



The University of Georgia

Center for Agribusiness and Economic Development

College of Agricultural and Environmental Sciences

An Economic and Cash Flow Analysis of a Proposed Kenaf Separation Plant

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Impact analysis is a key component of analyzing any proposed new project. An impact analysis is capable of showing the effect of a new venture on the economy. Building and implementing a kenaf processing facility in Georgia will impact the economy on two levels. The new plant will generate output as it begins selling processed kenaf. These sales will, in turn, generate additional sales as the plant purchases inputs. The suppliers to the plant will increase the purchase of their inputs, thus increasing demand for those items. These increased sales will ripple through the economy. An input-output model will capture and quantify these effects.

The input-output model, IMPLAN (Impact Analysis for PLANning, Minnesota IMPLAN Group) was utilized for this project. IMPLAN can predict the effects of a new venture on output (sales), employment and tax revenue. IMPLAN models can be constructed for a state, a region or a county. Input-output models work by separating the economy into its various sectors, such as agriculture, construction, manufacturing and so on. An IMPLAN model will show each sector and industry in the specific region's economy. The model can capture how a change in one industry (for example, kenaf processing) will change output and employment in other industries. The changes in the initial industry (kenaf processing) are labeled direct effects and the changes in the other industries are called indirect effects. The direct and indirect effects are summed to give the total economic impact.

An impact analysis relies on sales and direct employment that are determined outside the model. For this analysis, the amount of sales from the plant and the plant employment were obtained from Mr. Stephen Day of Integrated Composite Technologies Inc. Value of production was determined by multiplying the targeted acreage (25,000 acres) by an average value to the producer of \$560 per acre. Dr. Randy Hudson of the University of Georgia's Center for Emerging Crops and Technology provided the value of production to the farmer. The amount of employment was as estimated by the model. This amount of employment may vary depending on the number of producers who decided to grow kenaf. The impact analysis is based on these numbers and does not reflect any research by the Center for Agribusiness and Economic Development.

For this kenaf processing study, the impacts of the new plant on two regions were measured. However, before examining the economic impact of the plant, the issue of production should be addressed. In many cases, the construction of a new plant provides an increased market for a product. This is true in the case of the kenaf processing plant. Thus, it would be remiss not to include the value of production in the analysis of the economic impact. This is especially true in cases like the kenaf processing facility where the kenaf may not be produced or sold if a new market is not developed. Therefore, each region analysis will include a discussion of the associated production.

The first region modeled is Macon County. The direct value of the production of 25,000 acres of kenaf is \$14,000,000. This leads to a total economic impact of \$16 million. Production of this many acres of kenaf employs 150 people. Another 33 jobs are created as a result of spending by the industry. Thus, total employment attributable to

kenaf production is 183. Kenaf production also increases tax revenues by \$716,578 under this scenario, as shown in table 1.

Two important assumptions are made in this scenario and must be remembered. First, this scenario assumes all production is in Macon County. Second, this scenario assumes that the production is all on previously unused or underutilized land. It does not account for the value of say, cotton, lost if producers switch commodities. This paper will relax both those assumptions and show how that affects the total economic impact.

The processing plant will have sales of \$29,640,000. It will employ 220 people. Table 2 shows that sales from the plant will increase economic activity by \$6.6 million bringing the true total state impact of the plant to almost \$36.2 million. In addition to the 220 jobs at the plant, another 78 workers in Georgia will be employed due to the creation of the plant. Finally, the plant will increase state and local tax revenue by \$50,000.

	Direct	Indirect	Total
Output	\$14,000,000	\$2,090,412	\$16,090,412
Employment	150	33	183
Tax Revenue (State)	NA	NA	\$716,578

	Direct	Indirect	Total
Output	\$29,640,000	\$6,572,111	\$36,212,111
Employment	220	78	298
Tax Revenue (State)	NA	NA	\$1,082,599

The second scenario expands the region to include the surrounding counties¹. The value of this level of production, as shown in table 3, is the same at \$14,000,000. However, now it is assumed the production is anywhere in the region and not limited to Macon County. Due to this production, another \$6.5 million of sales exist in the regional economy. Thus, the total economic impact of the production of 25,000 acres is \$20.5 million. Directly, 150 people are employed to produce this amount of kenaf. This leads to a total of 244 people being employed in the region due to kenaf production. Kenaf production contributes \$1.1 million to state and local government, non-education tax revenues in this scenario.

A plant processing 25,000 acres of kenaf will have sales of \$29,640,000. Its employment will be 220 people. Table 4 illustrates the impact of this plant size. In addition to its direct output, the plant will generate \$15,436,602 million in additional sales. Thus, the total impact of the plant in Georgia will be \$45 million. In terms of employment, a total of 410 new jobs will be created due to the plant, 220 actually at the

¹ Counties included are: Bibb, Crawford, Crisp, Dooley, Houston, Macon, Peach, Schley, Sumter and Taylor.

plant and 190 in other various sectors. Tax revenues for the local and state government will rise by \$1,335,734.

	Direct	Indirect	Total
Output	\$14,000,000	\$6,460,121	\$20,460,121
Employment	150	94	244
Tax Revenue (State)	NA	NA	\$1,134,643

	Direct	Indirect	Total
Output	\$29,640,000	\$15,436,602	\$45,076,602
Employment	220	190	410
Tax Revenue (State)	NA	NA	\$1,335,734

This analysis rests on the assumption that the production of kenaf comes from entirely unutilized or underutilized land. If production were pulled from another irrigated commodity, such as cotton, then the gains from the value of the kenaf would be offset by the losses in the cotton industry. Cotton is used in this example as it has the most harvested acreage in the state of all the row crops. It also tends to be more highly irrigated and the kenaf production will be under irrigation. To illustrate, assume the exact same number of acres were removed from cotton production. At an average irrigated yield of 900 pounds per acre and a price of \$0.65 per pound, the value of the production from 25,000 acres would be \$14,625,000. The yields and prices used are from the 2001 Georgia Farm Gate Value Report. The price includes both the value of the cottonseed and the loan deficiency payment.

Table 5 shows the impacts on the regional economy because of the loss of cotton production. Directly, \$14.6 million will be lost in the economy, leading to the loss of an additional \$8.5 million. Thus, the total value lost from cotton production will be \$23 million. On the employment side, 96 jobs will be lost directly in cotton production. A total loss of 238 jobs will occur in the region. Finally, state and local non-education tax revenues will decrease by almost \$1 million.

	Direct	Indirect	Total
Output	- \$14,625,000	- \$8,549,778	- \$23,174,778
Employment	-96	-142	-238
Tax Revenue (State)	NA	NA	-\$870,597

Thus, to get the true economic impact of kenaf production, one must subtract the losses from alternative production. Table 6 shows these values. Clearly, increasing kenaf production at the expense of cotton production does not hold much benefit for the

overall regional economy. Total sales in the region will fall by \$2.7 million. There will be more jobs in the production of kenaf, but fewer jobs in the overall economy than with cotton production. State and local government, non-education tax revenues would be slightly higher under kenaf production.

Table 6. Impact of Production of 25,000 Acres of Kenaf, Accounting for Loss of Cotton Production			
	Direct	Indirect	Total
Output	-\$625,000	-\$2,089,657	-\$2,714,657
Employment	54	-48	6
Tax Revenue (State)	NA	NA	\$264,046

In summary, the production and processing of kenaf would have economic consequences for the Macon County, Georgia region. The potential for positive economic gain is evident. However, if those production gains are made at a disadvantage to another crop, the gains are not as great.

The Center for Agribusiness & Economic Development



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