PART 2 OF 2

VI. PROCESSING PLANTS

1. Sugar - Ethanol Processing Plant

Hybrid Ethanol beets are a basic crop in this program and the use of this well defined crop is selected because of the broad base it can give to this integrated agricultural program.

The sugar beet processing plant begins with a new type mill that washes, slices and juices the beets. The beet juice is fermented in a six hour continuous process. The beet pulp is fermented into a 20-22% protein animal feed. The fermentation juices are recycled and used in the organic fertilizer production. Fermentation gases are captured and used for heat energy.

All unwanted cellulosic residue is used in the fermentation process and produces methane gas for heat and electric power generation. The total cellulosic residue is used for fertilizer, feed and humus production. A portion of the carbon charcoal reduced in a pyroligneous retort exothermic process from wood biomass is used in the mixture of the organic fertilizer developed in this Program.

The pyroligneous retort gases and acids are processed into industrial chemicals including fertilizers. A portion of the gases produced in this process are used for heat purposes. The charcoal is also used for domestic purposes and as feedstock for the electric generating plant.

One variety of the ethanol beets lends itself to peeling the outer section leaving a clean human food grade pulp. This pulp is dejuiced and the food grade pulp fermented producing a dried edible pulp of 20-22% protein. The sucrose juices produced in the slicing process and by crushing through a roller system is taken into the processing tanks and converted to crystalline sugar and ethanol products. A major portion of the juices is converted in an additional process to Ethyl Tertiary Butyl Ether (ETBE) ethanol alcohol. The ETBE oxygenated fuel is used as vehicle fuel, farm tractors and other stationary power units. This reduces combustion engine emissions and reduces the environmental pollution problems. The U. S. has recently passed the Clean Air Amendment Act which requires the use of this type of oxygenated fuel throughout the country. These same fuel requirements will also be adopted by the world to reduce air pollution problems. The methane gas generated is used as fuel for electric generation and drying purposes. Molasses generated in the sugar process is used for human food, animal feeds and ethanol production.

The Ethanol beets can produce over 50 tons per acre and have produced over 75 tons. The sugar content ranges from 16% to 22%. Processing costs must be calculated according to local values. Recovery efficiency is projected to be about 95%. About 25 lbs. of molasses are projected for each ton of raw sugar beets processed.

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2. Meat

Since this integrated agriculture program produces large amounts of high protein animal feeds (20-22%), the red and white meat production schemes can be expanded and larger meat production of all kinds results. Comprehensive meat processing slaughter plants are scheduled. The plant designs includes one segment for large animal slaughter for beef, pork and other animals. In the initial phase the slaughter house will receive animals and process only to hanging and quartered carcasses. These then go to local butcher meat shops. In the second phase a box meat line will be added for export purposes. A full meat rendering and curing line will be included for fully utilizing the meat production. A tannery will be included for processing hides. A waste rendering plant will grind bones, blood and offals and make animal feeds. Paunch material and other wastes will be collected and sent daily to the methane fermentation plant. Daily production of meat will go to the central cold storage plant. A poultry slaughter line is scheduled for handling broilers, ducks and weeding geese. Wastes again are collected for reduction to animal feeds and are sent to storage in the feed mill for blending into animal feeds. The meat production will include fish and shrimp in ponds. Special formulas for fish will be provided. Waste material from fish and shrimp will be made into organic fertilizer additives.

A fish meat and crustacean cleaning and handling facility will be used for processing fish, shrimp and crayfish. The fish will be cleaned and fresh packed for market. Similar process lines will be used for the crustaceans. Wastes will be sent to the rendering plant for processing into animal feed and then sent to the feed mill for blending. Meat will be processed and stored first for local needs and then for the external export market.

A canning factory is provided to process a certain portion of the meat into long storage food items and includes all meat forms including fish and shrimp.

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3. Animal Feed

A feed mill complex is provided and has storage for the various ingredients needed for blending balanced rations for the poultry, fish, pork, beef and dairy feedlot units. Waste meat protein of fats, meat scraps, blood, etc., are processed by the rendering plant for animal feed. the residue from the fermentation processes for methane production, where the biomass wastes of the canning factory, feed lots, slaughter houses, crop stalks, leaves, cleanings etc., are fermented and are then used as animal feed. The residue normally will have plant protein factors of 12% to 20%. These are partially dried and blended into the animal feeds and provide a major additive to the feed ration for the beef and dairy animals. The animal manure wastes are collected and fermented in the methane production process and the gas used for electric power generation and drying. A portion of the residue is also used as humus fertilizer in the fields.

The liquor from this process contains many of the microorganisms and chelated nutrients needed to fertilize and accelerate the humus breakdown process in the fields and therefore is saved and further processed and applied in the fields as foliar fertilizer applications and in the irrigation water. It is further used in the aqua culture cycle to produce algae as an animal feed and as food in the biochain in the aqua culture cycle.

The cleanings from the dry beans and peas, grain, corn and rice are also used in the feed rations.

Medicated supplements are brought in as imports until the chemical processing lines can be completed for local production.

Green grasses and other crop wastes will be used in an ensilage process for the bulk portion of the beef and dairy rations.

A complete laboratory for evaluating feed contents is provided and used to thoroughly assay nutritional contents of the various components being processed and then blended into animal feeds.

4. Dairy and Egg Products

Local egg production will be reviewed and coordinated into expanded methods of handling, processing, production and marketing. A complete egg processing facility is provided and includes all handling, grading, and cold storage facilities. This unit also has the facilities for grading and handling all hatching egg stocks for layers, broilers, ducks and weeding geese. It also includes a section for hatching all poultry eggs. Waste eggs again go into the animal feed section.

Updated dairy facilities and livestock are integrated into local production as practical matters dictate to maximize production and reduce costs.

Complete milk processing units are provided. The milk production from the dairies is received into the plant facilities. Fresh milk is immediately processed into homogenized and pasteurized products, cream is separated for butter production, cottage cheese, yogurts, kiefer and various forms of cheese are produced. An enriched baby food line is produced as well as ice creams. Storage facilities are provided for maximum marketing periods. Modern processes for non-refrigeration items are also provided to assist in marketing this important food protein. Whey from the cheese processing is sent to the pork and calf rearing feedlots to upgrade nutritional intake of these animals.

Since egg and meat production already exists in substantial quantities, the intent of this Integrated Program is to enhance present production structure with better livestock better feed mixtures and availability, improved mechanical equipment, improved cultural practices, improved collection and processing facilities, and improved marketing methods and returns from both domestic and export markets.

5. Fertilizer

The fertilizer to be used in this integrated agricultural program is a broad spectrum organic material in both dry and liquid form. This liquid fraction is a comprehensive organic product that results as the liquid residue of the methane fermentation process. This material is mixed with fish fertilizer for both field and foliar application. The ingredients for this fertilizer are a broad base of wastes from manure produced in the feedlots to the wastes of the various processing facilities, canning factories, crop residues, algae, weed cuttings, beet leaves, etc. Additionally, a broad base of elemental minerals is added to the process to provide the metal elements needed for the microbial chelation process. The process is continuous with the feed mixture added at one end and the liquids and spent residue taken out at the other. The methane gas produced is used to generate electric power and as a base methane gas stock in the industrial biomass chemical processes.

The resulting liquor contains chelated nutritional molecules of a size and spectrum that make it an ideal foliar fertilizer. It is further processed, concentrated, and photo-synthesized in sun light before final use. It can be mixed in irrigation waters, sprayed as foliar sprays, or sprayed on the soil as an inoculant during seed bed preparation.

The resulting cellulosic humus residue can be used as animal feed for the process increases the protein content, or used as an incorporation fertilizer during planting or side dressing on row crops.-

In the industrial wood biomass chemical process carbon dixoide is generated and processed into ammonium bi-carbonate ammonium sulfate, and urea for commercial type fertilizers of NPK.

Therefore, in this integrated agricultural development program a broader spectrum of fertilizers than ever before available can be made to satisfy the plant and animal nutritional needs. In this performance a synergistic integrated biomass cyclic system is structured to utilize the natural resources in an expanded renewable process methodology.

This Program provides a greater utilization of the resources available today in so many parts of the world and provides most of the food, shelter and clothing needs of man with processes used every day by men throughout the world.

6. Electric Power - Utilities

In any modern society there is a need for electric power and the utilities of fresh water and a means of removing the wastes to maintain health at a high level.

Power generation for this project for both domestic and industrial purposes is designed to use standard steam generating systems fueled by methane gas, ethanol alcohols and charcoal. This type of co-generating electric power plants can be used to coordinate the energy forms available into a much needed and useful product - electric power. Certain waste gases from carbon dioxide production in the industrial chemical complex will also be used as fuel in this plant. The electric distribution system needed in such a program will be held to a minimum by engineering design and location of the segments in this program.

Fresh water wells will be drilled to assure a proper and healthy domestic and industrial supply. Effluent wastes will be treated by standard processes and microbial digestion before being returned to the environment. Pollution of water land and air will be reduced to minimums within the recoverable ability of the environment.

Collection of domestic wastes in communities will be handled in the normal steps of a developing community and treatment will be made before effluents are returned to the environment.

7. Fiberboard - Building Products

The special production of wood timber biomass from selected trees forms part of this Program. Woodlots, field boundaries, road boundaries, marginal land, etc., will be tree farmed. The wood from these areas will be used in a fiber board plant and 4' x 8' sheets will be manufactured for use in the building needs of this program. Dimension lumber will also be made for building purposes. Building joist structural members for all purposes will be engineered. All products will be treated for prevention of insects and micro-organism deterioration to provide long term structural components. All wood biomass waste will be chipped and sent to paper manufacturing or pyroligneous acid retorts. The Program will design land use plans to maximize tree production as an added income for the agricultural community.

Additional materials will be manufactured from the Industrial Chemical Complex to provide long term coatings impervious to the attack of deteriorating elements of temperature climates. Bonding glues and plastics will also be manufactured in the Industrial Chemical Complex for use in the building materials segment.

These building materials will provide the means for building housing for people, facilities for the food processing complex, industrial chemical complex, storage buildings, offices, maintenance facilities, feed lot housing for animals, slaughter house facilities, fermentation facilities, sorting and storage sheds, packaging needs, etc.

8. Fruits - Vegetables

The production of all types of fruits is scheduled in this program. All types of vegetables are scheduled. Some new types will be introduced to upgrade local stocks and others can provide for near year round consumption. These crops will be harvested and sent to the grading and sorting facility for packaging and storage in controlled atmosphere refrigeration units for extended season marketing in the fresh food markets. Others will be sent to the juicing, freezing and canning factory for processing. Some will be sent to the dehydrator for drying. Complete facilities are provided for bottling, packaging and canning of the food products. A complete line of baby foods is scheduled. All wastes are sent to the fermentation processing plant. Cold storage, dry storage, and freezing facilities are provided.

These processing facilities become the heart of creating an integrated agricultural program because they form the important link between agriculture production and free market economy. The free market economy is created when the farm crop producer is able to sell his production at peak quality condition to nearby processors that give him his revenue at the earliest possible time. This maximizes his time, production rates, high quality meaning highest prices and fullest utilization, removes the burden of sorting and packaging and marketing which permits priority time use on production or the addition of other crops or animals.

The available processing lines of drying, canning, freezing, combination food lines, etc, all mean that more food can be made available for the consumer. In turn this means that cost effective processing places a greater variety of good foods into the free market place and generates more small businesses which creates more jobs and tax resources for governing entities. Agriculture production in itself creates demand for more materials, supplies, equipment, higher skills and training, more specialization in the basics of agriculture production of seeds, horticulture, water development, land development, and environmental measures.

The availability of fresh vegetables, fruits, nuts, tubers, etc. in any marketplace is the best measure of the health of the local economy and creates a confidence in the economy and the governing process and its leadership.

9. Ethanol - Methanol Production

Complete plants for fermenting sugar beet juices and other fructose sugars from fruits will be processed in an ethanol alcohol fermentation facility. This process is an accelerated one and the production is scheduled to go to storage for processing into ETBE as vehicle fuel and use in the Industrial Chemical Complex Facility or for fuel in the steam generating plant.

A complete methanol facility is also provided for the production of methanol alcohol from the wood biomass retorts. Again a portion will be used in the Industrial Chemical Complex and part as a fuel mixture with the wood distillate oils as a fuel for diesel vehicles. A portion will also be used as fuel in the steam generating plant. Ethanol and Methanol are also used as industrial solvents and provide a broad use in the interchange and conversion processes in the Industrial Chemical Complex.

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10. Industrial Chemical Complex

The Industrial Chemical Complex begins with the wood biomass distillation retorts. The main feedstock is the waste wood biomass from tree farming. Other wood and similar waste materials can also be used and the initial feedstock will come from all waste biomass of deed trees, weed trees, limbs, etc. The classical procedure is to recover the distillate liquids in tanks to draw off surface oil and settle out insoluble tars. Then this product is redistilled to remove and recover the dissolved tar. The crude wood alcohol or methanol is taken from the top of the column. A counter current stream of solvent is percolated from the top of the column at the same time and acetic acid is extracted. The crude methanol is rectified in two columns at higher temperatures to produce refined alcohol. The acetic acid is stripped out of the solvent which is recovered and recycled. Acetic acid has a very broad use in the chemical industry. Methanol is an industrial solvent and chemical intermediate and is the base for making formaldehyde and methyl esters of organic and inorganic acids, and as a solvent in the manufacture of pharmaceuticals such as cholesteral, streptomycin, vitamins and hormones, etc.

The value of methanol and acetic acid can be considerably enhanced by further conversion in combination with other chemicals to produce ethyl acetate for synthetic fiber production.

The tars and oils recovered can be further distilled to produce light, heavy oil and pitch. The heavy oil yields creosote and other oils including crude guiacol - an anti-knock compound. The light oils are scheduled for further mixture with methanol for use as a diesel fuel. Creosote of course has a large use as a wood treatment to prevent fungus growth and wood decay. About 4% of the initial wood mass will result in creosote and about the same amount will be collected for diesel fuel.

Approximately 25% of the wood biomass fired in the retort will yield charcoal, and about 15% of the mass will go off as gas of about which 50% is Carbon Dioxide. The Carbon Dioxide can be stripped from the gas mixture in counter-current scrubbers using monoethanolamine or other suitable solvent to produce a 99% Carbon Dioxide. The remaining gas has a value of about 300 BTU/Cubic ft.

The Carbon Dioxide can be compressed to liquid Carbon Dioxide or dry ice and used in the quick freezing of the fruits and vegetables and for cold storage purposes, and shipping products by truck. It can also be used in the man-

ufacture of carbonated drinks for the juices produced in the juicing facility.

The Carbon Dioxide can be reacted with ammonia to yield ammonium bicarbonate for fertilizers including urea. It can be reacted with calcium hydroxide to manufacture calcium carbonate, or with soda ash to manufacture sodium bicarbonate for use in glass, textiles detergent and glutamate.

After the Calcium Dioxide has been removed from the gas stream, Carbon monoxide can also be recovered. The Carbon Monoxide can be combined with hydrogen under heat and pressure to make methanol or reacted with methanol to make more acetic acid, or with sulfur to make carbon disulphide, with chlorine to make phosgene, with acetylene to make succinc acid. The carbon chain chemicals provide the base for modern industrial chemistry. The main source today is petro-chemicals, which originally started as cellulosic biomass plant growth such as is being used in this integrated agricultural development program.

Assuming that the source of wood biomass were to be about 100,000 tons of dry matter, then in a years time this integrated project could produce 25,000 tons of charcoal, 500,000 gallons of methanol, 5,000 tons of acetic acid, 3,500 tons of creosote, 8,000 tons of carbon dioxide, 4,000 tons of carbon monoxide, 2,000 tons of methane and 3,500 tons or 500,000 gallons of diesel fuel.

11. Paper - Packaging

A certain portion of tree farming is scheduled to be chipped for the paper and cardboard industry. Recycled kraft paper, cardboard, white papers, and newsprint will be part of the paper manufacturing process. The Industrial Chemical Complex will have a Central Unit Recycling Facility which will have a waste paper section for collecting, separating and preparing waste papers of all kinds. Therefore, waste paper recycling into packaging products is a part of the Integrated Program proposed here. This facility is a turnkey plant and is intended to manufacture packaging materials needed for a cost effective orderly marketing of the products produced in this Program.

Additionally, the plastic recycling sector of the Central Recycling Unit Facility will recycle film plastic films back into plastic films for packaging. Thermoplastics will be recycled back into a host of plastic items including containers for food processing plants, vegetables and other food processing bins and a variety of food handling items. Plastic bins for fruit, vegetable, poultry and other food harvesting and processing will be manufactured. Plastic gates, separators, etc. for animal rearing and housing will also be made.

VII. TOTAL ENERGY REQUIREMENT FOR INDUSTRIAL CHEMICAL COMPLEX COMMUNITY

Energy Requirement	K.W.H. Per Day	Lbs. Steam Per Day
Sugar Plant	5,000	774,000
Alcohol Plant	1,500	1,600,000
Feed Mill-Fertilizer Plant	4,000	800,000
Slaughter Plant	2,000	200,000
Wood Preparation Plant	30,000	- 0 -
Storage Plants	10,000	- 0 -
Chemical plants	35,000	3,000,000
Power Plant	1,000	- 0 -
Canning-Dehydrating Plant	8,500	1,000,000
Paper Packaging Plant	2,000	2,140,000
Sorting & Packing Plant	2,000	- 0 -
Fiberboard-Wood Products Plant	2,000	5,000,000
Total Requirement	103,000 KW	10,014,000

Total Steam Requirements including Electric Power Generation, Assuming 14 lbs. steam to generate one K.W.H. power

Electric Power	1,442,000	lbs. steam
Steam	10,014,000	
Total	11,456,000	lbs. steam
Domestic & Civil	1,500,000	
Grand Total	12,956,000	lbs. steam

Add 20% extra capacity for growth and the Grand Total requirement is then set at 15,500,000 lbs of steam per day.

VIII. CAPITAL INVESTMENT PROJECTION

1. Industrial Processing Complex
Estimated Costs are as follows:

Sugar Plant	$6,000,000.
Alcohol Plant	8,500,000.
Feed Mill-Fertilizer Plant	4,000,000.
Slaughter Plant	5,000,000.
Wood Preparation Plant	10,000,000.
Storage Plants	5,000,000.
Chemical Plants	25,000,000.
Power Plant	10,000,000.
Canning-Dehydrating Plant	5,000,000.
Paper-Packaging Plant	18,000,000.
Sorting-Packing Plant	2,500,000.
Fiberboard Plant	4,000,000.
Maintenance Facility	5,000,000.
Supplies	25,000,000.
Administration	5,000,000.
Contingency	12,000,000.
Total	$150,000,000.

These numbers are projected using cost figures in the United States. Adjustments must be made to properly take into account local conditions of existing facilities and industrial and industrial entities that can be adapted into the Integrated Agricultural Program.

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2. Agriculture Complex

		Hectares	
1.	Ethanol Beet	20,000	$20,000,000.
2.	Vegetables	10,000	5,000,000.
3.	Grain	5,000	2,500,000.
4.	Fruits	5,000	2,500,000.
5.	Feedlots 80,000 head	400	5,000,000.
	Pasture	12,500	5,000,000.
	Piggery	100	2,000,000.
	Poultry Complex	100	5,000,000.
6.	Aqua-Culture	200	2,500,000.
7.	Equipment		20,000,000.
8.	Agriculture Supplies		15,000,000.
9.	Laboratory Facilities		3,500,000.
10.	Dairy Complex		12,000,000.
11.	Packaging Supplies		3,000,000.
12.	Breeding Stock		10,000,000.
13.	Administration		5,000,000.
14.	Contingency		12,000,000.
	Total Hectares	53,300	$130,000,000.

These numbers are projected using cost figures in the U. S. Adjustments must be made to properly take into account local conditions of existing facilities and agriculture entities that can be adapted into the Integrated Agriculture Program.

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3. Community Complex

This Project is projected to provide employment for about 10,000 people. An additional 40,000 jobs are estimated to be created in the surrounding support services, and another 2,000 jobs in the Civil Government Sector.

1. Community improvement costs are estimated at $5,000. per family
   10,000 families $50,000,000.

4. Operating Costs

Operation costs to maintain the project activity until a 50% return of projected revenue in 12 months is estimated to be $2,500 per 10,000 jobs created $25,000,000.

Total Project Financial Requirement Projection

1.	Industrial Processing Complex	$150,000,000.
2.	Agricultural Production Complex	130,000,000.
3.	Community Complex Improvements	50,000,000.
4.	Operating Costs	25,000,000.
	Projected Total	$355,000,000.

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IX. PRODUCTION CAPABILITIES

A summary of products grown and manufactured annually in this Integrated Agricultural Development Program are estimated as follows:

1.	Sugar - Ethanol Beets	2,200,000 tons*
	Crystallized sugar (350,000 tons raw beets)	50,000 tons*
	Natural sugar (350,000 tons raw beets)	50,000 tons*
	Ethanol (2,200,000 tons)	2,200,000,000 gals
	Molasses (Animal feed)	100,000 tons*
	Molasses (Human food)	5,000 tons*
	Beet Pulp	440,000 tons*
	Beet Top Silage	660,000 tons*
2.	Vegetables (10,000 Hectares) Including Fresh and Processed	150,000 tons*
3.	Fruits (5,000 Hectares) Including Fresh and Processed	100,000 tons*
4.	Building Material Plyboard and chip board, Truss Joist Pre-engineered and prefabricated structural members and dimensional timber	250,000 tons*

* Metric Tons

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5. Meat Production Per Year

Fish	200 hectares @ 50 ton	10,000 tons
Poultry	Broilers (3 lb.)	10,000,000
Poultry	Geese (10 lb.)	300,000
Pork	(100,000 head)	10,000 tons
Beef	(80,000 head)	48,000,000 lbs.
Eggs		100,000,000

6. Feed

Hay	300,000 tons
Beet Pulp	440,000 tons
Beet top silage	660,000 tons
Grain - wheat, corn, barley	500,000 tons
Other	100,000 tons

7. Dairy

Milk and Milk Products	50,000,000 lbs.

8. Paper — 50,000 tons

9. Misc.

Hides	80,000

10. Fertilizer

Liquid Chelated Fertilizer	500,000 tons
Humus	100,000 tons
Foliar - Fish and Fermentation	100,000 tons
Chemical NPK	10,000 tons
Organic - Total Spectrum	100,000 tons

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11. Waste Cellulosic Materials

1.	Ethanol Beet Field Waste		100,000 tons
2.	Fruits		100,000 tons
3.	Vegetables (all types)		150,000 tons
4.	Feedlot Manure		300,000 tons
5.	Piggery Waste		40,000 tons
6.	Stillage		400,000 tons
7.	Slaughter House		30,500 tons
	Beef	16,000 tons	
	Pork	2,000 tons	
	Fish	5,000 tons	
	Poultry	7,500 tons	
8.	Poultry Droppings		7,500 tons
	Layers	2,500 tons	
	Broilers	5,000 tons	
	Total		1,027,000 tons

X. ANIMAL FEED REQUIREMENTS ANNUALLY

		Tons
Fish	10,000 tons @ 2:1 conversion	20,000
Beef	80,000 head per year	250,000
Poultry	Hatching eggs, 75,000 hens @ 125 lbs./yr.	5,000
Geese	400, geese 1 lb./dy	2,000
Pork	(3,000 sows) (100,000 pigs per year) 1,000 lbs.	50,000
Dairy	5,000 head 10,000 lbs. per lactation 60 lbs./day	100,000
Laying Hens	500,000 layers 200 eggs per hen @ 100 lbs.	25,000
Broilers	10,000,000/yr. @ 50 lbs.	250,000
	Total	702,000

Estimated waste products for the entire project are 1,027,000 tons which are calculated to yield 700,000 tons of animal feed after processing and mixing in the feed mill with pulp and other silage and green chop materials.

XI. INDUSTRIAL CHEMICAL PROCESS PLANT

This projection is based upon an annual production of 400,000 tons of feedstock from wood biomass. Additional feedstock is cut from the local wood forest harvesting, local domestic yard wastes, and through surrounding forestry practices. The cost calculation for the wood feedstock is $20/ton at the plant. A total of 400,000 tons of feedstock is used in this projection, 90% efficiency is used in the calculations.

		Tons
1.	Charcoal	100,000
2.	Methane (750,000 gals.)	2,500
3.	Acetic Acid (10,000,000 lbs.) When added to 4,000 tons of ethanol Alcohol a total of 7,600 tons of Ethyl Acetate is produced. Ethyl Acetate	5,000 (7,600)
4.	Light Oil (diesel 2,000,000 gals.)	16,000
5.	Creosote	16,000
6.	CO2 (99%)	30,000
7.	CO (99%)	15,000
8.	Methane gas (CH4)	6,000
9.	Hydrogen	6,000

Values of products scheduled in this projection are based on 1980 prices and should be updated accordingly.

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Products planned to be manufactured:

CARBON DIOXIDE CONVERSIONS	COST AND VALUE INCREASE
Ammonium Bicarbonate	
31,726 tons CO2	+ 51,188.9 tons ammonia
gives	51,188 tons Ammonium Bicarbonate
Sales value	$3,839,100.
Ammonia cost	2,290,920.
	$1,548,180. less processing costs
Calcium Carbonate	
31,726 tons CO2	+ 58,759 tons lime
gives	72,152.7 tons calcium carbonate
Sales value	$1,297,750.
Lime cost	881,385.
	$417,365. less processing costs
Sodium Bicarbonate (USP)	
31,726 tons CO2	+ 83,883 tons Soda Ash
gives	120,875 tons Sodium bicarbonate
Sales value (USP)	$24,416,750.
Soda Ash cost	5,787,927.
	$18,628,823. less processing costs

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CARBON DIOXIDE CONVERSION — COST AND VALUE INCREASE

Urea

31,726 tons CO2	+	24,553	tons Ammonia
gives		38,091	tons Urea
Sales Value		$4,570,932.	
Ammonia Cost		4,174,048.	
		$ 396,884.	less processing and catalyst costs

CARBON MONOXIDE CONVERSIONS — COST AND VALUE INCREASE

Phosgene

15,863 tons CO	+	44,171.6	tons Chlorine
gives		50,417.5	tons phosgene
Sales Value		$22,687,875.	
Chlorine Cost		4,858,876.	
		$17,828,999.	less processing and catalyst costs

Carbon Di-sulfide

15,863 tons CO	+	18,159	tons sulfur
gives		9,702	tons Carbon Di-sulfide
Sales Value		$1,278.548.	
Sulfur Cost		544,767.	
		$ 733,781.	less processing costs

Methanol

15,363 tons CO	+	Hydrogen	
gives		11,650	tons Methanol
Sales Value		$1,659,242.	
Hydrogen		- 0 -	
		$1,659,242.	less processing costs and catalysts

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METHANE CONVERSION		COST AND VALUE INCREASE
Hydrogen Cyanide		
6,345 tons Methane +	6,736.6	tons ammonia
gives	9,623	tons Hydrogen Cyanide
Sales Value	$6,351,258.	
Ammonia Cost	1,145,244.	
	$5,206,034.	less processing costs and catalysts
Methyl Chloride		
6,345 tons Methane +	28,408	tons chlorine
gives	18,973	tons Methyl Chloride
Sales Value	$6,166,225.	
Chlorine Cost	3,085,336.	
	$3,080,889.	less processing costs and catalysts
Nitromethane		
6,345 tons Methane +	24,925	tons Nitric Acid
gives	20,523.9	tons Nitromethane
Sales Value	$28,733,460.	
Hydrogen	4,237,250.	
	$24,496,210.	less processing costs and catalysts

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METHANOL CONVERSIONS		COST AND VALUE INCREASE
Formaldehyde		
2,434.3 tons CH3OH +	1,215.6	tons oxygen
gives	1,366.4	tons Formaldehyde
Sales Value	$317,004.	
Oxygen Cost	- 0 -	
	$317,004.	less processing costs and catalysts
Methyl Amine		
2,434.3 tons CH3OH +	1,293.8	tons ammonia
gives	2,241.8	tons Methyl Amine
Sales Value	$1,636,550.	
Ammonia Cost	219,960.	
	$1,416,590.	less processing costs and catalysts
Acetic Acid		
2,434.3 tons Methanol +	2,128.1	tons Carbon Monoxide
gives	3,878	tons Acetic Acid
Sales Value	$1,396,080.	
Methanol & Carbon Monoxide cost	- 0 -	
	$1,396,080.	less processing costs and catalysts
Acetic Acid		
7,056 tons Methanol +	6,168.45	tons Carbon Monoxide
gives	11,239.68	tons Acetic Acid
Sales Value	$4,046,285.	
Methanol & Carbon Monoxide cost	- 0 -	
	$4,046,285.	less processing costs and catalysts

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METHANOL CONVERSIONS — COST AND VALUE INCREASE

Di Methyl Sulfide

2,434.3 tons methanol + 1,446.1 tons carbon disulfide

gives 1,156.9 tons Di Methyl Sulfide

Sales Value	$856,106.	
Carbon Disulfide cost	303,702.	
	$552,404.	less processing cost and catalyst

Methyl Chloride

2,434.3 tons Methanol + 2,769.99 tons Hydrochloric Acid

gives 3,644.1 tons Methyl Chloride

Sales Value	$1,184,332.	
HCL Cost	673,108.	
	$511,226.	less processing cost and catalyst

ACETIC ACID CONVERSIONS — COST AND VALUE INCREASE

Ethyl Acetate

5,292 tons Acetic Acid + 4,059.99 tons ethanol

gives 7,686.28 tons Ethyl Acetate

Sales Value	$3,689,414.	
Ethanol Cost	1,383,566.	
	$2,305,848.	less processing cost and catalyst

Ethyl Acetate

21,168 tons Acetic Acid + 16,239.89 tons ethanol

gives 30,744.89 tons Ethyl Acetate

Sales Value	$14,757,545.	
Ethanol Cost	5,534,172.	
	$9,223,373.	less processing cost and catalyst

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RAW MATERIAL COST PER YEAR

400,000	tons Wood at at $20. delivered	$8,000,000.
27,961	tons Soda Ash for production of Sodium Bicarbonate with project Carbon Dioxide	1,929,309.
4,060	tons Ethanol for Ethyl Acetate with project Acetic Acid	1,383,566.
2,975	tons Ethanol for Ethyl Acetate from project Methanol converted to Acetic Acid	1,013,883.
	Incidental chemicals and catalysts	250,000.
		$14,576,758.

SALES VALUE PER YEAR

100,000 tons of Charcoal at $65. bulk	$6,500,000.
36,266 tons of Sodium Bicarbonate	7,325,757.
7,686 tons of Ethyl Acetate (from project Acetic Acid)	3,689,414.
5,633 tons of Ethyl Acetate (from project Methanol/Acetic Acid)	2,703,613.
14,112 tons of Creosote	2,183,624.
14,112 tons of Dry Ice Liquid CO2	2,474,550.
25,209 tons of Phosgene	11,343,938.
4,811.5 tons of Hydrogen Cyanide	3,175,629.
12,462.5 tons of Nitromethane	14,365,730.
	$56,182,455.

The expansion above can, of course, be done in increments, with the non-toxic Nitromethane plant installed first and the Phosgene and Hydrogene Cyanide plants added later.

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XII. CHARCOAL POTENTIAL

The heat value of the charcoal is about 13,000 BTU per pound and burns clean and stable and fits designs of modern boiler furnaces where fuel is burned by spray injection into the furnaces.

Blue gas can be made in a furnace by using the standard method of many cities producing natural gas for the community A bed of hot incandescent charcoal is sparged with steam up through the bed of charcoal. The H2O in the steam combines with the carbon to form Carbon Monoxide (CO) and Hydrogen (H2) with a BTU value of about 299 per cubic foot.

50,000 tons of charcoal would produce Two Trillion, One Hundred Twenty Billion BTU (2,120,000,000,000 BTU). This is more than most coals can supply.

The Methane and various gases produced in the fermenting process are another excellent source of BTU energy for steam and electric power generation. The amount produced depends on the program used to meld this phase of the operation into the integrated program.

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XIII. ESTIMATED VALUE OF PRODUCTS

GROWN AND MANUFACTURED ANNUALLY

1.	Ethanol Beets	
	Sugar 100,000 T @ $300./T	$30,000,000.
	Ethanol 44,000,000 gal @$1/gal	44,000,000.
	Molasses 5,000 T @ $350./T	1,750,000.
	Molasses 100,000 T @ $350./T	3,500,000.
	Beet Pulp 330,000 T @ $100./T	33,000,000.
	Beet Top Silage 330,000 T @ $20./T	6,600,000
2.	Vegetables 150,000 tons @ $500./T	75,000,000.
3.	Fruits 100,000 tons @ $500./T	50,000,000.
4.	Building Materials 250,000 tons @ $250./T	62,500,000.
5.	Paper Products 50,000 tons @ $500./T	25,000,000.
6.	Meat	
	Fish 10,000 tons @ $2,000./T	20,000,000.
	Pork 10,000 tons @ $2,000./T	20,000,000.
	Beef 48,000,000 lbs. @ $1./lb.	48,000,000.
	Poultry 10,000,000 @ $1.50/each	15,000,000.
	Geese 300,000 @ $5./each	1,500,000.
	Eggs 100,000,000 @ 5 cents	5,000,000.
7.	Dairy Products 50,000,000 lbs. @ 25C/lb.	12,500,000.
8.	Paper Package 35,000 tons @ $500./T	17,500,000.
9.	Hides 80,000 @ $25	1,200,000.
10.	Fertilizer	
	Liquid 500,000 tons @ $20./T	10,000,000.
	Humus 100,000 tons @ $20./T	2,000,000.
	Foliar-Fish 100,000 T @ $100./T	10,000,000.
	Chemical NPK 10,000 tons @ $300./T	3,000,000.
	Organic 100,000 Tons @ $100./T	10,000,000.
11.	Industrial Chemicals	56,000,000.
12.	Charcoal 100,000 tons @ $65./T	6,500,000.
13.	Feed 1,050,000 tons @ $50./T	50,500,000.
14.	Grain 33,000 tons @ $125./T	4,125,000.
15.	Methane and other Gases (same as charcoal)	6,500,000.
16.	Electric Power 103,000 KWH @.05 x 365 days	1,879,750.
17.	Diesel Fuel 2,000,000 gal @ $1.	2,000,000.
18.	Steam 12,000,000 lbs./day @ 250 days	13,000,000.
	Total	$647,054,750.

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XIV. RETURN ON INVESTMENT

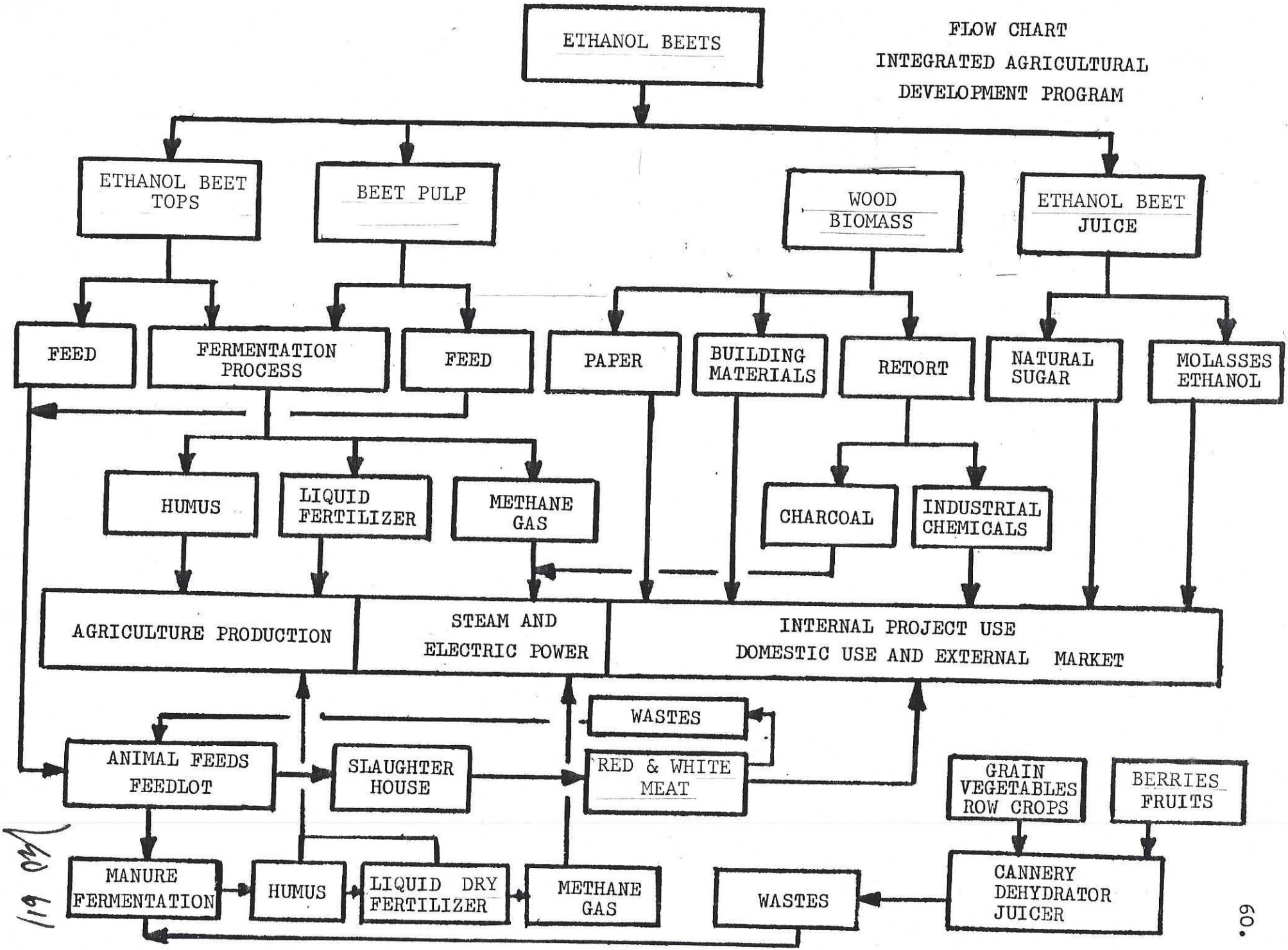
Existing infrastructure, facilities, farmland improvements are not within the scope of this projection and therefore not included in this analysis. Therefore the total financial requirement for this Integrated Agriculture Development Program is set at $355,000,000. The actual value of existing improvements should be calculated for each application of this integrated program.

Debt load of $355,000,000 at 10% is projected to be repaid in 25 years with no payments the first two years. Thereafter interest only for the next three years. Thereafter annual payments of $53,250,000. for 20 years.

Labor costs are scheduled to average a base $18,000. per year for 10,000 employees for $180,000,000. Administrative and production bonuses are scheduled for $20,000,000. Administrative G & A and legal are scheduled at $10,000,000. Maintenance costs are scheduled at $50,000,000 Supplies are scheduled at $75,000,000. Total projected costs are scheduled at $335,000,000. The projected profit is estimated at $313,354,750 dollars per year.

Because of the nature of this Program structure, the projected profit above is distributed to the participants as the products produced are taken to market. Therefore the economic base is created immediately and is sustained by the continued production performance of the participants. The integrated system creates and promotes the open free market complex with its exchange of currency in the market place for goods and services. Individual and small business performance of producing the goods and services is performed with the least Central Control and therefore provides the greatest amount of freedom of action. Therefore the balance between Central Control i.e. the political, and the economic is created and nurtured into a democratic self governing process giving its participants the highest standard of living possible. The greatest threat to its continued existence and growth is that the affluence it brings dulls the mind of free men and their lack of vigilance permits monopoly of power to be taken by default through greed in either the political or the economic sectors.

Simplicity and perseverance are the means to success in implementing the Program. First evaluate the existing resources that can be used in this program. These will normally be more than first thought. Then free the powerful initiative of individual effort to produce and improve the many items needed and desired by people to make a better world for themselves and their children. Democratization is the proper balance between Central Control politics and a free market economy.


ETHANOL BEETS
FLOW CHART
INTEGRATED AGRICULTURAL
DEVELOPMENT PROGRAM
ETHANOL BEET TOPS
BEET PULP
WOOD BIOMASS
ETHANOL BEET JUICE
FEED
FERMENTATION PROCESS
FEED
PAPER
BUILDING MATERIALS
RETORT
NATURAL SUGAR
MOLASSES ETHANOL
HUMUS
LIQUID FERTILIZER
METHANE GAS
CHARCOAL
INDUSTRIAL CHEMICALS
AGRICULTURE PRODUCTION
STEAM AND ELECTRIC POWER
INTERNAL PROJECT USE
DOMESTIC USE AND EXTERNAL MARKET
WASTES
ANIMAL FEEDS FEEDLOT
SLAUGHTER HOUSE
RED & WHITE MEAT
GRAIN VEGETABLES ROW CROPS
BERRIES FRUITS
MANURE FERMENTATION
HUMUS
LIQUID DRY FERTILIZER
METHANE GAS
WASTES
CANNERY DEHYDRATOR JUICER

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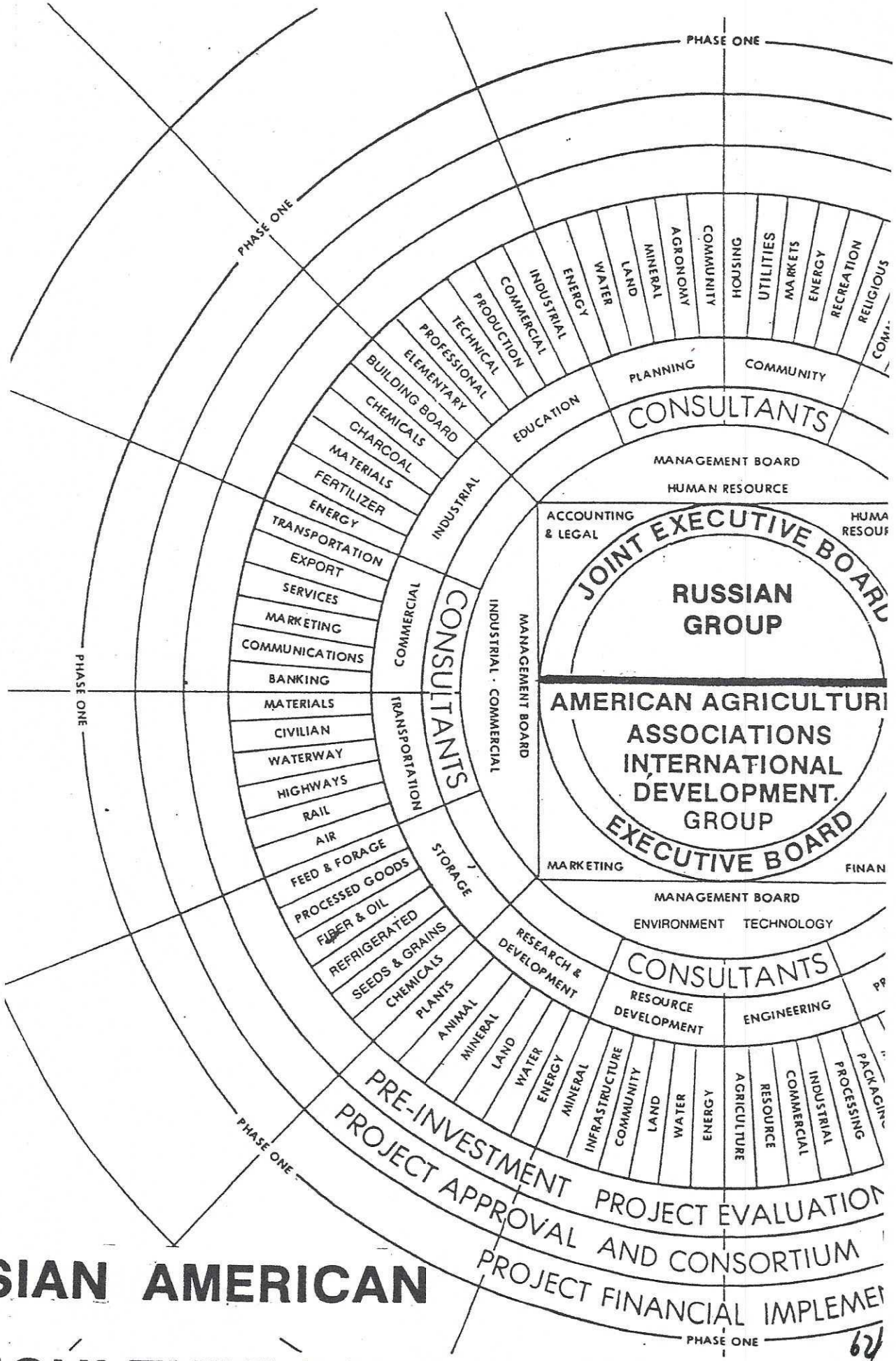

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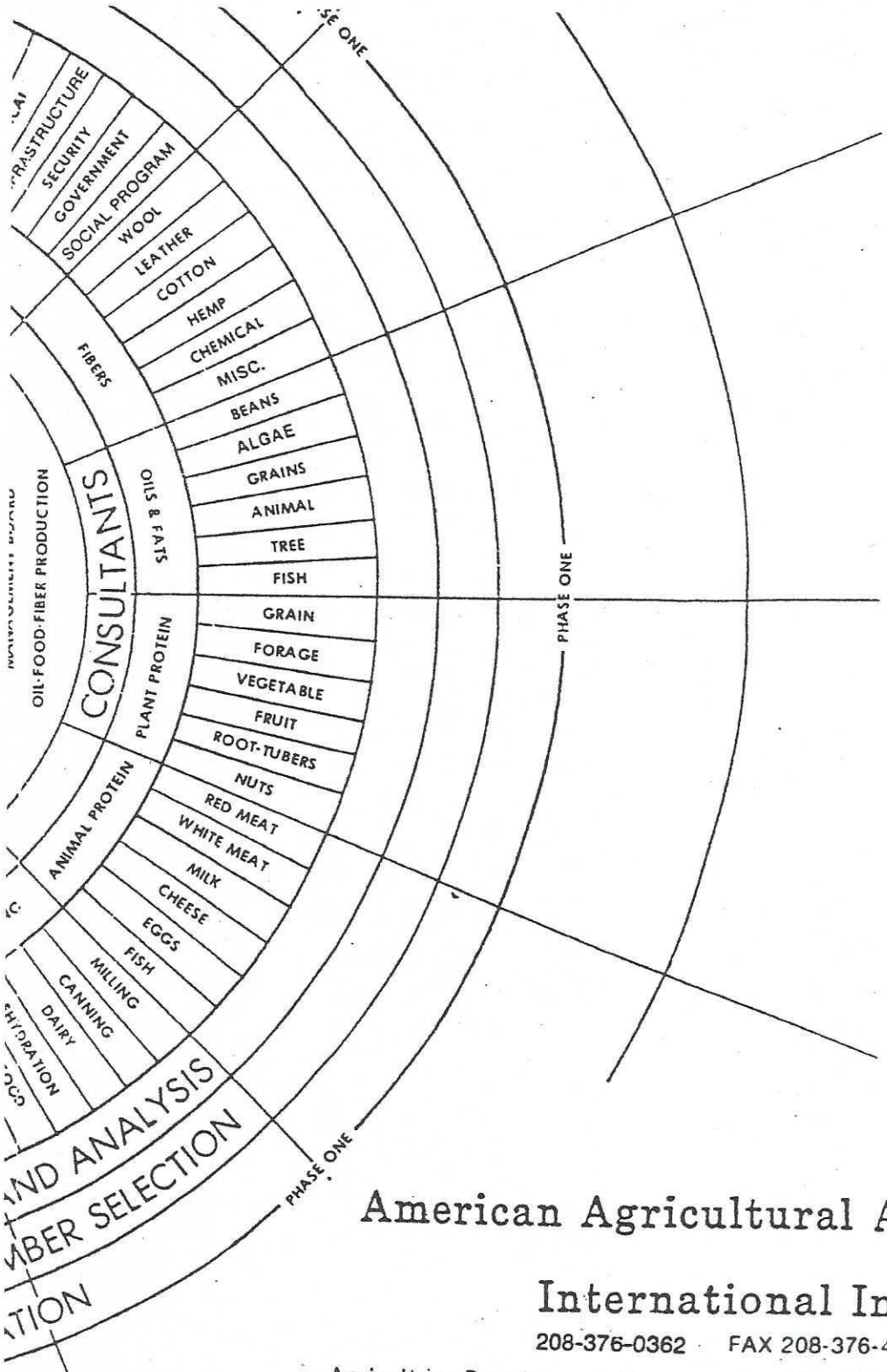

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THANK YOU,
Leo

RAM ORGANIZATIONAL CHART

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