Market Based Agricultural Risk Management for the Coffee Industry

World Bank
Non-Lending Technical Assistance
Agriculture Risk Management in the Caribbean

Kingston, Jamaica
June 18, 2009

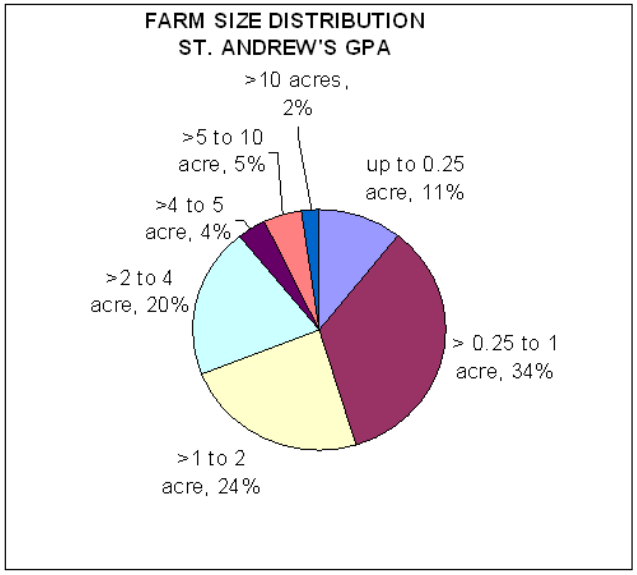
ALL ACP AGRICULTURAL COMMODITIES PROGRAMME

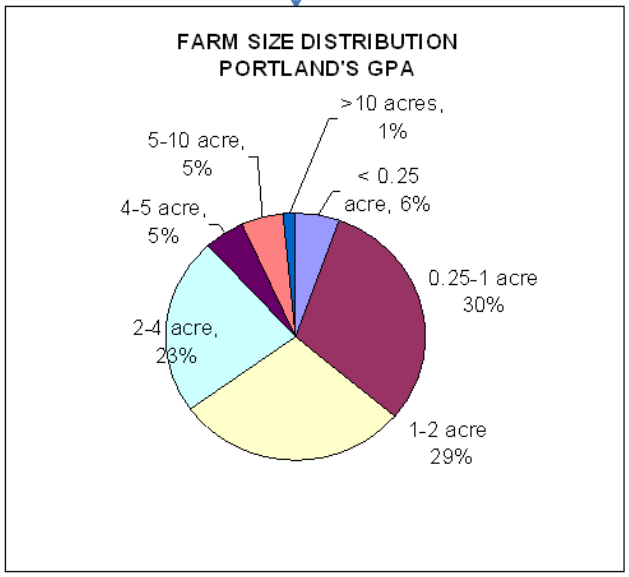
Agenda

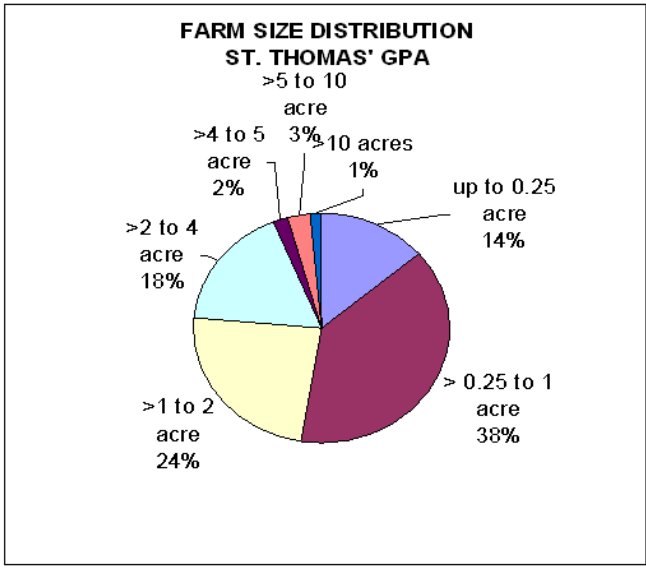
- Coffee industry
- History of coffee insurance
- Index-based Insurance for Coffee farmers
  - Objective
  - Scope of technical assistance
  - Technical Challenges
- Possible Options.
  - Index weather insurance for individual farmers (Option 3)

Structure of the Coffee Industry.

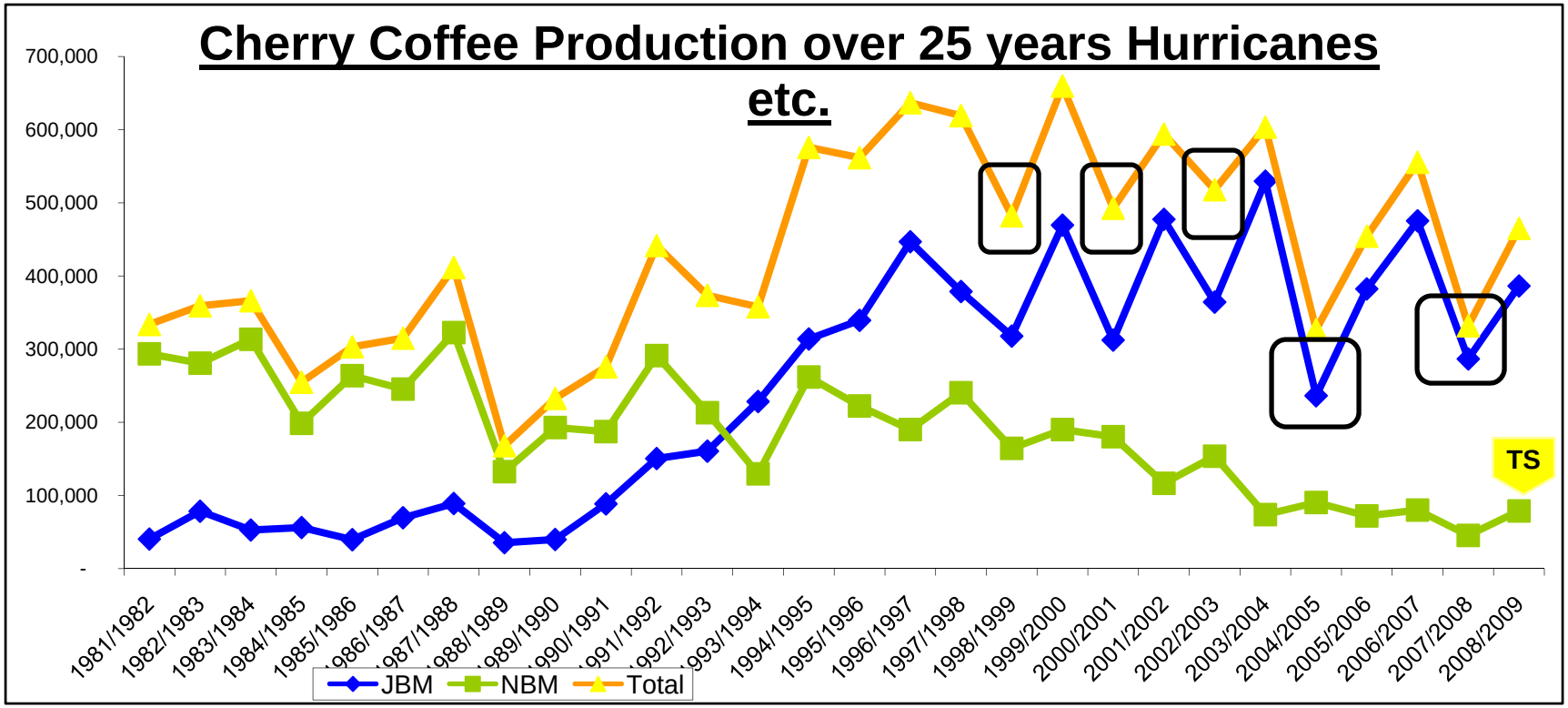
GPA	Total Farmers	Farmers with production & acreage	%	Total coffee area	%	Average production 2000/01 - 03/04 (Boxes)	%
St. Andrew	2,916	2,454	84%	5,822	44%	120,540	53%
Portland	2,238	1,710	76%	4,121	31%	58,226	26%
St. Thomas	1,878	1,632	87%	3,347	25%	47,567	21%
TOTAL	7,032	5,796	82%	13,290	100%	226,333	100%







Main causes of Coffee yield Losses



Main causes of Coffee yield Losses

Cherry Coffee Reaped.

Crop Season	Climate Event	Bmountain (Boxes)	% Change/year	NBMountain (Boxes)	% Change/year	Total Boxes	% Change/year
1998-1999	**Unusual heavy rainfall**	317,843	-16%	164,404	-32%	**482,247**	-22%
1999-2000		438,036	38%	167,642	2%	**605,678**	26%
2000-2001	**Drought, wind storm damages, flood rains.**	312,403	-29%	180,253	8%	**492,656**	-19%
2001-2002	**H. Michelle (Cat 4)**	477,575	53%	116,491	-35%	**594,066**	21%
2002-2003	**H. Isidoro and Lily**	364,356	-24%	153,528	32%	**517,884**	-13%
2003-2004		529,704	45%	73,809	-52%	**603,513**	17%
2004-2005	**H. Ivan**	236,405	-55%	90,318	22%	**326,723**	-46%
2005-2006	**TS Dennis, Emily and Wilma**	382,421	62%	71,950	-20%	**454,371**	39%
2006-2007		475,416	24%	80,032	11%	**555,447**	22%
2007-2008	**H. Dean**	286,636	-40%	45,313	-43%	**331,949**	-40%
2008-2009	**TS Gustav**	386,425	35%	78,691	74%	**465,115**	40%

History of Coffee Insurance.

CIB Insurance Program

- Administered by trustees for CIB:
  - ✓ Purchased Commercial Reinsurance.
  - ✓ Managed the Program (Aggregated shorfall policy).

Claims response was not properly defined

Farmers did not understand the bases of the insurance provided.

Total Individual Coverage ≠ Comercial Policy

There was a Generalized Unhappines with the CIBIP.

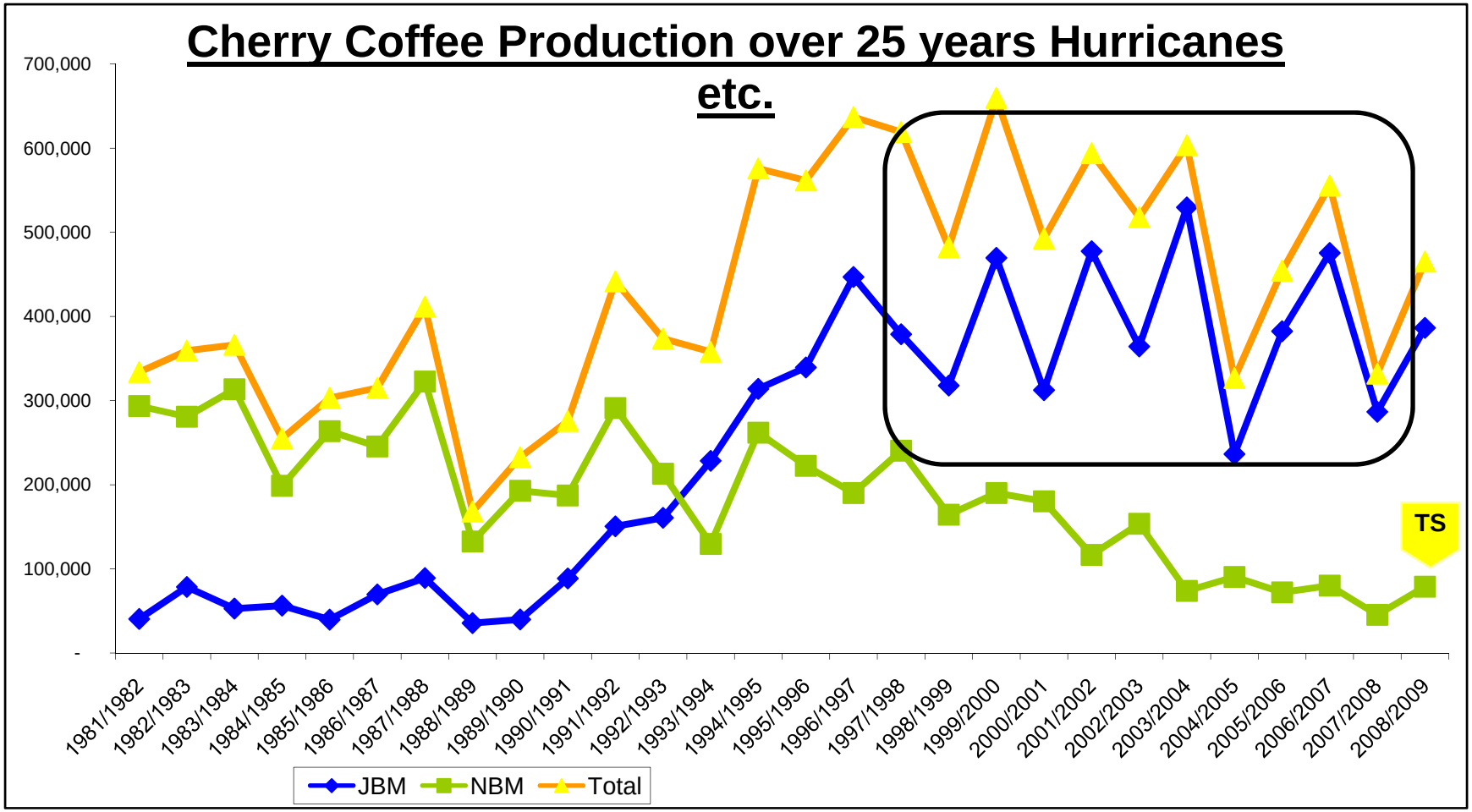
Take the past experience and reestructure/modify what is needed.

- **Individual Contracts vs Collective contracts.**
- **Updating and Administering Farmer Registration and Activity Tracking System (FRAT)**
- **Solving financial lack of liquidity at the moment of paying the premium.**
- **Secure premiums to insurers and reinsurers.**
- **Simplify channels to collect premiums and distributing payments (minimize/eliminate field survey).**
- **Improve the institutional structure and capacity that already exists for reaching farmers.**

Index Based Insurance for Coffee Farmers

- Objective:
  - **Assisst the CIB in designing and implementing a financial market-based mechanism for transferring weather risks to the international market.**

- Scope in providing technical assistance:
  - **Layering weather risks,**
  - **Designing a delivery channels for premium collection and payouts.**
  - **Risks quantification,**
  - **Structuring a weather insurance product,**
  - **Reinsurance negotiations.**


Cherry Coffee Production over 25 years Hurricanes etc.
700,000
600,000
500,000
400,000
300,000
200,000
100,000
-
1981/1982
1982/1983
1983/1984
1984/1985
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2003/2004
2004/2005
2005/2006
2006/2007
2007/2008
2008/2009
TS
JBM
NBM
Total

Technical Challenges

- Lack of data or inadequate infrastructure.
  - **There are no wind gauges in the BM, for pricing and monitoring contracts.**
  - **There will be a need to install new wind and rain gauges in the coffee regions.**
  - **Statistical base (production, losses, risks).**
    - **Farmers deliver berries to different dealers and factories.**
- Lack capacity or willingness to pay premiums.
  - **Need to find a financial arrangement to overcome the financing gap problem that farmers lack liquidity at the moment premiums are due.**
- Presence of huge basis risk.
  - **Extreme topography in the BM area, and its impact on localized wind and rain patterns.**
  - **Design a mechanism to compensate genuine losses incurred by farmers, but not triggered parametrically.**
  - **Agronomic cycle of coffee trees varies in relation to altitude and coffee areas.**

Options Considered

1. Traditional crop insurance;
2. An aggregate parametric trigger for the industry as a whole;
3. Parametric insurance with individual contracts to farmers;
4. Same as 3, but with creating a fund to deal with basis risk; and
5. Doing nothing

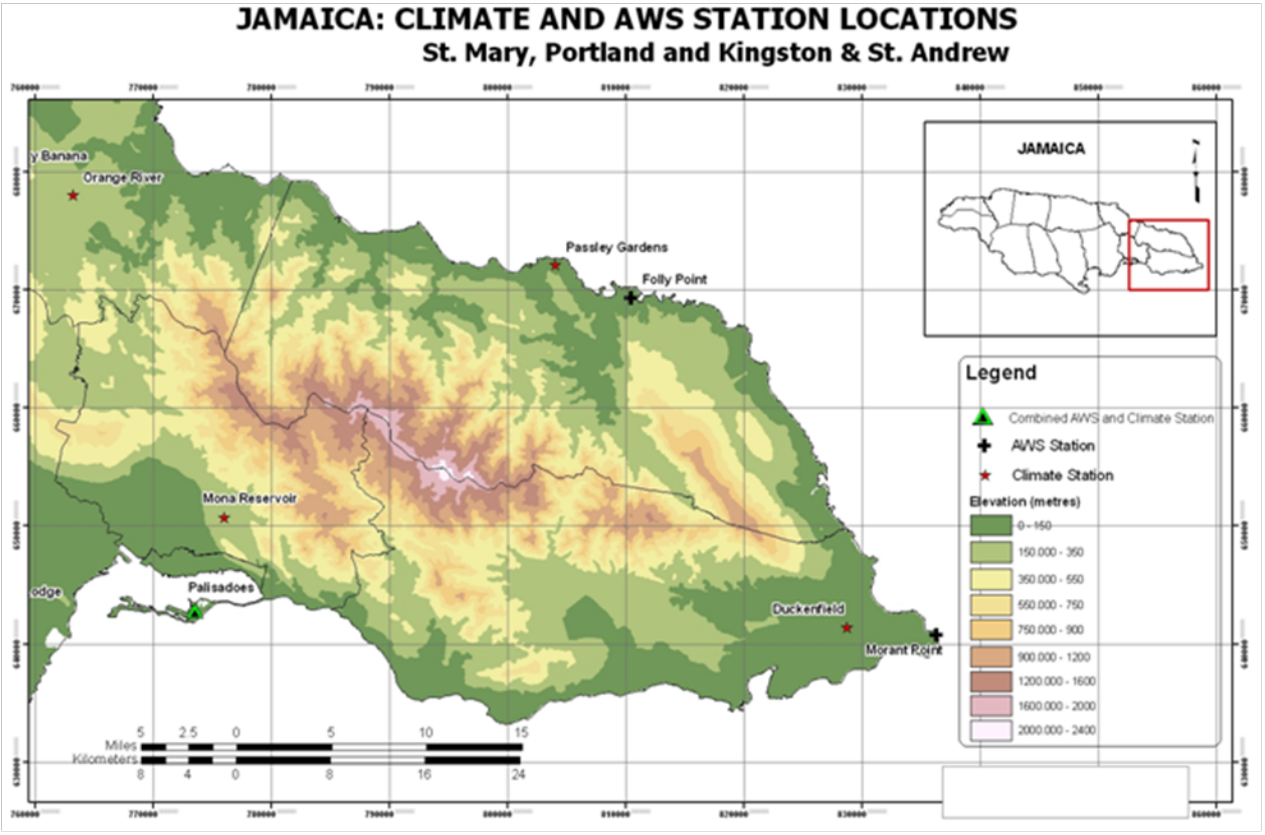
Possible Options.

Possible Options	Advantages	Disadvantages	Observations
1. Traditional Crop Insurance.	▪Indemnity according to individual farmer loss	▪ Loss assessment highly problematic, and costly ▪ Need of an insurance and claims management unit. ▪ High moral hazard ▪ *Reinsurers will not provide support*	▪This option has been tried and is highly challenging. ▪There are almost insurmountable operational difficulties
2. **Aggregate Parametric Trigger** (either (a) index based on hurricane track parameters or (b) based on triggers at a series of weather stations)	• Likely to be acceptable to reinsurers • Payouts based on independent and transparent parameters • (a) would be easy to implement	• Cannot operate without setting up scheme to distribute aggregate payout to individual farmers • Does not solve loss assessment needs at individual farmer level • Trigger type (a) gives high basis risk even at whole-industry level and cannot capture excess rainfall • Trigger type (b) requires new local station network in coffee areas as in (3)	• This option would make aggregate payment to CIB. • Does not address how to distribute claims to farmers • Neither hurricane track or weather-based option addresses underlying difficulty of previous scheme

Possible Options.

Possible Options	Advantages	Disadvantages	Observations
3. **Parametric Trigger with individual contract to farmers** (Based on weather stations)	• Transparent index • Rapid claims payment • No field loss assessment • Simple product allowing insurance contract to farm level • Likely to be acceptable to insurers and reinsurers • CIB act as distributer and not as insurer	• High Basis Risk • Few existing rain stations and no wind stations in coffee areas • Setting premium rates and triggers, and defining sub-zones, is technically challenging, and needs risk modeling • New automatic weather stations needed • Needs careful extension to farmers. • Premium rates and affordability unknown – increase in frequency of recent events	• High basis risk means that this option needs to be considered as "income supplement" and not "crop insurance".
4. **As (3) but with additional Basis Risk Fund**	• Basis Risk Fund targets farmers who are genuinely affected by loss when trigger not hit	• Individual farm assessment required for localized damages to be compensated under the Basis Risk Fund • Difficult to define coverage and to limit the circumstances which the Fund is required to compensate. This depends on extent of basis risk and on the triggers levels of the parametric product as in (3)	• This Fund would still need conventional individual farmer loss assessment (as per previous scheme). • It would be essential to clearly define and limit situations in which Fund responds to claims, to be operationally and financially feasible • It is recognized that the Basis Risk Fund would carry operational challenges.
5. **Nothing**	• Decision that insurance solutions are highly challenging or "too difficult"	• Financial protection against major events is extremely highly demanded by the industry and ranked as a top priority	• Insurance is just one of many measures needed by the industry,

Option 3. Parametric Insurance: Individual Contracts for Farmers.

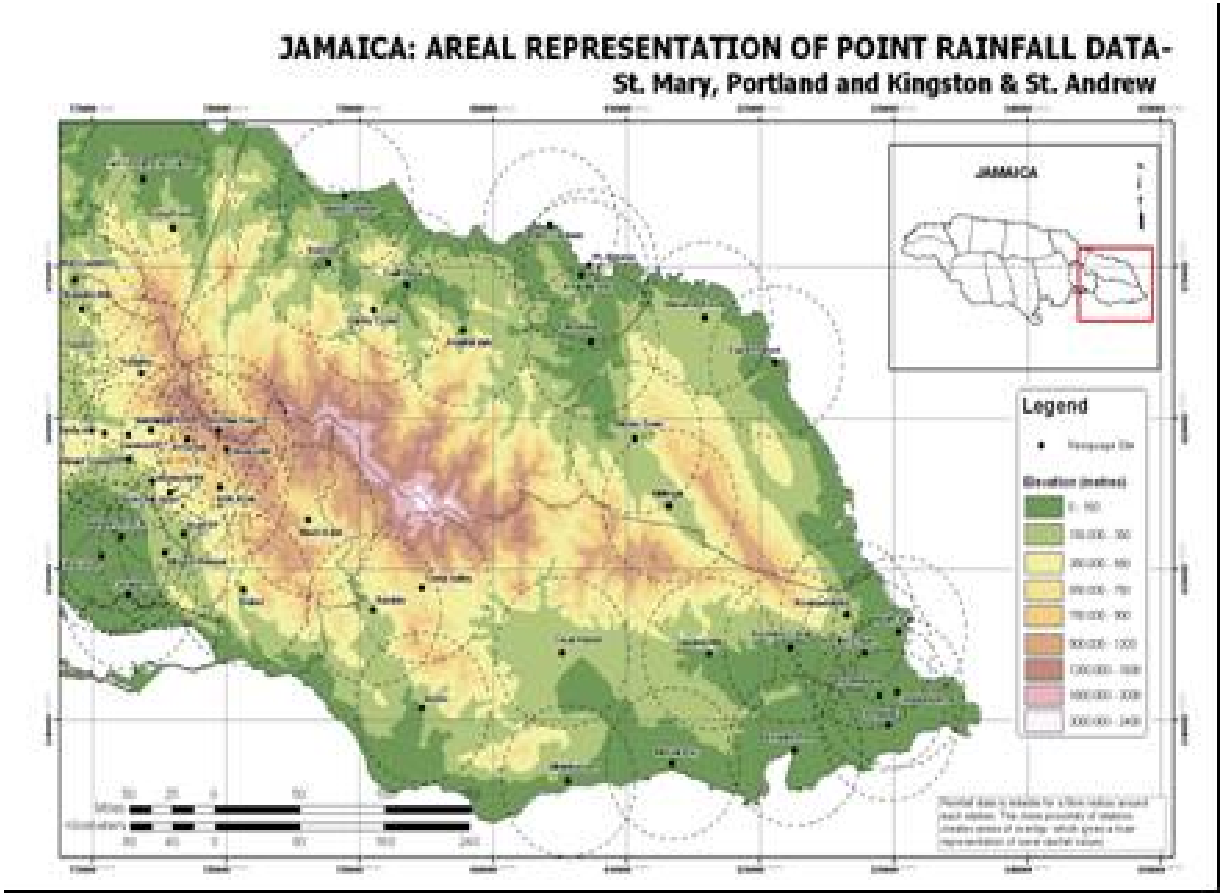


- Automatic weather Stations:
  - 10 ws (US$12,000.00/ws)
- Calibration of WS and triggers.
- Product Design:
  - Period of coverage.
  - Insured entity.
  - Sum insured.
  - Scale of sum insured by date.
  - Trigger definition.

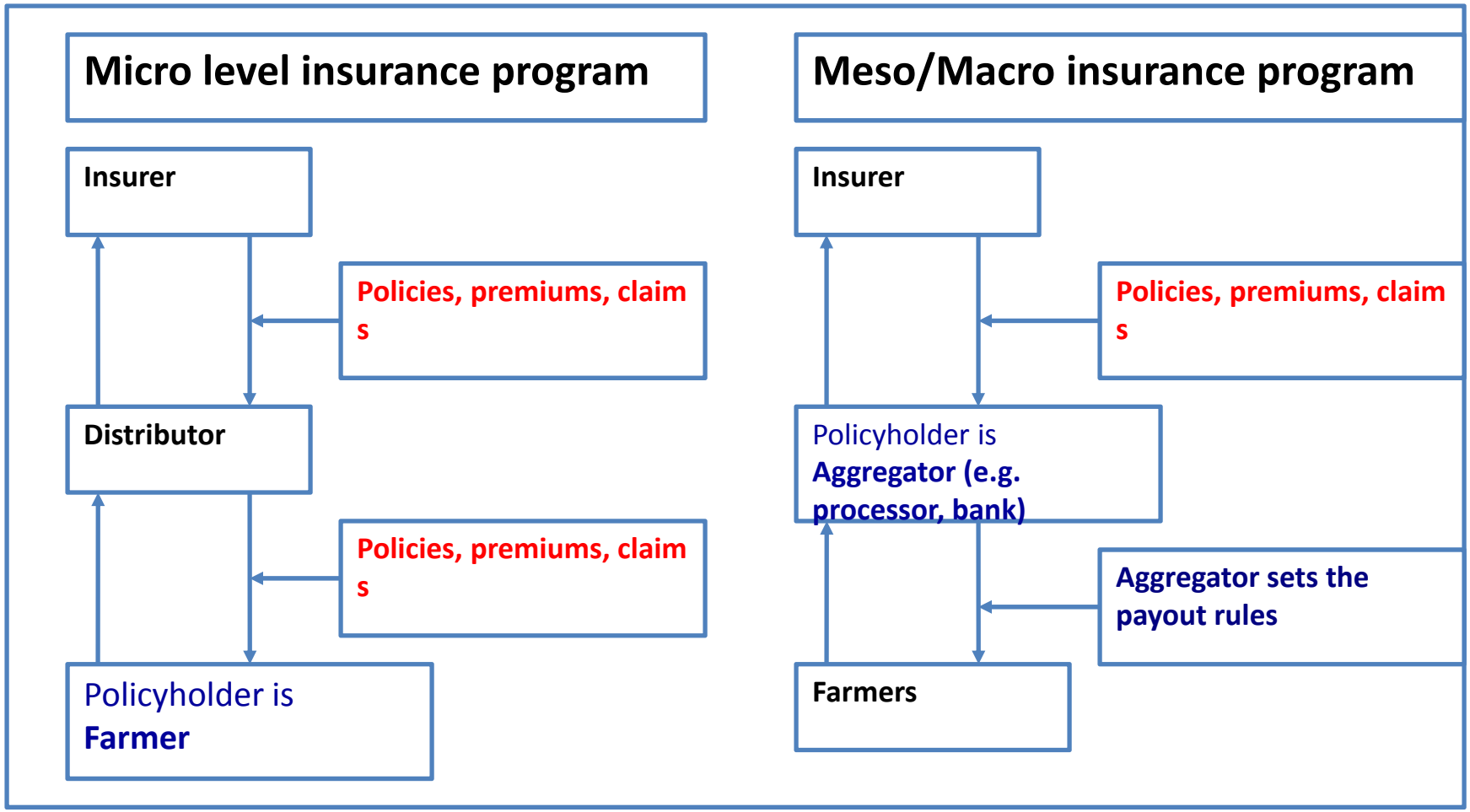
Source: National Meteorological Service

Option 3. Parametric Insurance: Individual Contracts for Farmers.

- Adm and contractual arrangements:
  - Who will underwrite?.
  - Voluntary or automatic.
  - Distribution and Enrolment.
  - Premium and Claim Payments.
  - Farmer extension.
  - Pilot implementation.
- Financial Arrangements.
  - Development costs.
  - Capital funding and maintenance budget for AWS.



Insurance Structures.



Coffee Industry Board Jamaica Index Insurance Project

Overview Planning - Feasibility Study and Pilot Design