

Profitability of Anaqeed Cooperative Enterprises (FY07) and the Financial Feasibility a Concrete Block Enterprise, Badia Region, Jordan

Jordan Component of the Sustainable Development of Drylands Project Report # 3

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Report # 1: Profitability Assessment of the Enterprises of the Anaqeed Cooperative Community-Based Project, Badia Region, Jordan, March 2007

Report # 2: Profitability Assessment of the Tal-Rimah Dairy Processing Factory Badia Region, Jordan, March 2007

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Background

Since mid-2005, New Mexico State University (NMSU) has worked cooperatively with the Jordan Badia Research and Development Center (BRDC) and University of Arizona's International Arid Lands Consortium (IALC). Part of the NMSU effort has been directed at assessing the profitability of the enterprises of two cooperatives that have been working closely with the BRDC. Earlier findings for the cooperatives were published in 2007. A dairy factory at the Tal Rimah Cooperative was found to be infeasible given existing markets and substantial resource costs.¹ The Tal Rimah Cheese Plant is no longer in operation as of this writing.

A second analysis was conducted to assess the various enterprises being conducted at the Anaqeed al Khair Cooperative.² In this report, eight enterprises were assessed based on the cost and returns data provided by the Anaqeed Cooperative. At the conclusion of fiscal 2006 (FY06), the Cooperative had been in operation for three years and some enterprises had already been abandoned. The NMSU team introduced the concept of accrual accounting for analyzing enterprise profitability and found four enterprises to be making money for the

¹ Gorman, et al. (March 2007). *Profitability Assessment of the Tal-Rimah Dairy Processing Factory Badia Region, Jordan*. Jordan Component of the Sustainable Development of Drylands Project, Report #2. New Mexico State University.

² Gorman, et al. (March 2007). *Profitability Assessment of the Enterprises of the Anaqeed Cooperative, Badia Region, Jordan*. Jordan Component of the Sustainable Development of Drylands Project, Report #1. New Mexico State University.

cooperative; honey, sheep, sun-dried tomatoes, and water hauling. The report notes that there was a learning curve for all of these operations and that improved management of these enterprises was, in part, responsible for their increased profitability.

The current report is a continuation of the work on the Cooperatives with the BRDC and the IALC. Since the Tal-Rimah Cooperative has ceased operation, this report is concerned with assessing the profitability of the fiscal year 2007 (FY07) activities conducted at the Anaqeed Cooperative. The fiscal year, for the purpose of this and previous reports begins on November 1 and concludes on October 31 of the following calendar year.

Fiscal 2007 Anaqeed Activities

During FY07 the Anaqeed Cooperative management continued operations in sun-dried tomatoes, honey, and sheep. The water hauling operation was discontinued and the capital equipment (a water truck) was sold. Two additional enterprises were added – a lamb feeding operation and a concrete block manufacturing enterprise. The lamb feeding operation is an extension of the sheep operation but the block business is entirely new to the Cooperative.

As discovered in the FY06 season, the profitability of sun-dried tomatoes was highest when the growing of the tomatoes was outsourced to a local farmer. Tomatoes were purchased from the farmer then processed and repackaged for sale to a distributor. Hence, revenues were obtained through value-added operations rather than production agriculture.

The honey operation continued as in previous years. Some 20 new hives were purchased in FY07 with a loss of only 3 hives. However, total honey production fell.

While sheep (and the sale of lambs) had been profitable in previous years, escalating world grain prices drove feed prices to levels that made these operations unsustainable. By the conclusion of the FY07 year, all sheep and lamb operations had been discontinued and there were no livestock remaining at the Anaqeed Cooperative.

As for the new enterprise, manufacturing of concrete blocks, the equipment necessary for the business was purchased earlier in the year. However, the production and sales of blocks had just gotten underway when data were being collected in late April 2008 for this report. Thus, since no actual operating financial data was available, this report includes proforma statements projecting the enterprise profitability using estimates collected from Anaqeed management.

The Cooperative has indicated an interest in continuing assessments of alternative value-added enterprises such as fiber arts made from wool, the production of natural dye plants, and growing medicinal herbs. These operations have the advantages of leveraging the existing resources (including the employment of women in rural areas) and minimizing the use of limited water resources. The NMSU team, in cooperation with the BRDC, is assessing the feasibility of fiber arts and allied industries during 2008 and 2009.

Sun-Dried Tomatoes

FY07 is the third year the Cooperative has been in the sun-dried tomato business. The first year the Cooperative was involved in tomato production, drying and packaging. In the second year the Cooperative began to contract the production of the tomatoes with a local cooperative member. This, it turned out, was a more profitable route. While the enterprise still lost money during the second year of the sun-dried tomato operation, it was apparent that the contract production approach was going to be a more successful route. The income statements generated for sun-dried tomatoes in FY05 and FY06 are presented for reference purposes in appendix A of this document (see appendix tables A-1 and A-2).

In FY07, the Cooperative was able to secure a contract to purchase “all of the packaged and sun-dried tomatoes it could provide”. The Cooperative contracted the growing of the tomatoes with the same farmer who provided tomatoes in FY06.

The income statement for sun-dried tomatoes for the FY07 year is presented in table1. As was the convention in the previous reports, the bottom line is shown as a net contribution to profit and G&A as general and administrative (G&A) costs have not been allocated to this enterprise.

Table 1. Sun-dried Tomato Enterprise (06-07)**Income Statement, 11/01/06 - 10/31/07**

	Quantity	Units	JD's /	
			Unit	Total
Revenue from sales				
Sun-dried tomatoes	1,085.5	kg	2.00	<u>2,171</u>
Total Sales				2,171
Cost of Goods Sold				
Beginning Inventory				-
Additions to inventory				
Plastic bags	4.0	kg	3.00	12
Salt	365.0	kg	0.10	37
Water	7.5	M ³	2.00	15
Fresh tomatoes	12.0	tons	70.00	840
Other	1.0	unit	38.00	38
Labor	395.6	day	1.00	396
Supervisor	0.0	unit	-	-
Ending inventory				<u>-</u>
Total COG before depr				1,337
Depreciation				80
Total COG				1,417
Contribution to profit and G&A				754
Loss of capital items				-
Net contribution to profit and G&A				<u>754</u>

As shown, sun-dried tomatoes were profitable for the Cooperative, generating 754 Jordanian Dinars (JOD) in FY07. The increase in profitability was derived, in part, from a greater volume sold and an increased per unit price. In FY06, the price paid per unit was 1.60 JOD. In FY07, the price paid increased to 2.00 JOD – a 25 percent increase. Per unit costs were similar to previous years. However, depreciation costs fell to 1/5th of those in FY06 (see table 2). This is because several of the capital items used in previous years were removed from service. The FY07 depreciation considers only the two concrete slabs used for drying the fruit.

Table 2. Income Statement Elements for Sun-dried Tomatoes by Years

	FY05	FY06	FY07
	----- JOD -----		
Total Revenue	728	1,360	2,171
Cost of Goods Before Depreciation	695	961	1,337
Depreciation	461	461	80
Loss of Capital Items	-	-	-
Net Contribution to Profit & G&A	(428)	(62)	754

With a commitment to buy as much as they can produce and a buyer who is willing to forward contract for that production, this is an enterprise that the Cooperative should continue to pursue and consider for expansion. Involving Cooperative members who farm in the area as growers of the tomato inputs

could create a measurable economic impact in the region. Additional work should be done to determine the levels of production the market might bear and if there are alternative tomato products or other dried products of interest to the current buyer of the sun-dried tomatoes.

Honey

Table 3 shows a comparison of the major elements of the income statement for honey. The complete income statements for the previous years of honey production are shown in appendix tables A-3, A-4, and A-5. After a slow start in the first two years of operation, the honey enterprise showed profits of 1,834 JOD in FY06 before declining to 207 JOD in FY 2007. This general increase in profitability was directly related to better understanding on how to manage the hives.

Table 3. Income Statement Elements for Honey by FY

	FY04	FY05	FY06	FY07
	----- JOD -----			
Total Revenue	2,060	1,090	4,441	3,991
Cost of Goods Before Depreciation	759	855	494	2,625
Depreciation	2,743	1,185	976	1,095
Loss of Capital Items	6,231	632	1,154	135
Net Contribution to Profit & G&A	(7,659)	(1,526)	1,834	207

While 20 new hives were purchased in FY07 and only 3 hives were lost, the total quantity of honey produced was 307 kg – a reduction of 60 kg from the FY06 production (Table 4). While the average price per kg was 13 JOD higher than that received in FY06, the lower volume produced meant reduced overall revenues in FY07.

With regard to costs, there are several factors of note. First, while supervision costs fell, labor costs went through the roof – from 45 JOD in FY06 to 923 JOD in FY07. While labor was just over 1 percent of sales revenues in FY06, it was over 23 percent of sales in FY07. Perhaps this is a reflection of better accounting for Cooperative labor. No matter, it is a notable increase that had a great influence on enterprise profitability.

Also notable in FY07 is the first time inclusion of a transportation expense category. No transportation costs were recorded in the data received for the previous years of the honey operation. These too are substantial at 913 JOD – 22.9 percent of total sales. Transportation when combined with labor in FY07 amounted to 46 percent of total sales whereas in FY06 these categories amounted to just over 1 percent of sales.

Table 4. Honey Enterprise (06-07)
Income Statement, 11/01/06 - 10/31/07

	Quantity	JD's/ Unit	Total
Revenue from sales			
1kg jars	150	13	1,950
1/2 kg jars	314	6.5	2,041
Total Sales			3,991
Cost of Goods Sold			
Beginning Inventory	0.0	0.00	-
Additions to Inventory			
Feed	129.0	0.40	52
Medicine	174.0	1.00	174
Water	4.0	1.20	5
Electricity	12.0	0.22	3
Jars (1/2)kg new	400.0	0.20	80
Jars (1kg)	300.0	0.32	96
Labels	500.0	0.28	140
Transportation	1.0	913.00	913
Labor	1.0	923.00	923
Supervision	1.0	200.00	200
Miscellaneous	1.0	40.00	40
Total COG before depr			2,625
Depreciation			1,095
Total COG			3,720
Less ending inventory of jars	1.0	0.00	72
Contribution to profit and G&A			342
Loss of capital items (bee hives)	3.0		135
Net contribution to profit and G&A			207

When considered in tandem, lower honey revenues and higher cost of operations resulted in lower profitability of the enterprise. The purchase of 20 additional hives is reflected in increased noncash depreciation costs. Therefore, while still profitable, the return of 207 JOD in FY07 fell well below what would have been projected based on FY06 results.

Sheep and Lamb Feeding Enterprises

In years previous, sheep and lamb feeding operations were maintained as a single enterprise. Beginning in FY07 the operations were treated separately in the accounting data. Income statements for the combined enterprises for the previous years of production are presented in appendix A of this document. However, they are not directly comparable with the FY 2007 statements presented below because of the separation into two enterprises.

FY07 was a difficult year for livestock production globally and for the Anaqeed cooperative. As grain prices escalated to unprecedented levels, farmers reduced or eliminated their livestock operations. Indeed, the Anaqeed Cooperative began FY07 with sheep production and expanded lamb feeding operations and closed the year having liquidated all livestock.

As shown in Table 5, the sheep enterprise was profitable in FY06 but resulted in a substantial loss in FY07. Liquidation of all sheep immediately after the close of FY07 resulted in a one-time cash inflow of 4,040 JOD in FY08.

Table 5. Income Statement Elements for Sheep by Fiscal Year

	FY04	FY05	FY06	FY07
	----- JOD -----			
Total Revenue	2,260	12,355	18,767	9,641
Cost of Goods Before Depreciation	5,202	10,708	10,072	6,752
Depreciation	4,035	5,929	5,512	4,844
Cost of Retained Lambs	4,586	2,766	731	-
Loss of Capital Items	713	-	380	2,296
Net Contribution to Profit & G&A	(3,104)	(1,516)	3,535	(4,251)

Table 6 presents the complete income statement for FY07 for the Sheep enterprise. In FY06 (see appendix table A-8) revenues were almost double those obtained in FY07. While the sales price of ewes rose almost 54 percent between FY06 and FY07, the quantity of sheep sold was not noticeably different. Missing from FY07 were revenues from the sale of goats and kid goats (2,022 JOD in FY06), the sale of milk (1,436 JOD in FY06), and the income from the lambs that had previously been included in the sheep operation (10,500 JOD in FY06). The revenues shown from lambs in the FY07 income statement are from animals sold by the sheep operation to the lamb feeding operation – this sale is reflected in the cost of good sold section of the lamb feeding enterprise shown in a later section of this report.

As indicated before, feed costs in FY07 Increased from 81.13 JOD per ton to 90.23 JOD per ton, an increase of more than 11%. It was also apparent that more feed was fed in FY07 on a per animal basis than in FY06. In FY06, feed costs were 37.6 percent of sales. During FY07 feed costs rose to 50.8 percent of sales. The higher cost of goods per animal sold and substantial (although decreasing because of less inventory) depreciation costs drove the sheep operation deep into the red in FY07. The loss was further compounded by a loss of 28 head.

Table 6. Sheep Enterprise (06-07)
Income Statement, 11/01/06 - 10/31/07

	Quantity	Units	JD's / Unit	Total
Revenue from sales				
Wool	141.0	kg	1.00	141
Milk	10.0	kg	0.40	4
Ewes	76.0	head	108.00	8,208
Rams	7.0	head	89.00	623
Lambs	7.0	head	95.00	<u>665</u>
Total Sales				9,641
<u>Cost of Goods Sold</u>				
Beginning Inventory	0.0			-
Additions to Inventory				
Feed	54.3	ton	90.23	4,895
Medicine	1.0	unit	146.00	146
Water	201.0	M ³	1.20	241
Farm labor	12.0	months	115.75	1,389
Electric	367.0	KW	0.22	81
Miscellaneous	1.0	each	109.00	<u>109</u>
Total COG before depr				6,752
Depreciation				4,844
Less costs of lambs retained for breeding herd (06)	0.0	head	-	-
Less costs of lambs retained for breeding herd (07)	0.0	head	-	-
Total COG				11,596
Less ending inventory				
Contribution to profit and G&A				(1,955)
Loss of capital items	28.0	head	82.00	2,296
Net contribution to profit and G&A				<u>(4,251)</u>

Sheep Liquidation

As discussed previously, all of the remaining sheep were sold shortly after the end of the FY07 year. A total of 54 head were reported sold at an average price of 74.81 JOD per head. This resulted in a cash inflow of 4040 JOD at the beginning of FY08. It should be noted that our accounting of the number of sheep over the course of the project differs from those indicated in the records provided by the Anaqeed staff. Our accounting indicates that there were 156 head (including ewes and rams) at the beginning of FY07. The sale of 83 head (76 ewes and 7 rams) plus a death loss of 28 head results in a reduction of 111 head. Thus, 156 less 111 yields a net of 45 head rather than the 54 indicated as sold during sheep liquidation. We suspect that there may have been some lambs retained in the sheep flock that may have been included in the final count.

Lamb Feeding Enterprise

As stated earlier, over the life of the enterprise, lambs were historically included as part of the sheep enterprise. The data provided show that only 7 lambs were purchased from the Anaqeed sheep flock. Another 115 were purchased externally at a price of 95 JOD each. This 95 JOD price was used for accounting purposes as the price that the lambing operation would have paid for those purchased from the sheep enterprise as shown in table 6. While the Anaqeed records indicate no cash exchange, we have included it in our statements to reconcile this exchange.

Conversations with the Anaqeed staff uncovered that the original expectations were that these lambs could be sold for special events and holidays at elevated prices. Unfortunately, as shown in the lamb feeding enterprise income statement, this did not come to fruition. As shown in table 7, the lambs sold for an average price of 67.74 JOD, which was 27.26 JOD less than the purchase cost. This including the cost of other inputs such as labor, medicine, feed and miscellaneous items, the lamb feeding enterprise resulted in a net loss of 7,657 JOD.

Table 7. Lamb Feeding Enterprise (06-07)

Income Statement, 11/01/06 - 10/31/07				
	Quantity	Units	JD's / Unit	Total
Revenue from sales				
Lambs ¹	113.0		67.74	7,655
Total Sales				7,655
Cost of Goods Sold				
Beginning Inventory	0.0			-
Additions to Inventory				
Lambs purchased (external)	115.0	head	95.00	10,925
Lambs purchased (Coop)	7.0	head	95.00	665
Feed	33.0	ton	63.42	2,093
Medicine	1.0	unit	199.40	199
Water	1.0	each	131.00	131
Electric	1.0	each	37.00	37
Farm labor				
Full-time	1.0	each	636.20	636
Part-time (temporary)	1.0	each	62.00	62
Miscellaneous	1.0	each	93.80	94
Total COG before depr				14,842
Depreciation				470
Total COG				15,312
Less ending inventory				-
Contribution to profit and G&A				(7,657)
Loss of capital items	0.00	head	-	-
Net contribution to profit and G&A				(7,657)

¹ While 122 lambs were purchased in FY07, nine lambs died and thus were not sold.

Proforma Income Statement for Concrete Blocks

In FY07 the Anaqeed Cooperative membership made a decision to liquidate the truck being used in the water hauling operation and utilize the sales proceeds to purchase the equipment needed to manufacture concrete blocks to be sold in the building trades industry. Although no formal assessment of feasibility was performed, preliminary indications were that a substantial regional demand existed. Anecdotal evidence in the way of success stories of others engaged in this enterprise showed the block business could be a profitable venture.

Table 8 illustrates the proforma income statement generated based on the data collected from the Anaqeed staff in April of 2008. At the time, few blocks had actually been produced and none sold. Thus, the income statement reflects projected sales volumes and prices. Because some production was underway, costs were better known. As shown, given the assumptions provided and detailed below table 8, the block business could be highly profitable for the Cooperative.

Block Enterprise Assumptions

The assumptions made in the development of the proforma statements for the Anaqeed Cooperative concrete block enterprise are listed in the following sections.

1. Land and Capital Equipment

During FY07, the Cooperative purchased the needed equipment to produce concrete blocks. The quantities, costs, estimated life of capital items, and the annual depreciation, are shown in table 9 below. As shown, a total of 15,185 JOD were expended for land and equipment. Based on the expected life for equipment and estimated salvage values, straight-line depreciation was calculated. Annual depreciation was estimated at 945 JOD.

2. Block Production and Pricing

At the time the NMSU team collected data in April 2007, production of blocks had just begun. The Cooperative plans to produce four different block types – 10, 15, and 20 cm blocks and concrete ribs used for structural support. The production of 15 cm blocks was already underway as these are in highest demand. Some 3,000 15 cm blocks had already been purchased on contract.

Table 8. Proforma Income Statement for Concrete Blocks

Proforma Income Statement, 4/01/08 - 3/31/08				
	Quantity	Units	JOD / Unit	Total
Revenue from sales				
15 cm blocks	115,064	each	0.34	39,122
20 cm blocks	86,298	each	0.36	31,067
10 cm blocks	43,148	each	0.28	12,082
Ribs	43,148	each	0.36	15,533
Total Sales				97,804
Cost of Goods Sold				
Beginning Inventory				-
Additions to inventory				
Cement	1	each	32,781	32,781
Sand	1	each	13,112	13,112
Water	1	each	1,639	1,639
Electricity	1	each	656	656
Fuel	1	each	9,834	9,834
Parts for block machines	1	each	2,550	2,550
Labor				-
Manufacturing	1	each	11,933	11,933
Lifting and loading	1	each	656	656
Driver	1	each	1,639	1,639
Management & supervision (12%)	1	each	11,736	11,736
Miscellaneous				300
Depreciation				945
Total Additions to Inventory				87,781
Ending inventory (raw materials)				
Ending inventory (finished goods)				1,416
Total COG				89,197
Contribution to profit and G&A				8,607
Loss of capital items				-
Net contribution to profit and G&A				8,607

Table 9. Capital Items Purchased for the Concrete Block Enterprise

Items	Quantity	Cost/unit	Units	Total	Life	SV	Ann Depr
Land	2	300	du	600	-		
Water tank (50m ²)	2	500	each	1,000	30	200	33
Truck	1	12,500	each	12,500	15	2,500	833
Block shaping machine	4	225	each	900	15	180	60
Hand tools & furnishings	1	185	each	185	10	37	19
Total				15,185			945

Table 10 illustrates the annual production schedule as projected by the Anaqeed staff for the first year of operation. As can be seen, almost 300,000 blocks are projected for production in year one. In the process of manufacturing the blocks, it was assumed that 2 percent of those produced would be broken and unsalable.

Thus, the table shows the number of blocks available for sale once breakage has been considered. It was further assumed that 98 percent of the blocks manufactured would be sold and the remainder held in inventory.

Table 10. Projected Block Production, First Year of Operation

Item	Number of blocks made	Number of blocks broken	Available for sale	Number sold in FY08	Inventory from previous years	Held in inventory
15 cm blocks	119,808	2,396	117,412	115,064	-	2,348
20 cm blocks	89,856	1,797	88,059	86,298	-	1,761
10 cm blocks	44,928	899	44,029	43,148	-	881
Ribs	44,928	899	44,029	43,148	-	881
Total production	299,520	5,991	293,529	287,658	-	5,871

The selling prices were estimate based on existing local prices. The selling price of the 15 cm blocks was corroborated by the price offered for the 3,000 contracted blocks being produced at the time of our visit. Selling prices were; .34 JOD for 15 cm blocks, .36 JOD for 20 cm blocks, .28 JOD for 10 cm blocks, and .36 JOD for ribs. These prices are shown in the income statement revenue section under JOD per unit.

3. Operating Costs

The Anaqeed staff provided data on the production of blocks based on the delivery of 10 cm³ of sand. This is the capacity of the dump truck that the Cooperative purchased earlier in the year. Each 10 cm³ was estimated to yield a certain number of blocks, requiring varied amounts of other materials and labor. Thus, the costs associated were estimated using an “engineering cost basis” – a measurement of the inputs needed along the production process.

From these estimates, we were then able to convert the costs to a per block basis by block type. Finally, using the unit costs in concert with the projected number of blocks, we were able to estimate the total annual costs by block type. These costs are shown in table 11. The final column of table 11 for each of the inputs can be seen directly reflected in the proforma income statement presented earlier (table 8).

Table 11. Costs of Materials and Labor for the Concrete Block Enterprise

Item	Cement	Water	Electricity	Fuel	Sand	Labor		
						Manufacturing	Lifting	Truck Driver
15 cm blocks	13,312	666	266	3,994	5,325	5,059	266	666
20 cm blocks	11,981	599	240	3,594	4,792	3,954	240	599
10 cm blocks	2,995	150	60	899	1,198	899	60	150
Ribs	4,493	225	90	1,348	1,797	2,022	90	225
Total Costs (Yr 1)	32,781	1,639	656	9,834	13,112	11,933	656	1,639

Noticeably absent from the Anaqeed estimates were the costs of supervision and management (including marketing and selling the blocks). These functions (especially marketing and sales) are critical to the success of the operation. Therefore, we have built this cost in as a variable cost. That is, it assumes that these costs are only incurred as blocks are produced. While it is likely that some base level of management and supervision cost would be incurred on a fixed basis, we expect that the marketing costs will be the most substantial (and built

on a variable scale). These costs might be as much as 15 percent of each sold block. We have used 12 percent for our estimates.

In collecting the data, we also noted that repair and maintenance of the equipment was missing. According to the Anaqeed staff, the lion's share of this expense will be associated with the block machines where the shaping box must be replaced every 10,000 blocks at a cost of 85 JOD each time. This cost has been included in the proforma statement as "parts for block machines".

Finally, to capture any unknown costs that might be incurred, we have included 300 JOD under a miscellaneous line. Miscellaneous cost might include for example, such things as repair and maintenance of the truck, unforeseen labor costs, or unexpected increases in base materials costs.

Sensitivity analysis

Because the proforma income statement is heavily dependent upon best estimates made by the Anaqeed staff rather than on actual historical records, it may subject to substantial variability. While component costs such as cement are relatively volatile, the revenues are especially uncertain. Thus, we have performed a sensitivity analysis of both price and volume to assess how the returns to the Cooperative might look under alternative production conditions. These results are shown in the table 12 below.

Table 12. Sensitivity to Changes in Sales Volume and Price

	<u>Selling Price</u>		
	Down 10%	As projected	Up 10%
	----- JOD -----		
<u>Pieces Sold</u>			
Down 10%	(124)	7,622	15,386
As projected	0	8,607	17,214
Up 10%	125	9,592	19,060

As shown, because most of the costs associated with the production of concrete blocks were assumed to be variable, returns are not terribly sensitive to changes in sales volume – block production and cost of goods correspond and the per unit margins change very little. However, changes in the selling price have a substantial impact on the enterprise profitability. A 10 percent reduction in the price of blocks results in an enterprise where returns are marginal. While a 10 percent increase in selling price doubles the enterprise profits. Hence, it seems imperative that the Cooperative achieves the selling prices it has forecast if this operation is to be viable.

Continuing and Future Work on Value-Added Enterprises

While the initial work done for the Anaqeed Cooperative involved helping to assess the profitability of existing enterprises and considering the feasibility of other enterprises, the NMSU team was also tasked with assisting the Cooperative in finding new enterprises that could utilize existing resources to create new employment opportunities. New enterprises for consideration must take into account water constraints and the utilization of unemployed and underemployed human resources (especially the women of the region).

Prior to the escalation of feed costs, one of the assets of the Cooperative was the wool in the sheep enterprise. With wool and abundant labor resources as available assets, the NMSU team developed a value chain of enterprises that could be considered by the Cooperative. This value chain is graphically depicted in appendix B of this document.

However, with sheep numbers declining, the abundance of wool as a resource has fallen, but there still is expected to be more than sufficient wool produced in the Badia, to support substantial wool based fiber arts industry. Additionally, many of the value added components proposed still could prove fruitful for the Cooperative or other cooperatives in the Badia. With Jordan's rich tourism resources and potential export opportunities, demand for hand-made products has the potential for expansion. During FY08, the NMSU team will research these opportunities with a special focus on how fiber arts industries might generate employment for the Cooperative's women.

An additional venue for exploration is the explosive growth in demand for "green and natural products". The Anaqeed Cooperative or other cooperatives may enjoy competitive advantage in the production of the plants and herbs used in making natural dyes. Many of these natural dye plants thrive in low water environments and could be cultivated by the Cooperative. These dye plant would be an important part of a fiber arts venture. The NMSU team in its continuing work will explore this avenue in the Badia.

Appendix A
Income Statements from Previous Years
Sun-dried Tomatoes, Honey, and Sheep

Appendix Table A-1. Income Statement for Sun-dried Tomato Operation (04-05)

Income Statement, 11/01/04 - 10/31/05

	Quantity	Units	JD's / Unit	Total
Revenue from sales				
Sun-dried tomatoes	455.0	kg	1.60	<u>728</u>
Total Sales				728
Cost of Goods Sold				
Beginning Inventory				0
Additions to inventory				
Tomato seeds	1.0	kg	36.50	37
Plastic bags	2.0	kg	4.00	8
Fertilizer and pesticide	1.0	unit	15.00	15
Salt	250.0	kg	0.06	15
Water	35.0	M ³	2.00	70
Raw product purchases (tomato)	450.0	kg	0.40	180
Labor	38.0	day	5.00	190
Supervisor	1.0	unit	180.00	180
Ending inventory				<u>0</u>
Total COG before depr				695
Depreciation				<u>461</u>
Total COG				1156
Contribution to profit and G&A				-428
Loss of capital items				0
Net contribution to profit and G&A				<u>-428</u>

Appendix Table A-2. Income Statement for Sun-dried Tomato Operation (05-06)
Income Statement, 11/01/05 - 10/31/06

	Quantity	Units	JD's / Unit	Total
Revenue from sales				
Sun-dried tomatoes	850.0	kg	1.60	<u>1360</u>
Total Sales				<u>1360</u>
Cost of Goods Sold				
Beginning Inventory				0
Additions to inventory				
Tomato seeds	0.0	kg	36.50	0
Plastic bags	5.0	kg	4.00	20
Fertilizer and pesticide	0.0	unit	0.00	0
Salt	350.0	kg	0.06	21
Water	10.0	M ³	2.00	20
Raw product purchases (tomato)	10.0	tons	70.00	700
Labor	40.0	day	5.00	200
Supervisor	0.0	unit	0.00	0
Ending inventory				<u>0</u>
Total COG before depr				961
Depreciation				<u>461</u>
Total COG				1422
Contribution to profit and G&A				-62
Loss of capital items				0
Net contribution to profit and G&A				<u>-62</u>

Appendix Table A-3. Income Statement for Honey Operation (03-04)**Income Statement, 11/01/03 - 10/31/04**

	Quantity	JD's / Unit	Total
Sales			
Honey Enterprise			
Revenue from sales	206.0	10.00	2,060
Cost of Goods Sold			
Beginning Inventory	0.0	0.00	0
Additions to Inventory			
Feed	97.5	0.40	39
Medicine	1.0	54.00	54
Water	2.0	1.00	2
Electricity	10.0	0.22	2
Jars (1/2kg)	300.0	0.15	45
Jars (1kg)	100.0	0.25	25
Supervisor	3.0	50.00	150
Labor	122.0	3.62	<u>442</u>
Total COG before depr			759
Depreciation			<u>2,743</u>
Total COG			3,501
Less ending inventory of jars	1.0	13.20	13
Contribution to profit and G&A			-1,428
Loss of capital items (bee hives)	37.0	168.40	<u>6,231</u>
Net contribution to profit and G&A			<u>-7,659</u>

Appendix Table A-4. Income Statement for Honey Operation (04-05)
Income Statement, 11/01/04 - 10/31/05

	Quantity	JD's / Unit	Total
Sales			
Honey Enterprise			
Revenue from sales	109.0	10.00	1,090
<u>Cost of Goods Sold</u>			
Beginning Inventory	0.0	0.00	0
Additions to Inventory			
Feed	87.5	0.40	35
Medicine	6.0	20.00	120
Water	2.0	1.00	2
Electricity	10.0	0.22	2
Jars (1/2kg)	300.0	0.15	45
Jars (1kg)	100.0	0.25	25
Supervisor	1.0	300.00	300
Labor	90.0	3.62	<u>326</u>
Total COG before depr			855
Depreciation			<u>1,185</u>
Total COG			2,040
Less ending inventory of jars	1.0	55.50	56
Contribution to profit and G&A			-894
Loss of capital items (bee hives)	5.0	126.30	<u>632</u>
Net contribution to profit and G&A			<u>-1,526</u>

Appendix Table A-5. Income Statement for Honey Operation (05-06)
Income Statement, 11/01/05 - 10/31/06

	Quantity	JD's / Unit	Total
Sales			
Honey Enterprise			
Revenue from sales	367.0	12.10	4,441
<u>Cost of Goods Sold</u>			
Beginning Inventory	0.0	0.00	0
Additions to Inventory			
Feed	48.8	0.40	20
Medicine	4.0	15.00	60
Water	2.0	1.00	2
Electricity	10.0	0.22	2
Jars (1/2kg)	230.0	0.15	35
Jars (1kg)	124.0	0.25	31
Supervisor	1.0	300.00	300
Labor	15.0	3.00	<u>45</u>
Total COG before depr			494
Depreciation			<u>976</u>
Total COG			1,470
Less ending inventory of jars	1.0	17.10	17
Contribution to profit and G&A			2,988
Loss of capital items (bee hives)	16.0	84.20	<u>1,154</u>
Net contribution to profit and G&A			<u>1,834</u>

Appendix Table A-6. Income Statement for Sheep (Few Goats) Operation (03-04)

Income Statement, 11/01/03 - 10/31/04

	Quantity	Units	JD's / Unit	Total
Revenue from sales				
Wool	130.0	kg	1.00	130
Milk	1,687.5	kg	0.40	675
Lamb	26.0	head	55.97	1,455
Goat kids				0
Manure				0
Total Sales				2,260
Cost of Goods Sold				
Beginning Inventory	0.0			0
Additions to Inventory				
Feed	40.0	ton	75.00	3,000
Medicine	1.0	unit	117.00	117
Ear tags	400.0		0.30	120
Water	75.0	M ³	2.00	150
Farm labor	365.0	days	3.00	1,095
Milking labor (women)	120.0	days	3.00	360
Technical supervision	0.1	years	3,600	300
Electric	272.7	KW	0.22	60
Total COG before depr				5,202
Depreciation				4,035
Less costs of lambs retained for breeding herd ¹	31.0	head	147.93	4,586
Total COG				4,651
Less ending inventory				0
Contribution to profit and G&A				-2,391
Loss of capital items				713
Net contribution to profit and G&A				-3,104

¹ This item has been removed from the income statement and capitalized on the balance sheet.

Appendix Table A-7. Income Statement for Sheep (Few Goats) Operation (04-05)

Income Statement, 11/01/04 - 10/31/05

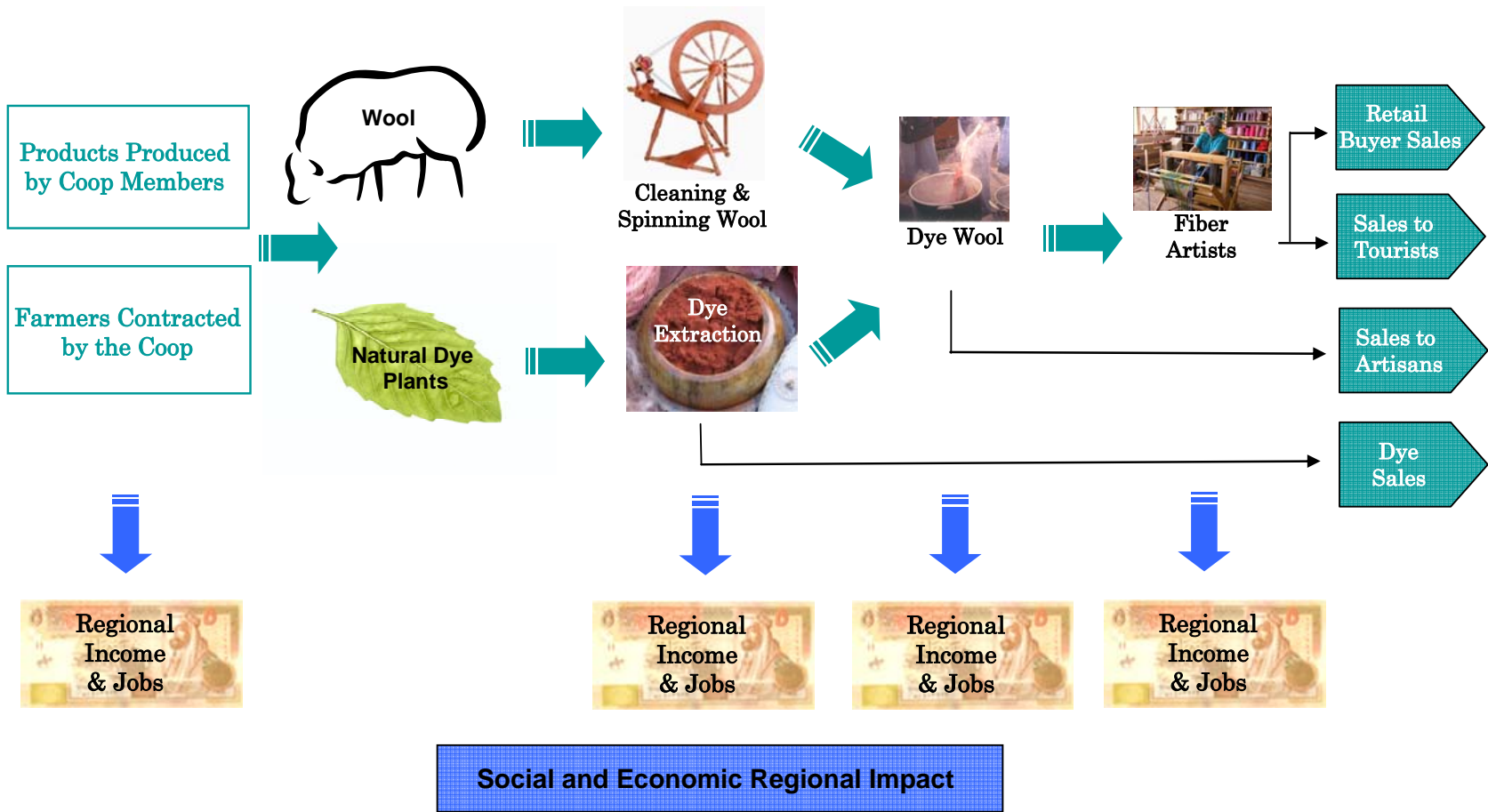
	Quantity	Units	JD's / Unit	Total
Revenue from sales				
Wool	140.0	kg	1.00	140
Milk	1,912.5	kg	0.40	765
Manure	2.0	units	50.00	100
Ewes 1	65.0	head	45.38	2,950
Ewes 2	18.0	head	98.00	1,764
Culled ewes	23.0	head	29.26	673
Goats	3.0	head	53.33	160
Goat kids	9.0	head	60.56	545
Rams	4.0	head	91.25	365
Bucks	2.0	head	105.00	210
Lambs	87.0	head	53.83	<u>4,683</u>
Total Sales				12,355
Cost of Goods Sold				
Beginning Inventory	0.0			0
Additions to Inventory				
Feed	100.5	ton	75.00	7,538
Medicine	1.0	unit	395.00	395
Water	285.0	M ³	1.00	285
Farm labor	12.0	months	110.00	1,320
Milking labor (women)	170.0	days	3.00	510
Technical supervision	0.2	years	3,600	600
Electric	272.7	KW	0.22	<u>60</u>
Total COG before depr				10,708
Depreciation				5,929
Less costs of lambs retained for breeding herd (04)	31.0	head	26.25	814
Less costs of lambs retained for breeding herd (05)	25.0	head	78.08	1,952
Total COG				13,871
Less ending inventory				0
Contribution to profit and G&A				-1,516
Loss of capital items				0
Net contribution to profit and G&A				<u>-1,516</u>

Appendix Table A-8. Income Statement for Sheep (Few Goats) Operation (05-06)

Income Statement, 11/01/05 - 10/31/06

	Quantity	Units	JD's / Unit	Total
Revenue from sales				
Wool	81.0	kg	1.00	81
Milk	3,420.0	kg	0.42	1,436
Manure	0.0	units	50.00	0
Ewes	68.0	head	70.00	4,760
Culled ewes	11.0	head	38.00	418
Goats	20.0	head	89.09	1,782
Goat kids	8.0	head	30.00	240
Lambs	150.0	head	67.00	<u>10,050</u>
Total Sales				18,767
Cost of Goods Sold				
Beginning Inventory	0.0			0
Additions to Inventory				
Feed	87.0	ton	81.13	7,058
Medicine	1.0	unit	419.00	419
Water	180.0	M3	1.00	180
Farm labor	11.0	months	165.00	1,815
Milking labor (women)	205.0	days	2.00	410
Technical supervision	0.04	years	3,600	150
Electric	180.0	KW	0.22	<u>40</u>
Total COG before depr				10,072
Depreciation				5,512
Less costs of lambs retained for breeding herd (05)	25.0	head	29.23	731
Less costs of lambs retained for breeding herd (06)	0.0	head	72.87	0
Total COG				14,853
Less ending inventory				
Contribution to profit and G&A				3,914
Loss of capital items	5.0	head	75.95	380
Net contribution to profit and G&A				3,535

Appendix B
Value Chain for Utilization of Anaqeed Wool and Labor



Disclaimer

The ideas and views expressed in this report represent the views and opinions of the authors and do not necessarily represent the official view of the organizations participating in either the *Sustainable Development of Drylands Project* or the funding sources, USAID-Washington and USAID-Jordan. Comments relating to this report should be addressed directly to the authors.



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