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SMALL SCALE AGRI-BUSINESS OPPORTUNITIES IN TRINIDAD AND TOBAGO

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SMALL SCALE AGRI-BUSINESS OPPORTUNITIES IN TRINIDAD AND TOBAGO

Small Business Management for the Rural Development Process
in Trinidad and Tobago

January, 1990

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SMALL SCALE AGRI-BUSINESS
IN
TRINIDAD AND TOBAGO

AN IDENTIFICATION OF OPPORTUNITIES

INTRODUCTION

The Inter-American Institute for Cooperation on Agriculture (IICA) is presently involved in a project in Trinidad and Tobago entitled, "Small Business Management for the Rural Development Process in Trinidad and Tobago". One of the main objectives of this project is to provide technical advice and management training to persons who are desirous of pursuing business opportunities in the agricultural sector. The emphasis here is on self-employment in small scale enterprises.

Concurrently, the Association for Caribbean Transformation (ACT) has initiated its own credit programme with the use of funds accessed through the small project programme of the Inter-American Development Bank (IDB). ACT provides credit, market information, production and marketing support to small producers in the agricultural sector.

The general expectation of both of these institutions is that persons, who have successfully completed the training exercises under IICA, would proceed to the project formulation stage and be able to access credit, information and technical support from ACT and other agencies and thereafter, to the implementation stage.

One of the major decision points bridging the gap between training and implementation is having an idea that is worth pursuing as a viable business option.

It is hoped that this list of agri-business opportunities would broaden the range of options available to individuals and groups.

The information provided herein are preliminary estimates only and subject to change over time. A more detailed study would be necessary to determine markets, financing and choice of technology before any final decision can be taken to invest in any one of these options.

The document is in a format that makes it subject to updating periodically from the experiences of others, as well as, from the developments that are occurring in the wider economy.

ENTREPRENEURSHIP

When we speak of self-employment in agriculture, we are really speaking about entrepreneurship. There is no stereotype image of 'an entrepreneur'. They are usually recognized by what they do. The dictionary defines an entrepreneur as one who organizes, operates and assumes the risks of a business venture.

Organizing a business venture involves bringing together all of the necessary inputs in the same location, at the appropriate times and managing their use in a manner which produces the desired results. Entrepreneurship calls for a high level of motivation, self-discipline and a willingness to take risks and make decisions.

Some successful businessmen appear to be born entrepreneurs, or as we say, "they have a head for business". Others will tell you they just followed their instincts and grew into the role. If you have felt attracted to this style of living, that is, taking control of your own economic life, then here is a short test that could help confirm, reinforce or question the feeling.

Fill in the questionnaire below, giving yourself points ranging from:

5 Always

4 Most of the time

3 Sometimes

2 A few times

1 Never

Remember this is a test of your current personality traits. Be careful not to confuse it with how you would like others to see or think of you. So be as **frank** and as **fair** to yourself as you possibly can.

ENTREPRENEURSHIP SELF-TEST

1.	I try to do things my own way	5	4	3	2	1
2.	I usually take the initiative	5	4	3	2	1
3.	I work harder when I am involved in something important	5	4	3	2	1
4.	I consider myself a high achiever	5	4	3	2	1
5.	I prefer to make up my own mind	5	4	3	2	1
6.	I tend to keep working until the job is finished	5	4	3	2	1
7.	I consider myself to be a person who does not avoid taking risks	5	4	3	2	1
8.	I can anticipate results	5	4	3	2	2
9.	I can easily envisage various solutions to a given problem	5	4	3	2	1
10.	I find it stimulating to hunt for solutions	5	4	3	2	1
11.	I can usually imagine several uses for the same object	5	4	3	2	1
12.	Once my mind is made up, nothing can stop me	5	4	3	2	1
13.	I feel capable of making sacrifices in order to get results	5	4	3	2	1
14.	I am intuitive -in my decisions as well as in the methods I select for achieving my goals	5	4	3	2	1
15.	I have no inhibitions about being too ambitious	5	4	3	2	1
16.	I feel I have no limitations	5	4	3	2	1
17.	I know that I would not succeed if I do not take chances	5	4	3	2	1
18.	For me, life is an exciting adventure	5	4	3	2	1
19.	I am ready to take a chance even when I cannot be absolutely sure of the results	5	4	3	2	1
20.	I do not mind failure if I can learn something useful from it	5	4	3	2	1
21.	I am able to put my own ideas to work	5	4	3	2	1
22.	I remain calm in the face of success as well as failure	5	4	3	2	1
23.	I am absolutely convinced that I will succeed	5	4	3	2	1
24.	I believe that I have more than the average amount of initiative	5	4	3	2	1
25.	I am not afraid of adversity	5	4	3	2	1

NOW ADD UP YOUR TOTAL POINTS _____

One of the main things to remember about business ideas is that they do you no good if you are the only one convinced about them. You have got to convince the financial institutions to invest in your ideas. To do so, you must be able to show them that the venture will be successful. Ultimately, you have to convince the buyers in the market to buy your product. Indeed, you have to be prepared to spend a lot of time and energy convincing others of the worth of your enterprise.

The bottom line is factual estimates and details. As a first step, in starting up a business, be prepared to supply data on production, pro-forma invoices for cost items, indications of market commitment and evidence of resource availability and profitability.

Now let us go back to that test on Entrepreneurship. Add up your points and find out whether or not you have what it takes **to live in the world of continuous challenges.**

Score: 100 - 125

You are independent and capable of self-discipline. You are ready to take chances when you know you will benefit. In short, you have the entrepreneurial personality. Now it's your move.

Score: 75 - 99

You have entrepreneurial potential but you are reluctant to take the initiative. You have too little confidence in your own ideas and intuitions. You could become an excellent entrepreneur by learning to set clearer goals and by developing a better grasp of your own abilities. As it stands, you could be extremely effective in a decision-making position within an existing business.

Score: 50 - 74

You have possibilities as an entrepreneur. Your profile shows that you are a determined person still coming to grips with your abilities. A word of advice: learn to pay close attention to events in your environment, then try to imagine how you would solve problems using the means at your disposal.

Score: 25 - 49

This test is a good opportunity for you to evaluate your abilities and level of self-confidence. You have the urge to go into business, but you need to work at acquiring the qualities you admire in successful entrepreneurs.

Score: 0 - 25

Your creativity and initiative are somewhat limited. You could get along in a job which does not require you to make decisions and assume responsibility for the consequences. A suggestion would be to develop your entrepreneurial sense by taking a small chance each day -as long as you can be sure of the support of colleagues or a supervisor. Above all, do not hesitate to ask for advice when you run into obstacles.

Adapted from: American Airlines Inflight Magazine, August, 1989.

PRIMARY PRODUCTION:

CROPS

PRIMARY PRODUCTION OF CROPS

General Notes:

There is a wide range of crops that can be produced on a small scale. Whether or not any of the crops traded on the local market or exported, appear to you as a business opportunity will depend on quite a few factors, among which are:

- Your skills and experience in planting
- Land suitability
- Initial capital investment
- The marketing prospects

The crops that are identified in this document are based solely on the fact that they currently have very good marketing prospects.

Special Requirements:

When you are growing food crops for export, it is important that you become familiar with any special requirements beforehand so as to minimize the percentage of your harvest that may be rejected.

Costs:

The total cost estimates in this document are budgetary estimates. Your actual expenditures will depend very much on your management abilities, or lack of it.

Total expenditure is only half of the equation. The other half is revenue and this is dependent on your harvested yields. The yields quoted here are as close as possible to actual experience. You may find them at variance with many other quoted documents. In some cases, we have found that farmers are getting yields more than 50% lower than those quoted in official texts. So new entrants into crop production be warned!

CATEGORY: Primary Production

Final Product: BROCCOLI (Fresh Market)

Major Inputs:

1. Seed varieties: Green King, Early Value
2. Seedling Trays, Peat Pellets or Blocking Composts
3. Herbicides: Dacthal 75 W.P, Furore
4. Insecticides: Diazinon, Malathion, Vydate L
5. Fungicides: Bravo, Ridomil, Rizolex
6. Fertilizers: Calnitro, Nitrex, 12:12:17 + 2 or 13:13:20

Quantitative Estimates:

A. Viable Scale of Operation:

1/2 acre; can be grown on small scale in grow boxes.

B. Establishment Costs:

Total Establishment Cost is $6,257.00 (exclusive of the grow boxes) of which labour is 19% and chemicals 7%

C. Estimated Yields: 5,720 lbs. per acre

Market Price:

$ 3.20/lb

Potential Markets:

Local market; supermarkets and fresh produce market

Special Requirements:

Must refrigerate immediately upon harvesting.

CATEGORY: Primary Production

Final Product: CARROT (Fresh Market)

Major Inputs:

1. Seed: Varieties: Kuroda, Danvers
2. Herbicide: Herbadox, Kusagard
3. Insecticides: Diazinon, Scipio, Furadan
4. Fungicides: Bravo C/M, Rizolex, Manzate
5. Fertilizers: 12:24:12 or 15:15:15

Quantitative Estimates:

A. Viable Scale of Operation:

1 acre; very suitable for grow box culture given the need for very, sandy soil conditions.

B. Total Establishment Cost:
$ 4,958.00 on one acre

C. Estimated Yield: 2680 kg/acre

Potential Markets:

Local Markets; supermarkets and fresh produce markets

Market Price: (Wholesale)

Maximum	=	$ 5.00/kg
Minimum	=	$ 3.51/kg
Mean	=	$ 4.04/kg

Special Requirements:

Well drained soil and push-type seeder recommended with depth of tilth at least nine inches. Clay soils not recommended.

Final Product: OCHRO

Major Inputs:

1. Seed Varieties: (Export) Bindi, Clemson spineless, Lucky 5. (Local) local ochro
2. Weedicide: Herbadox, Gramoxone
3. Pest and Disease control: Rizolex, Belmark, Benlate, Bravo, Perfekthion
4. Fertilizers: Nutrex, 12:12:17+ 2, Sulphate of Ammonia

Quantitative Estimates:

A. Viable Scale of Operation:
1 acre is adequate for a two-person operation

B. Establishment Costs:
Total cost (1 acre) is $ 9,730 of which labour is 44% and pest management control 20%

C. Yields: 11,500 lbs/acre (with 30 fruit/plants including cut back)

Potential Markets:

Local; fresh produce
Export; (U.K., Holland)

Market Price: (Wholesale)

Local Market $ 2.00/lb (about 50 singles)
Export Market $ 1.20/lb

Special Requirements:

Locational considerations include fertile, well-drained sandy loam for maximum yield. The export market requires ochros 3.5" to 4" in length and free of insect damage. CATCO specifications include, boxes 10 lbs. net for the U.K. market and 5 kg. net for the Holland market. Boxes should be shaken to settle the contents exactly with the top and no leaves, stems or debris should be included.

Another major consideration especially with respect to the export market is the need for almost daily harvesting.

CATEGORY: Primary Production

Final Product: ONION

Major Inputs:

1. Seed varieties: Bunching/Nebuka, Yellow Granex
2. Propagating Trays, Seeding compost
3. Weedicide: Tok E25
4. Fungicides: Benlate, Kocide
5. Insecticide: Lannate, Basudin
6. Fertilizers: 12:24:12

Quantitative Estimates:

A. Viable Scale of Operation:

One acre

B. Establishment Cost:

Total cost is $ 5,706 (exclusive of the growing media) of which labour is 41%

C. Yield: 11,000 - 14,000 lbs. per acre

Potential Markets:

Local; fresh Produce Market (must be dried), supermarkets, pizza parlours and processing firms.

Market Price:

$0.55/lb

CATEGORY: Primary Production

Final Product: PIGEON PEAS

Major Inputs:

1. Seed Varieties: UW17, UW10, Chaguaramas Pearl, Tobago
2. Weedicides: Atrazine 80, Gesagard, Gramoxone, Fusilade
3. Insecticides: Malathion, Ambush, Perfekthion

Quantitative Estimates:

A. Viable Scale of Operation:

Ten acres; a major consideration in operational scale is the labour cost for harvesting and the price. Mechanical harvesting is recommended. At the end of year period when prices are high (exceeding $2/lb) a 2 -acre operation may succeed. Growing the crop on a small scale is questionable if the price does not exceed $1.50/lb

B. Establishment Costs:

Total cost is $2,900 of which labour is 50% and land preparation 25%

C. Yield: 2,600/lbs/acre

Potential Markets:

Local Markets; fresh produce market, supermarkets and food processors (shelled and/or frozen)

Market Price:

Ranges from $0.50 to $ 2.00/lb

CATEGORY: Primary Production

Final Product: CANTALOUPE

Major Inputs:

1. Seed varieties: Magnum 45
2. Herbicides: Gramoxone, Dacthal, Amiben
3. Pesticides: Ridomil M258, Champion, Benlate, Diazinon, Belmark, Decis
4. Fertilizers: Organic Manure, 12:12:17.2

Quantitative Estimates:

A. Viable Scale of Operation:

1 acre

B. Establishment Costs:

Total cost is $9,281. Some of the major items of expenditure include;

Labour:	$ 3,840.00
Land Preparation:	$ 1,050.00
Fertilizer:	$ 1,334.00
Pest Management:	$ 2,413.00

Potential Markets:

Local; supermarkets
Export Market

Special Requirements:

This fruit requires very careful pest management on a continuous basis. The export market requires special attention to packaging. CATCO specifications include fruits of uniform size and appearance in CATCO vegetable boxes to a net weight of 9.0 kg with counts of six to ten. A layer of shredded paper should be placed in the base of the box and a divider in the middle to reduce fruit movement. CATCO labels should be attached to individual fruits.

CATEGORY: Primary Production

Final Product: CAULIFLOWER (Fresh market)

Major Inputs:

1. Seed variety: White Baron
2. Weedicides: Herbadox, Gramoxone
3. Insecticides: Decis, Tamaron or Lannate
4. Fungicides: Kocide, Trimiltox
5. Fertilizers: Organic Manure, 13:13:20, Calcium Nitrate
6. Baskets for harvesting

Quantitative Estimates:

A. Viable Scale of Operation:

1/2 acre in grow boxes

B. Establishment Cost:

Total cost for 1/2 acre is $ 6,956.00 of which labour is 28% and material supplies 56%

C. Yields: 1,800 kg/1/2 acre

Potential Markets:

Local Markets; supermarkets, hotels and restaurants (fresh), and processors (pickles, etc.)

Market Price: (wholesale)

From $ 3.00/kg in the Dry Season to as high as $ 14.00/kg in the late rainy season.

Special Requirements:

To avoid blanching of the white head during post harvest, it is necessary to cover with older leaves to exclude sunlight.

CATEGORY: Primary Production

Final Product: HOT PEPPER

Major Inputs:

1. Seed varieties: Local red and yellow
2. Herbicides: Gramoxone, Herbadox
3. Insecticides: Belmark, Vydate, Tambo, Kelthane
4. Disease Control: Bravo, Benlate, Kocide
5. Fertilizers: Pen Manure, 13:13:20, Cal Nitro
6. Seedling Trays
7. Pump (3.8 hp.) knapsack sprayers, miscellaneous tools

Quantitative Estimates:

A. **Viable Scale of Operation:**
2 acres

B. **Establishment Costs:**
Total cost is $ 7,358.00 per acre of which labour is 58%

C. Yield: 10,080 kg/acre

Potential Markets:

Local Markets; supermarkets, food processors, fresh produce market
Export Markets; Holland, United Kingdom

Market Price:
Ranges from as low as 3 cents to as high as 20 cents each

Special Requirements:

Locational considerations include good drainage and the use of a combination of organic manure. The export market requires special packaging, such as, an absence of leaves, broken stems or other debris. Only boxes provided by CATCO should be used and a hot pepper label should be attached to the end of each box. The UK market requires boxes of 9 lbs. net (4.1 kg) and a mixture of different sizes. The Holland Market prefers 8 lbs. 11 ozs. (4.0 kg) and large peppers.

CATEGORY: Primary Production

Final Product: GINGER

Major Inputs:

1. Divided Tubers: Small Hot and Large Yellow
2. Herbicides: TOK E25, Gramoxone
3. Fertilizers: Pen Manure, 13:13:20, Limestone

Quantitative Estimates:

A. Viable Scale of Operation:

1 acre

B. Establishment Costs:

Total cost is $12,900 of which labour is 36% and chemicals 14%

C. Yield: 14,800 lbs/acre

Potential Markets:

Local Supermarkets
Export Market (fresh)

Market Price: (Wholesale)

Ranges between $ 1.91 and $ 4.65/lb

Special Requirements:

A free draining soil. The export market requires special packaging. CATCO specifications include a standard "banana type" carton to 12.3 kg. net weight and should include an extra 5% to allow for shrinkage.

LIST OF EXPORTED AND POTENTIAL EXPORT CROPS

Hot Peppers
Bodi
Ochroes
Carailie
Watermelon
Cantaloupe
Pumpkin
Sweet Potato
Sorrel
Pommecythere
Mangoes (Julie)
Mangoes (Others-green)
Dasheen Bush
Dasheen
Chadon Beni
Fine Leaved Thyme*
Breadfruit
Papaya*
Chennet
Ginger
Melongene

* Potential Export Crops

PRIMARY PRODUCTION:

ORNAMENTAL

PRIMARY PRODUCTION:

ORNAMENTAL

Category: Ornamental

Final Product: ANTHURIUMS (cut flowers)

Major inputs:

1. Planting material, plantlets
2. Chopped coconut husk, coconut fibre bast
3. Saran netting (73% shade)
4. P.V.C.
5. 3/8 cable
6. Teak posts
7. Misting system
8. Insecticides; Kelthanem, Malathion, Diazinon
9. Metaldehyde baits (snails)
10. Nematicide: Furadan
11. Disease Control: Banrot, Daconil, Kocide, Rizolex
12. Weedicide: Herbadox
13. Fertilizers: organic manure, 13:13:20, 5:10:10, or 16:16:16, Micromax or Micromix, Phostrogen or Peter's special

Quantitative Estimates:

A. Viable scale of operation:
one shade house measuring 19 metres by 2 metres holding 10,000 plants

B. Establishment cost:
Total cost is $150,000 with the shade house as the major expenditure (40%) and the irrigation system 30%

C. Yield:
Three (3) blooms per plant in the first year increasing to six (6) blooms per plant in the third year.

Potential Markets:

Local markets; flower shops and export markets.

CATEGORY: Ornamental

Final product: GINGER LILY (cut flowers)

Major Inputs:

1. Flower Shoots, Divisions
2. Nematicide: Furadan
3. Pesticides: Ultracide, Basudin, Diazinon, Chlordane
4. Fertilizers: 12:4:25 + 6, 12:12:17: + 2

Quantitative Estimates:

A. Viable scale of operations:

(not validated)

B. Establishment Costs:

The planting materials cost $5.00 each and flowering plants cost $18.00/plant

C. Yield:

(not validated)

Potential Markets:

Local and export markets

Market Price:

$1.00 per flower

Special Requirements:

Locational consideration include good, rich, soils with plenty of water, seventy-five to ninety percent (75%-90%) humidity, shade and afternoon sun.

AGRO-PROCESSING

CATEGORY: Agro-processing

Product: CANDIED FRUIT

General Notes:

The main products in this group are;
- papaya
- banana
- citrus peel
- gooseberry
- nutmeg pod

Product Description:

Candied fruits are fruits which have been processed in syrup. They are used as;
- snacks
- in the bakery trade as a filler, flavour enhancer and for decoration
- a base material for chocolate coatings

Process Technology:

1. Washing and drying of fruit
2. Separation of guts from the skin; for example, with citrus fruits, a chemical treatment can be applied with a weak solution of Sodium Bicarbonate which removes bitterness and loosens the guts. Other fruits require Slicing, Destoning and Peeling as necessary.
3. Steeping of the fruit peel in progressively higher concentrations of syrup (sucrose). This may be done under vacuum to hasten the process.
4. Finishing which includes washing off excess syrup, drying and cutting the peel into the required size.
5. Glazing (if required).

The method of preservation relies on the removal of water by the action of osmotic pressure after the products have been exposed to gradually increasing concentrated sugar solutions

The crystallized form is made from the candied form by the addition of finely granulated sugar.

The Glace product is obtained if the candied form is dipped in syrup and then allowed to dry.

Major Inputs:

Stainless steel pots
Knives, spoons, strainers
Large plastic buckets
Gas burners
Large weighting scales (50 kg)
Dicing equipment
Polythylene bags
Sealer
Small scale (1 kg)

CATEGORY: Agro-processing

Final Product: CANDIED PAW PAW

Major Inputs:

Machinery and equipment:

Preparation tables
Stainless steel (s/s) Rod washers
S/s jacketed kettle with stirrers
S/s tumbler/mixer
S/s dicer with knives
S/s bins (150 gals.)
Perforated baskets (2 gals.)
Waste hopper
Oven
Steam generator (10 hp., 100p.s.i.)
Vacuum pump
Platform scale
Measuring and quality control equipment, for example, a refractometer

Raw material:

Citrus peel
Fruits
Sugar
Sodium Benzoate
Flavouring/colouring materials

Quantitative Estimates:

A. Viable scale of operations:
A one person operation can manage 20 to 25 lb per week. The scale considerations are very important if peeling is manual.

B. Establishment cost
Total cost is $10,000.00 for a one-person, manual-type operation. Larger operations using equipment as outlined above require investments of $35,000.

Potential Market:

Local; this product is geared toward import substitution or replacememt. For the period January 1983 to December 1988, imports averaged 103,000 kg. per annum.

Market Price:

maximum - $6.00/lb
minimum - $4.50/lb
mean - $5.25/lb

Special Requirements:

Locational considerations dictate that this enterprise be located where there is easy access to the distributors and retailers. The finished product must be packaged in moisture-proof materials.

CATEGORY: Agro-processing

Product: PICKLES (Vegetables)

General Notes:

Several products can be preserved by Brining, that is, immersing them in a salt (sodium chloride) solution. Principal products are:

- cucumbers
- cauliflower
- onions
- green tomatoes
- carrots
- cabbage (sauerkraut)

Product Description:

Preservation of vegetables in salt or vinegar to which spices or oil may be added

Process Technology:

1. Preparation of vegetable (washing, trimming)

2. Curing in salt solution (10%) in a sterile container for four to six weeks, during which fermentation by a lactic acid bacteria occurs. The product may require a more concentrated salt solution if it is to be stored in bulk.

3. Pasteurisation in pickling solution

4. Packaging

The salt composition is maintained at about 12% so that the organisms that are active during fermentation produce sufficient acid to prevent food poisoning organisms from germinating

Sugar is often added to sustain the fermentation process if the vegetable is initially low in sugar.

Major Inputs:

Machinery and equipment:

1. Preparation table
2. Washing sink and drain board
3. Brine Preparation vat
4. Curing vats
5. Platform scale
6. Laboratory equipment for testing
7. Steam generator with water treatment plant
8. Stainless steel steam jacketed kettle
9. Pasteurising trough
10. Water storage tank
11. Fermentation tanks (wooden vats or plastic tanks)
12. Salometer
13. Glass containers

Raw Material:

vegetables
salt
spices, vinegar and other additives

Quantitative Estimates:

A. Viable scale of operation:
(not validated)

B. Establishment costs:

Total cost is $35,000- $40,000

Potential Market:

Local; for the period January 1984 to December 1987, imports averaged 390,000 kgs. per annum.

Market Price: (retail)

Plain and sweet	$6.25/280 grams
	$8.65/355 grams
Chow-chow	$4.80/280 gram
	$7.95/355 gram

CATEGORY: Agro-processing

Final Product: SAUCES

General Notes:

Sauces are blended extracts of condiments, vegetables, fruits, vinegar etc., for use with meats, fish, soups and other foods.

A good sauce with a definite and distinctive flavour requires close attention to the selection and blending of the raw ingredients.

Technological Process:

1. A preliminary treatment of the spices or fruits, usually by boiling them in vinegar to bring out the flavour.

2. Boiling together the various ingredients.

3. Pulping or finishing

4. Bottling

Thickeners must be added at the right time or the acid may break down the mixture.

Pieces of materials, for example, spices, herbs, and peel must not be present in the final product.

Major Inputs:

Equipment:
Steam jacketed kettle
Stirrers
Strainers or filters
Pulper or Blender
Colloid mill or homogenizer
Funnels, pouring vessels
Stainless steel buckets

Special Requirements:

Iron and copper vessels should not be used because these are acted upon by the vinegar and may promote rancidity. Proper sanitation practices must be adhered to, otherwise fermentation may result.

CATEGORY: Agro-Processing

Final Product: SAUSAGES AND PATTIES

General Notes:

The major products involved in this process are:

- beef, beef fat
- pork, pork fat
- chicken
- turkey
- fish

The sausages, patties and burgers are ground meat or fish products which are salted and seasoned.

The term "sausage" today covers a large number of varied products which can be in a casing or formed in a reusable mold. These products can either be chopped or course ground items or fine ground emulsions.

Major Inputs:

Equipment:

Meat grinders

Paddle mixer or ribbon blender

Bowl chopper or silent cutter

Stuffer or linker

Stable machine

Smoke house

Vacuum sealer

Meat slicer

Digital scale

Patties former

Special Requirements:

The choice of the raw material, especially the meat cuts is very important. A knowledge of the factors which contribute to the formation of a stable emulsion and the role of binders, extenders, seasonings and spices is also necessary.

SERVICES

CATEGORY: Services

Final Product: KITCHEN GARDENS

Service Description:

Preparation of plot

Supply of growing medium

Transplanting of seedings

Maintenance of plot

Major Inputs:

Gardening tools

Supplies of manure

Supplies of seedlings

Vehicle

Quantitative Estimates:

A. Viable scale of operation:

Two- to three-person operation servicing three clients a week

B. Establishment costs:

Total cost is $12,000.00

Potential Markets:

Local; middle to upper income families, companies and credit unions.

Market price:

$200- $500 for plots of 500 sq. ft.

CATEGORY: Services

Final Product: SEEDLING NURSERY

Major Inputs:

1. Nursery 'house' 30m x 15m x 4m
2. Seedflats wooden boxes 8cm x 45 cm. square
3. Benches (staircase structures)
4. containers (black plastic bags, styrofoam cups)
5. Seeds
6. Irrigation system
7. Tools
8. Chemicals
9. Propagating medium (sawdust 75% and sand 25%)

Quantitative Estimate:

A. Viable scale of operation:

5 person operation with 120,000 plants per annum

B. Establishment costs:

Total cost is $36,000.00

Potential Markets:

Local; commercial farmers, plantshops, landscappers and backyard enthusiasts.

Market price:

25 cents to 50 cents per seedling.

Special Requirements:

Locational considerations include flat land, access to water for irrigation and accessibility to purchasers.

CATEGORY: Services

Final Product: TRACTOR SERVICES

Service description:

Land clearing and Levelling

Brushcutting

Rotavating

Ploughing

Banking

Major Inputs:

Machinery and equipment:

1. Tractor
2. Brush cutter
3. Rotavator
4. Disc plough
5. Tatu roof

Quantitative Estimates:

A. Viable scale of operation:

single person operation servicing 5 acres a day

B. Establishment cost:

Total cost is $110,000.00 of which machinery and equipment is $106,000.00 and insurance 1,615.00

Market price:

$200.00- $350.00 per acre.

LIST OF OTHER SERVICES

Landscaping

Potted plants

Soil Production

Soil mixtures for Grow Boxes

MISCELLANEOUS PROFILES

CATEGORY: Apiary

Final Product: HONEY

Major Inputs:

Starter colonies

Protective wear

Hive stands

Hive parts

Tools and Equipment

Quantitative Estimates:

A. Viable scale of operation:

10 hives

B. Establishment cost:

Total cost is $7,000.00 of which tools and equipment is $2,200.00, construction of hive parts $2,700.00 and purchase of starter colonies $900.

C. Yield:

10 litres of honey per hive per year.

Market price:

$33.00/ litre (honey)

$90.00 per nuclei

Special requirements:

Locational considerations become very important in the production of honey; an apiary must be at least 200 metres from the nearest residence and 100 metres from the nearest roadway. This is in accordance with the recommendation from the Ministry of Food Production and Marine Exploitation.

CATEGORY: Wildlife Farming

Final product: AGOUTI

General Notes:

Agouti stock can be purchased from registered wildlife farmers in Trinidad and Tobago. To start production, acquire all stock from one source since it is not advisable to have more than four strangers in one group. The recommended ratio is one male to two females.

Major Inputs:

Infrastructure:

1. A pen in the form of a cage on the ground, made with BRC frame with a finer mesh covering around the base to prevent the young from escaping. Larger enclosures will require concrete floors with a gradient to all run-off.

2. Concrete troughs or metal containers

3. PVC pipes or hollow logs

4. Hollow clay bricks

5. Feed:
   -Fruits and vegetables, such as, coconut, cassava, pumpkin, mango, pommerac, potatoes, avocado, bananas, legumes, melon, west indian cherry.
   -Shrubs and grasses, such as, Hibiscus, watergrass, rabbit meat, St. John's bush, railway daisy, candle bush, crepe-coq.
   -Commercial feed, such as, dairy ration, rabbit ration and cracked corn.
   -Garden spoils and table scraps such as patchoi, lettuce, carrots, watercress and cabbage.

Husbandry:
No detrimental diseases have been recorded for these animals. It is necessary to clean pens daily and keep agouti away from pigeons, poultry or other livestock. Feed once or twice daily. Meat of any kind is not recommended as a food item.

Breeding Management:
The Maternity Cage Method increases breeding rates and offspring survival. A dominant male is isolated in a smaller cage in the community pen or close to the main pen. A female is placed in the cage after one week and left there for two weeks. The female is then returned to the main pen where she is monitored. The process is repeated with another female.

LIST OF OTHER WILDLIFE ANIMALS

Lappe

Deer

Tattoo


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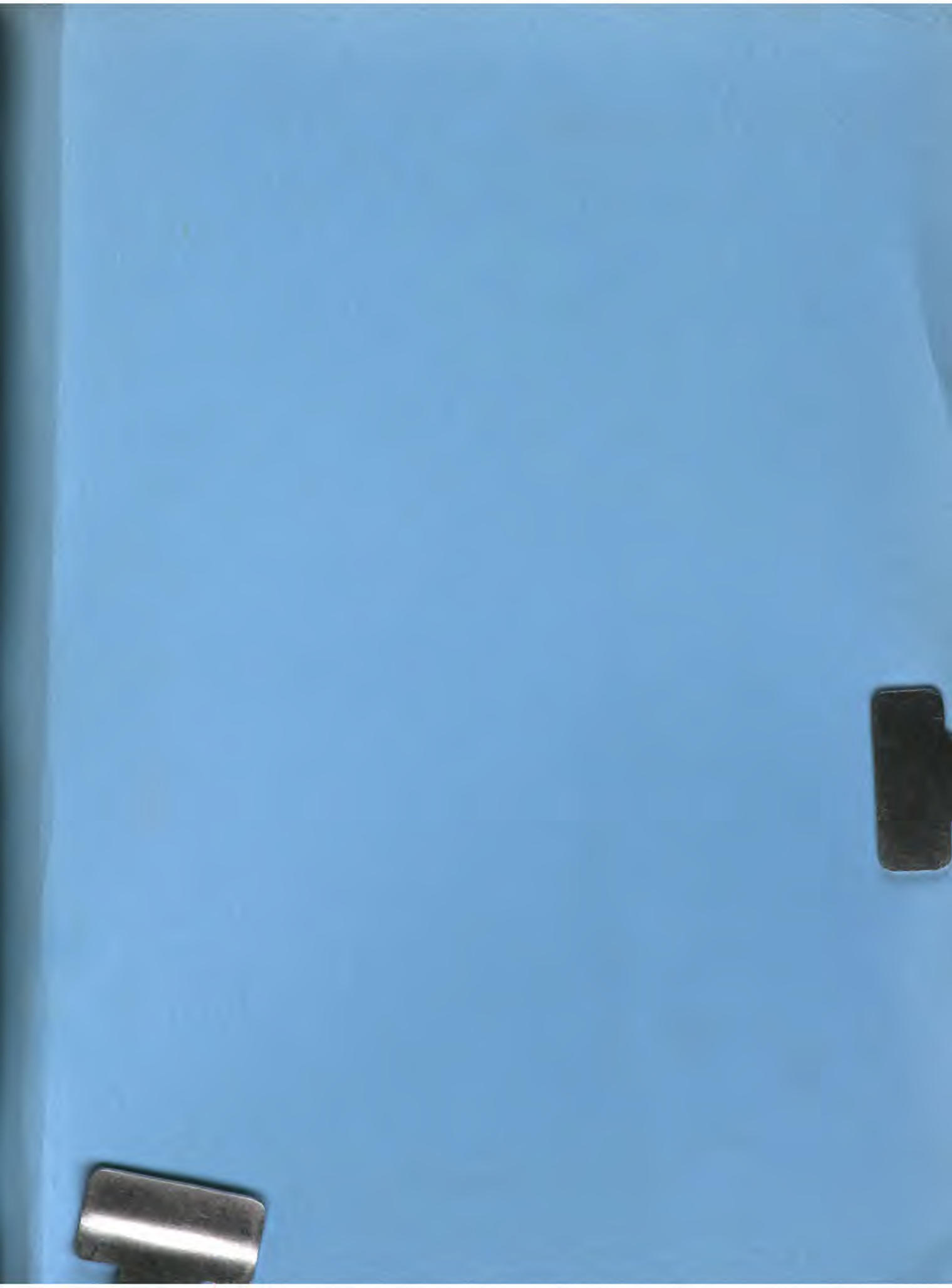


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