilizer cost
Spray (September):	13.50	13.50	Application, $5; 1 qt. Roundup @ $8.50/qt.
Fertilize (October):	85.00	85.00	Application, $5; Fertilizer, $80
Spray (October):	15.00	15.00	Application, $5; Broadleaf Herbicide, $10
Fertilize (February):	23.00	23.00	Application, $5; Fertilizer, $18
Spray (March):	20.00	20.00	Application, $5; Broadleaf Herbicide, $15
Fertigate (April):	7.50	7.50	Fertilizer cost
Herbigate (April):	14.00	14.00	Herbigator, $3; Rust & Mildew Control, $11
Herbigate (May):	14.00	14.00	Herbigator, $3; Rust & Mildew Control, $11
Herbigate (May):		14.00	Herbigator, $3; Rust & Mildew Control, $11
Swath (June):	25.00	25.00	
Combine (July):	65.00	65.00	
Trucking (July):	9.97	9.97	$.0068 per Lb. of Field Run Seed
Cleaning (July):	165.00	165.00	$.15 per Lb. of Clean Seed
Remove Residue (July):	87.50	87.50	2.5 Tons @ $30/Ton + $5/Ton for Cover
Spot Spraying (Season):	30.00	30.00	Labor, $25; Chemicals, $5
Irrigation (Season):	96.50	96.50	Water, $40; Power, $25; Repairs, $10; Labor & Mgt, $20; Insurance, $1.50
Management (Season):	50.00	50.00	Some feel mgt. cost should be $70 in 2od Yr.
Land Rent (Annual):	300.00	300.00	
Interest (Annual):	55.75	60.77	Interest on 1/2 Total Production Cost
Overhead (Annual):	58.54	63.81	Utilities, Legal, Accounting, etc.
Total Production Cost:	1229.26	1340.06	
Receipts from Residue:	0.00	0.00	
Receipts from Grazing:	0.00	0.00	
Total Production Cost - Receipts:	1229.26	1340.06	
Break-even Price per Year:	1.12	1.22	
Break-even Price for 2 Years:	1.17		

Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is violation of law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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