


Farm Business Management Reports		EB1802
	<p>1995 Crop Enterprise Budget for Producing Garbanzos in Walla Walla County, Washington</p>	
	<p>Herbert R. Hinman Walter J. Gary</p>	
<p>COOPERATIVE EXTENSION WASHINGTON STATE UNIVERSITY</p> 		

PREFACE

Enterprise costs and returns vary from one farm to the next and over time for any particular farming operation. Variability stems from differences in the following:

- Capital, labor, and natural resources
- Type and size of machinery complement
- Cultural practices
- Size of farm enterprise
- Crop yields
- Input prices
- Commodity prices
- Management skill

Costs can also be calculated differently depending on the intended use of the cost estimate. The information in this publication serves as an estimate of the costs and returns for growing garbanzos under dryland conditions in the 17- to 25- inch rainfall area of Walla Walla County, Washington. To avoid drawing unwarranted conclusions for any particular farm or group of farms, you must examine closely the assumptions used. If they are not appropriate for your situation adjust the costs and/or returns accordingly.

1995 Crop Enterprise Budget for Producing Garbanzos in Walla Walla County, Washington

Herbert R. Hinman and Walter J. Gary¹

INTRODUCTION

This publication presents estimated costs and returns for producing garbanzos (also referred to as chickpeas), following a winter wheat crop in the 17- to 25-inch rainfall area of Walla Walla County in southeast Washington State. Producers, agricultural lenders, and others should find this information helpful when identifying enterprise strengths and weaknesses, planning production adjustments, determining financial requirements, making market decisions, and analyzing other business management issues.

The enterprise data represent costs and returns under the specific assumptions adopted for the study. Because of differences in costs and returns among farms and over time, individual growers are encouraged to use the blanks provided on the right-hand side of the budget tables for estimates of their unique costs and returns. Additional help is available through local Cooperative Extension agents and field persons for recommendations on field operations and operating inputs.

SOURCES OF INFORMATION

A committee of experienced garbanzo producers from the study area was assembled at the request of the county agent. They identified the machinery complement, field operations, and inputs commonly used on well-managed operations. The producers also determined the cost of labor including social security tax, labor and industrial insurance, plus any perquisites that may be provided such as housing, vehicles, fuel, etc. The labor cost also represents what owner-operators feel is a fair return to their labor. Local farm suppliers provided current price information on materials and services. Machinery costs were based on current replacement prices and on typical rates of annual use.

BUDGET ASSUMPTIONS

The following assumptions were made in developing the budget:

1. Dwelley or Sanford are the garbanzo varieties used in this study. They are both relatively new to the industry. These two varieties are currently the only large seeded kabuli types with resistance to Ascochyta blight, a devastating disease in

¹Respectively, the authors are Extension Economist, Farm Management, Department of Agricultural Economics, and Chair and County Agent, Walla Walla, Washington State University.

- the Palouse area. Sanford matures about three to four days earlier than Dwelley, has slightly smaller seed, and somewhat higher yields.
2. The purchased certified seed price is \$0.75 per pound, but is expected to become less expensive over the next several years.
 3. Annual garbanzo yields average 1,750 pounds per acre with 75% or 1,312 pounds of Grade A, 15% or 263 pounds of Grade B, and 10% or 175 pounds of screenings.
 4. Prices received for the garbanzos are:

 \$0.25 per pound for Grade A garbanzos,
 \$0.17 per pound for Grade B garbanzos,
 \$0.035 per pound for screenings.
 5. Interest rate is 11.25%.
 6. Only the catastrophic (CAT) level of crop insurance is purchased. It is included as part of the overhead cost.
 7. Machinery is valued at current replacement prices. Machinery on farms in the study area is typically replaced with used machinery. While valuing machinery at replacement cost rather than original cost may overstate current production costs, it indicates the earnings needed to replace depreciable assets. As machinery costs rise, depreciation based on original purchase prices will understate the amount of capital required for asset replacement. When an enterprise is evaluated to determine its long-run viability, it is important to consider its ability to replace depreciable assets on a replacement cost basis.

The budget should be viewed as "typical" or "representative," rather than a mathematical average of a large number of producers. Quite different enterprise costs and returns may result where factors such as farm size, machinery complement and use, cultural practices, and yield differ from those assumed in this publication.

DISCUSSION OF BUDGET INFORMATION

The budget information for the garbanzo enterprise is reported in seven tables.

Table 1: Schedule of Operations and Estimated Costs Per Acre

Table 1 outlines the schedule of field operations by calendar month, type of machinery used, and hours used per acre for producing garbanzos. The costs are divided into two categories. Fixed costs are primarily associated with the ownership of machinery and land. The second category, variable costs, include cost of operating machinery, labor, and purchasing services and materials. Total cost is the sum of fixed and variable costs.

Machinery fixed costs include depreciation, interest on the investment, property taxes, housing, and insurance. Given the ownership of a specific machinery complement, these costs do not vary with the crops produced and are incurred whether or not a crop is grown. The per-hour fixed costs are determined by dividing total annual fixed cost by annual hours of machinery use for the representative farm. Machinery fixed costs for a specific field operation are determined by multiplying the machine hours per acre times the per-hour fixed costs reported in Table 6.

Land fixed costs include taxes and net rent. Net rent is based on rental agreements typical for the area. The typical lease for garbanzos is a crop-share agreement in which the landowner receives 20% of the crop. Also, the landowner typically pays 20% of the chemical costs and all real estate taxes. The lessee is responsible for all other production costs.

While the owner-operator does not actually experience a land rental cost, this charge represents the minimum return the owner-operator must have to justify growing the crop. Net rent is the income the owner-operator foregoes by producing the crop rather than renting to a tenant. Thus, the appropriate land charge for the owner-operator growing the crop is equal to the net rent lost. In this publication, net rent is termed an opportunity cost to indicate that it is not an out-of-pocket expense, but rather a return that is foregone as a result of choosing to farm rather than rent the land.

Thus, net rent for garbanzos is calculated in the following manner:

\$65.60	.20 x 1,312 lbs. Grade A garbanzos x \$0.25/lb.
8.94	.20 x 263 lbs. Grade B garbanzos x \$0.17/lb.
<u>1.22</u>	.20 x 175 lbs. screenings x \$0.035/lb.
75.76	Gross revenues
- 5.79	.20 of chemicals
<u>- 3.00</u>	Real estate taxes
\$66.97	Net rent

To determine the profitability of crop production relative to other activities, you may want to consider these foregone returns, or opportunity costs, along with the usual production expenses. Alternatively you may want to identify any land costs that are cash costs, such as interest payments on loans outstanding or land rent payments, and treat them as cash costs and not as opportunity costs. Changes in land value are not considered to be a part of the garbanzo enterprise.

Variable costs vary directly by the number of acres produced and by crop. Variable costs include fuel, oil, repairs, fertilizer, chemicals, custom work, overhead, and interest on operating capital. Overhead is assumed to be 5% of variable costs and includes utilities, legal services, accounting, organization dues, periodical subscriptions, business travel, CAT insurance, etc. Interest on operating capital is calculated over the period from the time the expense is incurred until harvest, based on an annual rate of 11.25%. Machine operating labor, including that provided by the owner-operator, is also included as a variable cost. Of course, the charge for labor provided by the owner-operator is an opportunity cost and not an out-of-pocket cost. It represents the return owner-operators are eligible for had they used their labor in the next best alternative.

Table 2: Materials and Services Used Per Acre

In Table 1, dollar figures for services and materials used by different operations are listed under the "Service" column and "Materials" column. Table 2 lists, by operation, specific services or materials used, quantities used, and prices paid.

Table 3: Itemized Cost Per Acre

Table 3 itemizes the costs appearing in Table 1: Schedule of Operations and Estimated Costs Per Acre. Most of the items are self-explanatory or have been explained previously. Interest on machinery warrants additional explanation.

Machinery interest costs are calculated on the average annual investment in the machine. The formula used to calculate the average machine investment is:

$$\frac{\text{Purchase Cost} + \text{Salvage Value}}{2}$$

The 11.25% interest charge made against this average investment represents either an opportunity cost (returns foregone by investing in the machine rather than in an alternative investment) or interest paid on money borrowed to finance the machine purchase, or a combination of both. Interest cost for one acre of garbanzos is determined by multiplying the respective machine and/or tractor hours per acre times the per-hour interest costs (Table 6).

Table 4: Summary of Receipts, Costs, and Returns Per Acre

Table 4 summarizes per-acre receipts, costs and returns for a garbanzo enterprise under the assumptions of this study. The returns are expressed as net returns to management. This is the return the owner-operator realizes after accounting for all costs, except management, including \$10.00 per hour for operator labor, net land rental cost, and an 11.25% return on all capital assets owned or borrowed. Since seed prices for Dwelley and Sanford garbanzo seed are expected to vary widely during the next several years, a footnote to Table 4 compares net returns at several different seed prices.

Table 5: Machinery Complement

Table 5 lists the machinery complement used to calculate the machine costs for this study. Included are a description of each machine, current replacement value, years until trade, salvage value in current prices, annual hours of use, annual repair costs, fuel type and consumption.

Table 6: Hourly Machine Costs

Table 6 lists the fixed, variable, and total hourly cost of operating each piece of machinery listed in Table 5.

Table 7: Input Prices

The prices used for the inputs in this study are listed in Table 7.

TABLE 1: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PRODUCING GARBANZOS, FOLLOWING WHEAT, IN WALLA WALLA COUNTY, WASHINGTON

OPERATION	TOOLING	MTH YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
						FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
					\$	\$	\$	\$	\$	\$	\$	\$
DISC ¹	200HP-CT, 21' OFFSET DISC	OCT 1994	.14	.16	5.61	3.07	1.57	.00	.00	.48	5.12	10.73
HARROW	120HP-CT, 54' TINE HARROW	OCT 1994	.05	.06	.69	.82	.55	.00	.00	.14	1.51	2.20
PLOW	200HP-CT, 10BTM PLOW	OCT 1994	.17	.18	6.60	5.29	1.83	.00	.00	.73	7.86	14.46
CULTIVATE (2X)	200HP-CT, 36' CULTIVATOR	MAR 1995	.13	.15	6.94	2.67	1.46	.00	.00	.23	4.36	11.30
HAUL WATER ²	2 TON TRUCK W/SLIP TANK	APR 1995	.01	.01	.13	.10	.15	.00	.00	.01	.27	.39
SPRAY/HARROW	120HP-CT, RENTED 50' SPRAY/HAR	APR 1995	.05	.06	.28	.65	.60	2.75	15.38	.91	20.29	20.57
CULTIVATE	200HP-CT, 36' CULTIVATOR	APR 1995	.07	.07	3.47	1.33	.73	.00	.00	.10	2.16	5.63
HAUL SEED	2 TON TRUCK	APR 1995	.02	.03	.26	.21	.30	.00	.00	.02	.53	.79
PLANT	120HP-CT, 3 GANG AIR DRILLS	APR 1995	.10	.12	7.89	2.84	1.20	.00	107.80	5.24	117.09	124.98
HARROW	120HP-CT, 54' TINE HARROW	APR 1995	.05	.06	.69	.82	.55	.00	.00	.06	1.43	2.12
HAUL WATER ²	2 TON TRUCK W/SLIP TANK	APR 1995	.01	.01	.13	.10	.15	.00	.00	.01	.27	.39
PACK	120HP-CT, 40' PACKER	APR 1995	.07	.07	2.31	1.05	.73	.00	.00	.08	1.87	4.17
SPRAY	120HP-CT, RENTED 50' SPRAYER	APR 1995	.05	.06	.28	.65	.60	1.25	9.55	.56	12.62	12.90
SPOT SPRAY ³	CUSTOM AERIAL (HELICOPTER)	JUN 1995	.00	.00	.00	.00	.00	1.00	3.50	.13	4.63	4.63
HARVEST ⁴	24' COMBINE	AUG 1995	.20	.22	24.48	5.38	2.20	.00	.00	.07	7.65	32.13
HAUL	2 TO 5 YEAR OLD TRUCK	AUG 1995	.07	.11	.85	.69	1.10	.00	.00	.02	1.81	2.66
HAUL	10 TO 15 YEAR OLD TRUCK	AUG 1995	.07	.11	.67	.72	1.10	.00	.00	.02	1.83	2.51
LAND COST	NET RENT	SEP 1995	.00	.00	66.97	.00	.00	.00	.00	.00	.00	66.97
MACH TRANSPT	2 TON TRUCK	ANN 1995	.01	.01	.13	.10	.11	.00	.00	.01	.23	.36
WEED CONTROL	4WD ATV W/SPRAYER	ANN 1995	.02	.02	.18	.04	.23	.00	.50	.04	.81	.99
MISC USE	3/4 TON PICKUP	ANN 1995	.25	.29	2.02	2.29	2.87	.00	.00	.29	5.45	7.47
MISC USE	52HP-WT W/BUCKET	ANN 1995	.05	.06	.21	.17	.58	.00	.00	.04	.79	1.00
MISC USE	4WD ATV	ANN 1995	.04	.04	.27	.06	.40	.00	.00	.03	.49	.76
TAXES	LAND TAXES	ANN 1995	.00	.00	3.00	.00	.00	.00	.00	.00	.00	3.00
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN 1995	.00	.00	.00	.00	.00	.00	9.95	.00	9.95	9.95
TOTAL PER ACRE			1.62	1.90	134.06	29.07	19.01	5.00	146.68	9.24	209.00	343.06

¹THE DISC OPERATION MAY OR MAY NOT BE PERFORMED DEPENDING ON THE AMOUNT OF STRAW ON THE GROUND.

²SLIP TANK SUPPLIED BY DEALER.

³APPROXIMATELY 20% OF THE ACREAGE SPRAYED.

⁴SOME PRODUCERS SWATH BEFORE COMBINING.

Table 2: Materials and services used per acre by operation for producing garbanzos

Operation		Materials and/or Services
Spray/Harrow	April	1.0 pint of Treflan @ \$4.60/pint 2.0 ounces of Pursuit @ \$5.39/ounce Rented 50' sprayer/sabretooth harrow @ \$2.75/acre
Plant	April	140 lbs. of seed w/Captan and Mertect LSP @ \$0.75/lb. Innoculant @ \$0.02/lb. of seed
Spray	April	5.0 ounces of Sencor/Lexone @ \$1.91/oz. Rented 50' sprayer @ \$1.25/acre
Spot spray ¹	June	1.0 pint of Poast @ \$16.00/pint 1.0 quart of prime oil @ \$1.50/quart Aerial applied by helicopter @ \$5.00/acre
Weed control	Annual	Non-select herbicide @ \$0.50/acre
Overhead	Annual	5% of variable cost

¹Approximately 20% of the acreage sprayed.

TABLE 3: ITEMIZED COST PER ACRE FOR PRODUCING GARBANZOS,
FOLLOWING WHEAT, IN WALLA WALLA COUNTY, WASHINGTON

		PRICE OR		VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	COST	FARM
VARIABLE COSTS		\$		\$	
TREFLAN	PINT	4.60	1.00	4.60	
PURSUIT	OZ.	5.39	2.00	10.78	
50' SPRAY/SABTH HARROW	ACRE	2.75	1.00	2.75	
SEED W/CAPTAN&MERTECT	LB.	.75	140.00	105.00	
INNOCULANT	ACRE	2.80	1.00	2.80	
SENCOR/LEXONE	OZ.	1.91	5.00	9.55	
50' SPRAYER	ACRE	1.25	1.00	1.25	
POAST	PINT	16.00	.20	3.20	
PRIME OIL	QT.	1.50	.20	.30	
CUSTOM AERIAL	ACRE	5.00	.20	1.00	
NON-SELECT HERBICIDE	ACRE	25.00	.02	.50	
LABOR (TRAC/MACH)	HOURL	10.00	1.90	19.01	
TRACTOR REPAIR	ACRE	9.69	1.00	9.69	
TRACTOR FUEL/LUBE	ACRE	6.42	1.00	6.42	
MACHINERY REPAIRS	ACRE	11.11	1.00	11.11	
MACHINE FUEL/LUBE	ACRE	1.85	1.00	1.85	
INTEREST ON OP. CAP.	ACRE	9.24	1.00	9.24	
OVERHEAD	ACRE	.05	199.05	9.95	
TOTAL VARIABLE COST				209.00	
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	4.98	1.00	4.98	
TRACTOR INTEREST	ACRE	5.12	1.00	5.12	
TRACTOR INSURANCE	ACRE	.27	1.00	.27	
TRACTOR TAXES	ACRE	.82	1.00	.82	
TRACTOR HOUSING	ACRE	.46	1.00	.46	
MACHINE DEPRECIATION	ACRE	20.44	1.00	20.44	
MACHINE INTEREST	ACRE	24.57	1.00	24.57	
MACHINE INSURANCE	ACRE	1.31	1.00	1.31	
MACHINE TAXES	ACRE	3.93	1.00	3.93	
MACHINE HOUSING	ACRE	2.18	1.00	2.18	
NET RENT	ACRE	66.97	1.00	66.97	
LAND TAX	ACRE	3.00	1.00	3.00	
TOTAL FIXED COST				134.06	
TOTAL COST				343.06	

Table 4: Summary of Receipts, Costs, and Returns Per Acre for Garbanzos,
Walla Walla County

	Price/Unit	Quantity	Value or Cost
	\$		\$
Gross Receipts From Production			
Grade A Garbanzos	0.25	1,312	328.00
Grade B Garbanzos	0.17	263	44.71
Screenings	0.035	175	<u>6.12</u>
Total Gross Receipts			378.83
Less: Variable Cost			<u>209.00</u>
Returns Over Variable Cost			169.83
Less: Fixed Cost			
Tractor & Machinery			64.09
Net Rent			66.97
Land Taxes			<u>3.00</u>
Net Returns to Management			<u>35.77</u>

Note: In the above calculations, a purchased seed cost of \$0.75/lb. was used. As purchased seed prices vary, net returns to management varied as follows:

<u>Seed Price</u>	<u>Net Return</u>
\$ 0.55	\$66.54
0.65	51.15
0.75	35.75
0.85	20.37
0.95	4.98

All net return calculations include appropriate changes in interest and overhead costs.

TABLE 5: MACHINERY COMPLEMENT

DESCRIPTION	REPLACEMENT VALUE	YEARS OF TRADE	SALVAGE VALUE	ANNUAL HOURS OF USE	ANNUAL REPAIR	FUEL TYPE	GALLONS PER HOUR
	\$		\$		\$		
200HP-CT, 10YR. OLD	50,000	15	10,000	550	4,800	DIESEL	6.5, 8.0 ¹
120HP-CT, 15YR. OLD	15,000	10	3,000	450	4,000	DIESEL	4.5
52HP-WT W/BUCKET,	10,000	20	2,000	300	200	DIESEL	3.0
54' TINE HARROW, NEW	10,000	12	2,000	200	400		
21' OFFSET DISC, NEW	26,000	12	5,200	160	850		
36' CULTIVATOR, NEW	20,000	15	4,000	75	280		
36" DISC AIR DRILL,	40,000	12	8,000	85	1,200		
10 BTM PLOW, NEW	27,000	15	5,400	150	2,100		
40' PACKER, NEW	20,000	15	4,000	100	140		
240 COMBINE, 6YR.	130,000	15	26,000	150	3,000	DIESEL	7.5
2400N TRUCK, 2YR.	20,000	20	4,000	200	1,620	GAS	2.5
2400N TRUCK, 12YR.	9,000	10	1,800	150	1,200	GAS	3.0
3/4-TON PICKUP, NEW	20,000	7	4,000	500	2,500	GAS	3.0
4WD ATV, NEW	5,000	10	1,000	125	150	GAS	.25
ATV SPRAYER, NEW	500	10	0	40	10		

¹DEPENDS ON THE FIELD OPERATION BEING PERFORMED.

TABLE 6: HOURLY MACHINERY COSTS

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPREC-IATION	INTER-EST	INSUR-ANCE	TAXES	HOUSING	TOTAL FIXED COST	REPAIR	FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST
	\$												
200HP-CT, 10YR	50,000.00	15	550	4.85	6.14	.33	.98	.55	12.84	8.73	5.98 ¹	14.71	27.55
120HP-CT, 15YR	15,000.00	10	450	2.67	2.25	.12	.36	.20	5.60	8.89	4.14	13.03	18.63
52HP-WT W/BUCKET	10,000.00	20	300	1.33	2.25	.12	.36	.20	4.26	.67	2.76	3.43	7.69
54' TINE HARROW	10,000.00	12	200	3.33	3.38	.18	.54	.30	7.73	2.00	.00	2.00	9.73
21' OFFSET DISC	26,000.00	12	160	10.83	10.97	.59	1.76	.98	25.12	5.31	.00	5.31	30.43
20' CHISEL, 5YR	5,000.00	15	85	3.14	3.97	.21	.64	.35	8.31	3.53	.00	3.53	11.84
36' CULTIVATOR	20,000.00	15	75	14.22	18.00	.96	2.88	1.60	37.66	3.73	.00	3.73	41.40
10 BOTTOM PLOW	27,000.00	15	150	9.60	12.15	.65	1.94	1.08	25.42	14.00	.00	14.00	39.42
40' PACKER	20,000.00	15	100	10.67	13.50	.72	2.16	1.20	28.25	1.40	.00	1.40	29.65
30' DISC AIR DRILL	40,000.00	12	85	31.37	31.76	1.69	5.08	2.82	72.74	14.12	.00	14.12	86.85
24' COMBINE, 6YR	130,000.00	15	150	46.22	58.50	3.12	9.36	5.20	122.40	20.00	6.90	26.90	149.30
2TON TRUCK, 2YR	20,000.00	20	200	4.00	6.75	.36	1.08	.60	12.79	8.10	2.30	10.40	23.19
2TON TRUCK, 12YR	9,000.00	10	150	4.80	4.05	.22	.65	.36	10.07	8.00	2.76	10.76	20.83
3/4 TON PICKUP	20,000.00	7	500	4.57	2.70	.14	.43	.24	8.09	5.00	4.14	9.14	17.23
4WD ATV	5,000.00	10	125	3.20	2.70	.14	.43	.24	6.72	1.20	.35	1.54	8.26
ATV SPRAYER	500.00	10	40	1.25	.70	.04	.11	.06	2.17	.25	.00	.25	2.42

¹ASSUMING A FUEL CONSUMPTION RATE OF 6.5 GALLONS PER ACRE.

Table 7: Input Prices

Item name	Unit	Price
		\$
Rental 50' sprayer/sabre tooth harrow	Acre	2.75
Rental 50' sprayer	Acre	1.25
Custom aerial application	Acre	5.00
Seed	Lb.	.75
Innoculant	Lb. of Seed	.02
Treflan	Pint	4.60
Pursuit	Ounce	5.39
Sencor/Lexone	Ounce	1.91
Poast	Pint	16.00
Prime oil	Quart	1.50
Labor	Hour	10.00
Gasoline	Gallon	1.20
Diesel	Gallon	.80
Interest Percent	11.25	

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.

Alternate formats of our educational materials are available upon request for persons with disabilities. Please contact the Information Department, College of Agriculture and Home Economics.

Washington State University Cooperative Extension publications contain material written and produced for public distribution. You may reprint written material, provided you do not use it to endorse a commercial product. Please reference by title and credit Washington State University Cooperative Extension.

Issued by Washington State University Cooperative Extension and the U.S. Department of Agriculture in furtherance of the Acts of May 8 and June 30, 1914. Cooperative Extension programs and policies are consistent with federal and state laws and regulations on nondiscrimination regarding race, sex, religion, age, color, creed, national or ethnic origin; physical, mental or sensory disability; marital status, sexual orientation, and status as a Vietnam-era or disabled veteran. Evidence of noncompliance may be reported through you local Cooperative Extension office.

Published 1995. Subject codes 274, 340.A.

EB1802