

Agricultural reinsurance

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NOT IF, BUT HOW



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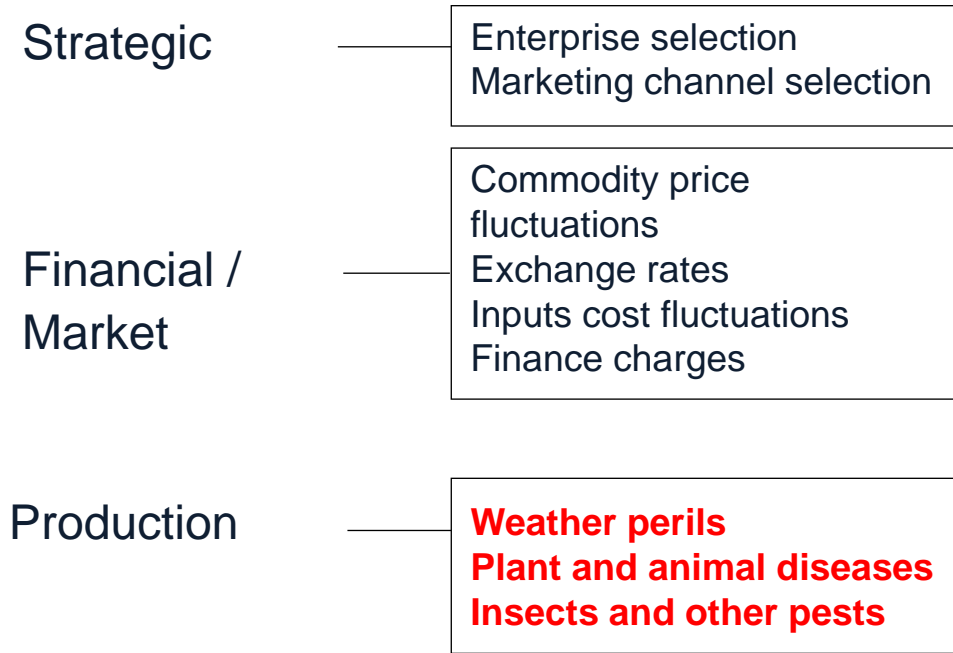
Risk in Agriculture

01



Risks in Agriculture

Farmers are exposed to the vagaries of climate



Role of agricultural insurance

02



Producers face...

- Increased risk due to climate change
- Decrease of production margins
- Low financial reserves to absorb losses
- Difficulty in accessing finance



What crop insurance can do:

- Stabilise producers' income
- Provide an incentive for investment
- Serve as collateral and allow access to finance



What crop insurance cannot do:

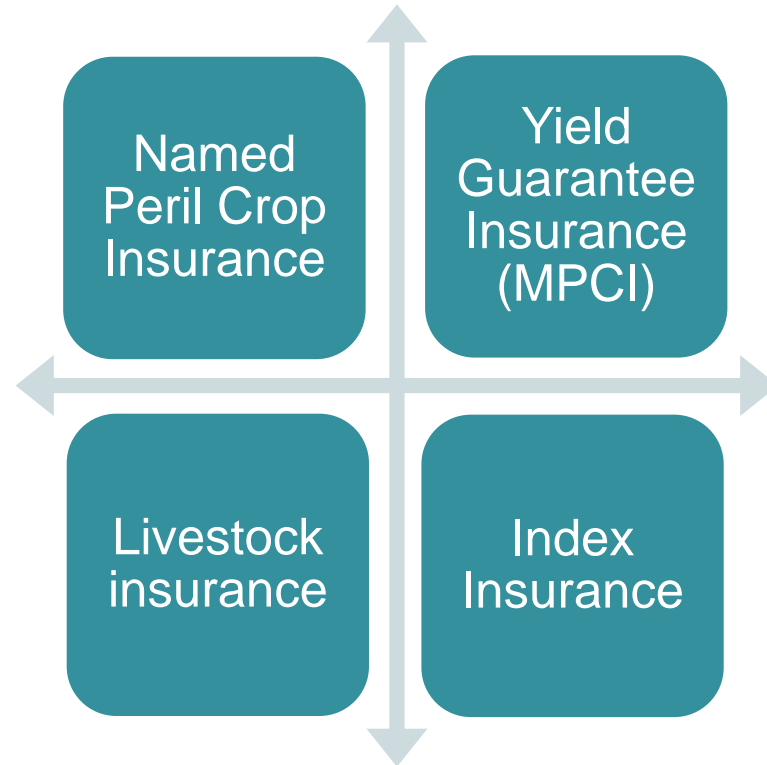
- Compensate for poor management and cultivation practices
- Compensate for inadequate agricultural policy of government (infrastructure, subsidies)
- Mitigate price fluctuations of commodities



Types of Agri cover

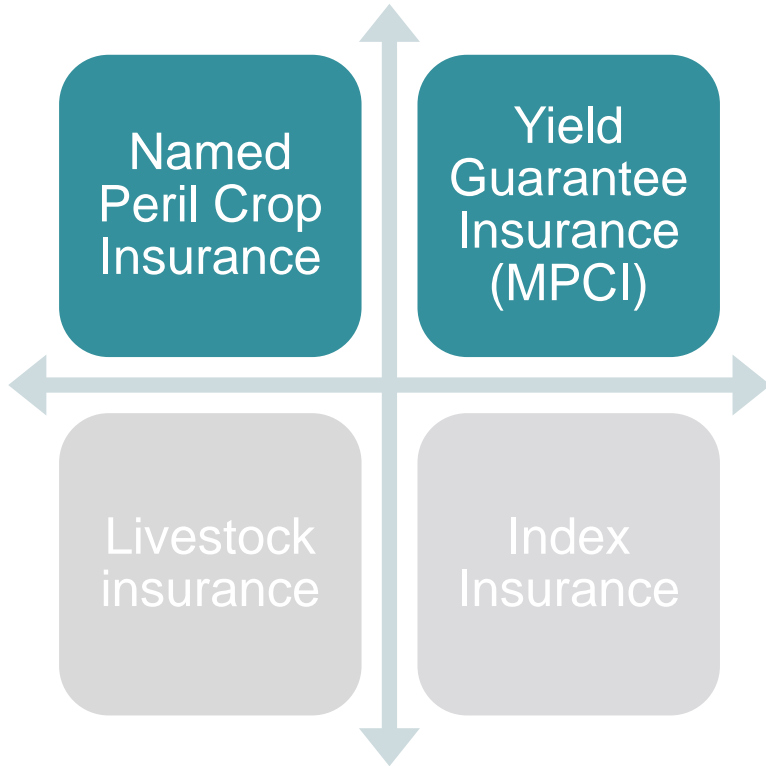
03





➤ Other special covers include Greenhouse, Pet, Aquaculture and Forestry insurance

Traditional crop covers



Insurable Perils in crop production

- **Adverse weather conditions:**
 - Hail
 - Storm, Wind , Sandstorm
 - Floods, Excessive rainfall.
 - Drought, Heatwave
- Fire & Lightning
- Uncontrollable disease and pests
- Transit Risks (Accidents & Overturning)



- **Product alternatives:** - Fixed sum insured
- **Application :** - Named perils (e.g. hail, frost, inundation)
- **Advantages :**
 - Simple product design
 - Loss adjustment based on % loss
 - Reliable, scientifically based loss adjustment procedure used.
- **Disadvantages :** - Only applicable to few risks (e.g. hail, fire, frost)

- Product alternatives:**
 - Individual historic yield (farm level)
 - Regional average yield
- Application :**
 - Applicable for all climate risks
- Advantages :**
 - Comprehensive cover, all climate risks
 - Easy to understand
 - Very good correlation between yield and indemnification
- Disadvantages :**
 - Determination of yield guarantee is a challenge.
 - All climate risks have to be insured.
 - Indemnification of non-insured perils (e.g. pest and diseases).

The rate is determined by the Insurer according to:

- Crop Type History
- Area Exposure History
- Farmer's Loss History
- No-Claim-Bonus
- Market/Competition
- Perils to be insured
- Susceptibility of crop to insured peril
- Location
- Spread (Distribution)
- Loss experience
- Growth cycle
- Planting and harvesting dates
- Evaluation of horticultural practices (management)
- Risk management
- High producer participation
- Technically sound terms

Basis of Sum Insured

1. Based on yield x price x area
2. Amount independent of yield

Hail Loss Assessment:

Count on 1/4 square meter:

- No. of plants lost
- No. of leaves or leaf area lost
- No. of seeds lost

Use tables to calculate the expected loss of yield in percent:

e.g.

35 % of expected crop lost =

35 % of Sum Insured to be paid (less deductible).



MPCI Loss Assessment:

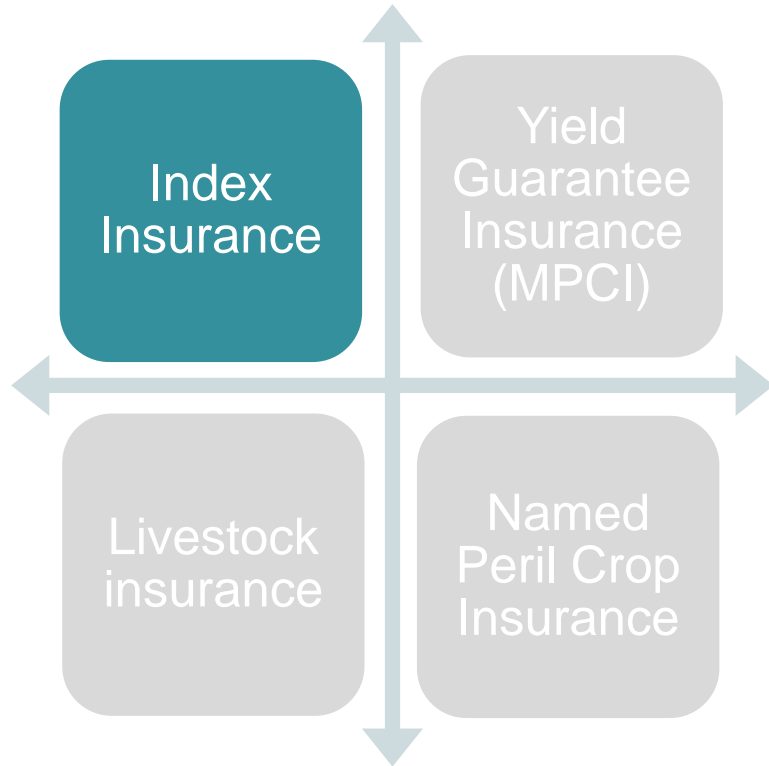
Agreed average yield is 4 tons/Ha

Yield insured is 70% = 2.8 tons/Ha

Actual Yield is 2.0 tons/Ha (measured by sample weighing)

→ Indemnity is 0.8 tons/Ha

Index Insurance



An insurance method that relates pay-outs to an index correlated to agricultural production losses rather than to the actual losses incurred, primarily used in Agriculture particularly for smallholders in developing countries :



Target Population

Low-income farmers producing for surplus



Distribution

Various channels; often bundled with other services in the supply chain



Class

Field crops
Livestock
Pastures/
grassland



Affordability

Commensurate with income levels of low-income groups; often with other services

What do we consider to be index insurance?



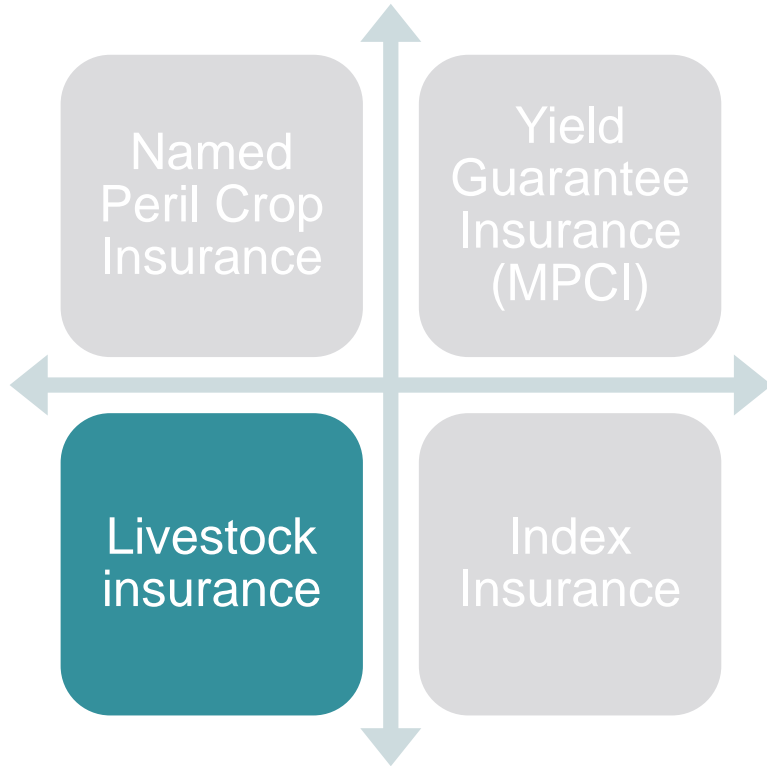
Index product

Elements of an index cover

Insurance cover selection depends on many factors:

- Supply chain configuration
- Data availability (historical and in-season)
- Data granularity
- Weather peril (systemic or localized)
- Farmer needs
- Premium affordability

Most useful for small scale farmers in RoA



Insurance of cattle, sheep, goats, as well as game

Pet insurance was recently added to the portfolio

Scope of Cover

- All-risks of Mortality
- Death / emergency slaughter due to accident
- Death / emergency slaughter due to fire, explosion, lightning, storm
- Loss due to proven theft

Sum Insured

- Agreed upfront inception of policy
- Not to exceed market value
- Purchase price
- Declared value i.e. high value animals



- Type of animal
- Susceptibility
- Location
- Age (Growth cycle)
- Overall Management and production system
- Spread
- Loss Experience
- Normal Mortality
- The excess structure

Special Covers



Greenhouse



Pet



Aquaculture



Forestry



- Cultivating crops and vegetable in sheltered structures
- Mostly used for Vegetables, flowers, fruits and seedlings
- Different structures

Types of greenhouse facilities

- Glass Structure
- Shades
- Plastic
- Indoor structures

Scope of cover

- Fire and lightning
- Named peril cover with frost, hail, etc

Underwriting Considerations:

- The crop
- Structure details (e.g. material used, age, location)
- Management
- Appropriate technology



- Accident and illness coverage for family-owned pets,
- Although pet insurance is classified and regulated as P/C insurance, it has many similarities to Life health insurance in terms of coverage and rating

Types of insured pets

- Insured pets are most commonly dogs and cats
- Exotic Pets cover : Birds, Reptiles, Mammals Land-based

Scope of cover

- Accident Only
- Accident and Illness
- Wellness & Prevention
- Third-party Liability may also be added

Underwriting Considerations:

- Geographic area,
- Pet age
- Breed
- Deductible, co-pay, limit,
- Common exclusions: Pre-existing conditions, Cosmetic procedures, Breeding/whelping, Prescription diet food, Supplements & herbs



- The production of marine life under controlled conditions in fresh or sea water
- E.g. fish, crustaceans, mussels and plants
- More than 600 species are currently farmed globally

Types of aquaculture systems

- Water-based systems :cages and pens, inshore/offshore
- Land-based systems: rainfed ponds, irrigated or flow-through systems, tanks and raceways
- Recycling systems: high control enclosed systems, more open pond based recirculation

Scope of cover

- All risks mortality (ARM) with exclusions
- Named peril depending on the market
- General exclusions are similar to property policy

Underwriting Considerations:

- Suitable location
- Appropriate technology
- Experienced and skilled farm management
- Economic viability



- There are distinct differences between natural forests, managed forests and forestry plantations
- Munich Re Group focus on forestry plantations
- Mostly Pine or Eucalyptus species

Types of forestry

- Natural forests
- Managed forests
- Forestry plantation

Scope of cover

- Common cover is against Fire and Lightning
- Storm or other perils such Hail or Frost may be added

Underwriting Considerations:

- Location and topography: risk is higher in areas with high temperature and low precipitation,
- Risk Management
- Species

MR Tech Initiatives

04



MR tech Tools: provide end to end solution for Pricing, Portfolio Monitoring, and LR estimation



REVA

- REVA (Risk Evaluation Tool) is webbased **PI pricing tool**.
- Less prone to human error
- Stochastic calculation of cat loading and heterogeneity instead of spreadsheet based deterministic approach
- Historical yield data is available in the database which is link to the platform
- **Soft factors** i.e. weather forecast, farm management practices, ground level expertise, and specific risk are also **incorporated quantitatively**



MR Capture

- **Precise survey** data collection mobile Application (CHM, CLS, CCEs)
- **Analytics driven** dashboard for **management view**
- Helps in **near real time** ground level monitoring, manpower management and tracking of portfolio
- **Alert** in case of **expected LR is high**
- **Aid to satellite based analysis** and reporting



Agro View

- **Analytics driven** dashboard based on exposure and satellite data developed in collaboration with **GAF Munich**.
- **More than 20 years** of satellite & weather data for **risk assessment** and **portfolio selection**
- Helps in **Crop Health Monitoring** during cropping season and support towards loss assessment
- **Fortnightly** satellite & weather based portfolio reports

Reinsurance

05



- Reinsurers carry exposure to relieve agriculture insurers
 - Some Reinsurers can support in
 - Product development
 - Product pricing review
 - Global expertise
- Help developing public private partnership for ag insurance system to make all agricultural risks insurable

Thank you for your attention!

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