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OVERVIEW OF SEED VALUE CHAIN

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INTRODUCTION

Definition: Value chain is a sequence of events from development, production, processing, marketing and use of the product.

- Discussion is on overview and description of Seed Value Chain
- The Chain can be described by six links
 - Plant breeders or product Developers
 - Seed companies, conditioners/processors, seed labs
 - Seed growers,
 - Regulatory agents owing seed labs
 - Marketing agents, Distributors(stockists), exporters, importers)
 - End user (farmers)

DEVELOPERS (PLANT BREEDERS)

- Government Research organization
- Private seed companies
- Universities
- International Research Organizations
- Government seed projects
- Non-governmental organizations
- Name developers in your County

SEED CONDITIONERS/COMPANIES

- These are registered business owners
- They may be members of seed trade associations
- They prepare and implement seed business plans
- They may have seed processing plants
- They may have accredited seed laboratories
- How many seed merchants are in your country?
- What are seed processing arrangements in your country ?

SEED GROWERS

- These are selected and trained by developers mostly under regulations
- Each Grower is given distinct crop and variety and is trained to ensure quality seed is grown and delivered to the owner
- All have uniformity of practice by adhering to standards provided by regulator and must delivery high quality seed to the owner
- Discussions:
 1. How do you select seed grower in your country
 2. Is criteria enforced by regulator?
 3. How many seed growers does your company have?

REGULATORS

- These national seed regulating authorities
- They enforce seed laws
- The regulation is either voluntary or compulsory
- Is seed law strictly enforced in your country?
- Are seed labs under regulators or private?
- What do you recommend would be best for your country and why?

MARKETING AND DISTRIBUTORS

- After processing, seed providers have a range of method on how to promote, market and distribute the seed to Customers
- Seed provider is responsible for marketing and distributing the products
- Seed provider normally selects distributors/stockists) in order to reach as many locations as possible.
- Each must provide information to end user without delay.

END USER

- Seed end user depends on the seed classes
- Breeder seed ends with licensed seed companies
- Certified generation one (CG1) seed ends with farmers who buy it from the distributors/stockists.
- What link in the chain do the end users encounter when getting the seed from various actors?

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**SEED CERTIFICATION (FIELD INSPECTION,
TRANSPORT, PROCESSING, TESTING AND
LABELLING and GMO SEED PRODUCTION**

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INTRODUCTION

Seed system include production, certification, marketing and USE.

- Seed production is done by breeders, seed companies and other private entities under both internal and regulator quality assurance
- The regulator enforces seed laws through certification which include
 - Field inspection to ensure seed crop retains genetic purity
 - Seed transport control to ensure the harvested is what is in store
 - Lab services which include, sampling and testing according to seed laws, OECD and ISTA rules to allow international trade
 - Labelling and sealing/packaging ensuring what was in the field is what is sold to farmers
 - Monitoring marketing and distributors(stockists), exporters, importers) and end user (farmers) packages

CERTIFICATION

- Includes field inspection
- Done by both producer and regulator
- Regulator requires that
 - Seed crop is registered with regulator
 - Producer provides proof of origin showing the Breeder
 - Inspectors determine crop is grown per agreed standards
 - Seed crop is pure, no genetic contamination and free from pests and diseases
 - Transport of harvest is monitored upto the store (in Kenya)
 - Is transport monitored in your country?

Certification Includes Seed Conditioning/Processing

- This is systematic removal of impurities like:-
 - Weeds
 - Inert materials
 - Immature seeds
 - Broken and diseased
- Systematic grading and sorting out colored seeds
- Sampling of seed for testing by regulator before treatment
- Treating or dressing with standard chemicals

CERTIFICATION INCLUDES SEED TESTING

- After sampling the regulator tests the seed for various quality parameters including
 - Purity
 - Germination
 - Moisture content
 - Seed health
 - Then assigning lot numbers for the tested seed
 - If seed fails they recommend how to dispose off the lot
 1. Not for sale
 2. Burning/destroying
- How is testing done in your country?

CERTIFICATION INCLUDES LABELLING AND SEALING

- The regulator ensures the approved lots is labelled and given weight demonization
- The approved seed is packed in approved container and sealed in presence of regulator
- It is then sealed for sale through various channels registered by Regulator
- This ensures seed pack cannot be tempered with without being noticed and the farmer can get right seed as sealed.
- Is seed law strictly enforced in your country?

POST CONTROL TESTS AND SURVEYS

- Regulator and seed providers conduct tests to:-
 - Check genetic purity of the variety by planting samples from sealed packets
 - This is to monitor if the quality assurance measures were effective
 - The team undertake surveys at planting to sample from what farmers are planting
 - The samples are sown alongside the post control plots for comparison
 - This assists to verify seed is of high quality or not

GENETICALLY MODIFIED SEED AND IMPLICATION IN FARMING

- Biotechnology tools to improve varieties is a common practice today
- Our interest is on:
- Tissue culture (TC) which allows cleaning of plants by generating plants from selected clean plant parts including meristems or even single cells under sterile lab conditions.
- Marker Assisted Selection (MAS)
- Genetic modified organisms

GENETICALLY MODIFIED SEED AND IMPLICATION IN FARMING cont'd

- Marker assisted breeding
- This is a process where a marker (morphological, biochemical, or one based on DNA/RNA variation) is used for indirect selection of genetic determinant/s of a desired trait e.g. yield, drought, disease resistance
- Breeders identify gene or group of genes which are used to identify desired trait
- This is not controversial process as identified varieties are usually used in breeding programs.

GENETICALLY MODIFIED SEED AND IMPLICATION IN FARMING

- Genetically modified organisms (GMOs) are living (plants, animals, microorganisms) in which genetic materials (DNA) has been artificially altered in a way that it doesn't occur naturally by mating and /or natural recombination.
- Desired gene/s is moved from one organism through bacteria to improve another in labs. Changed organism is GMO or transgenic
- Are GMOs safe? This depends from which country you come:
- Arguments are as varied as the countries and lobby groups
- USA has approved many plant GMOs in 80% of conventional processed foods
- However these must be labelled

GENETICALLY MODIFIED SEED AND IMPLICATION IN FARMING

- In Australia, Japan, and all EU there are restrictions or outright bans on production and sale in GMOs.
- Has your country accepted production and sale of GMOs?
- Impact of GMOs during seed production and environment
 - Isolation is a problem and processing capacity to process and present to farmers will be not easy
 - 80% of GMOs are grown in the world are engineered for herbicide tolerance
 - EU argue long time effect of GMO is unknown
 - Once released in environment the GMOs cannot be recalled
 - Governments must decide for their farmers and environments
- Effects of GMOs to Farmers
 - Companies have patents and have power to sue farmers like it happened in canola case in Canada:: more debate on this.....
- How to avoid GMOs
 - GMOs are labeled.

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VARIETY RELEASE, SEED CERTIFICATION, IMPORT
AND EXPORT

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INTRODUCTION

- Variety release procedures, certification and distribution (export and import) are in various Seed Laws
- After variety development and satisfactory test results from National performance Trials (NPT) or Value for cultivation and use (VCU), Distinctiveness, uniformity and Stability (DUS), the variety is released by designated authority
- The data for release is normally submitted to National Variety Committee (NVRC) composed of selected representatives
- NVRC makes decision to release or to reject new variety based on data
- Frequency of NVRC meetings vary: most are annual, Uganda twice, Malawi special meeting can be called after annual
- Does your country have NVRC and how many times do they meet?

INTRODUCTION cont'd

- Seed laws in Africa vary: some laws conform to International Union for protection of new varieties (UPOV) and International Seed Testing Association (ISTA) protocols as well as Organization for economic Cooperation Development (OECD)
- UPOV protects new plant varieties with intellectual property rights including plant breeders' rights
- ISTA sets standards for seed testing and certification for use in transnational seed trade.
- OECD seed schemes is one of international frameworks for certification of seed to assist in International trade
- Being a member of these facilitate International seed trade
- Do you have a seed law in your country
- Is your country a member of UPOV, ISTA or OECD?

VARIETY RELEASE

- Variety release is perceived by some developers as cumbersome. They say it delays release of new varieties
- Some say it is expensive and in some countries guidelines are not transparent and NVRC rarely meets
- There are complaints that new variety must be tested each time it is to be marketed in respective countries even if it is developed to sell across a wide range of agro-ecologies.
- Private sector complains that NVRC is dominated by public sector which has no direct investment and doesn't feel pain when a variety release is delayed or rejected
- Do you think the NVRC adds value to your company?

VARIETY RELEASE cont'd

- We agree that:-
 - Each government develop transparent variety release guidelines in those countries that don't have to ensure fairness in the process
 - Regional Governments (eg COMESA, SADAC, West African, EAC) should harmonize seed policy and laws to ease variety release. Variety released in one country should be automatically marketed in the next.
 - Data collected from similar agro-ecology should be accepted across countries
 - Breeder multilocation data should be accepted for release instead of using more time testing in NPT leaving regulator to conduct DUS
- Who must then care?

SEED CERTIFICATION, IMPORT AND EXPORT

- Certification is done by regulator and was explained in details in a previous discussions.
- The regulator prevents introduction into a country of harmful foreign weeds, pests and diseases through adherence to strict quarantine regulations and procedures
- The regulator inspects and grades agricultural produce for import and export to ensure that these are of high and acceptable quality
- To import and export agricultural inputs including seed, all must register or apply to designated regulator
- Regulator must have authority and control to ensure that what may be released under harmonized regulations and seed produced in other countries is healthy

SEED CERTIFICATION, IMPORT AND EXPORT cont'd

- Importer must apply for seed or plant import permit from regulator
- All imported seed must be accompanied by phytosanitary certificate and ISTA certificate
- In Kenya, seeds of all crop are subjected to lab quality tests upon arrival and must meet gazetted minimum standards being offered for sale
- Similarly all seed for export must meet the minimum quality standards and be accompanied by country of origin phytosanitary certificate and export permit plus ISTA certificate
- Does your country have seed import and export regulations?

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REGISTRATION OF SEED RELATED
INSTITUTIONS AND PLANT VARIETY
PROTECTION LEGISLATION

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INTRODUCTION

- In most countries to produce, process and market seed under any seed law one must be registered as Seed Merchant
- In Kenya All Seed merchants are registered by Kenya Plant Health Inspectorate Services
- Or there is a country in-here which doesn't have this requirement?
- The international exchange of germplasm and trade/movement of plants and plant products is a must to facilitate adequate food production in the world.
- Plant variety protection legislations using various protocols, seed laws and regulations are in put in place

VARIETY DEVELOPMENT, SEED PRODUCTION CERTIFICATION, PHYTOSANITARY, MARKETING INSTITUTIONS

- Variety development institutions include public and registered Seed Companies
- Seed Production institutions in majority of the countries are those registered as Seed Merchants
- Certification Institutions are those gazetted in Law as service providers
- Seed Marketing/distributors are registered by regulator

VARIETY DEVELOPMENT, SEED PRODUCTION CERTIFICATION, PHYTOSANITARY, MARKETING INSTITUTIONS

- Phytosanitary services that provide protection services including plant health clinic, quarantine, grading and inspection of products are included in various laws
- This service is to ensure for governments, business sector, scientists and farmers that no injurious foreign pest, diseases and noxious weed is introduced
- Regulators derive their authority from international protocols or standards which are domesticated
- In Kenya, Plant Breeders' rights in seed law is domesticated from UPOV
- Seed Testing domesticated from ISTA protocols

VARIETY DEVELOPMENT, SEED PRODUCTION, CERTIFICATION, PHYTOSANITARY, MARKETING INSTITUTIONS

- Phytosanitary/Plant protection services laws are domesticated from international plant protection convention (IPPC) and World Trade Organization (WTO) agreement on sanitary and phytosanitary (SPS) regulations and guidelines.
- This ensures that agricultural products approved by regulator are acceptable to across the countries who are members:- eg ISTA certificate.
- Do you agree that all our countries should be members of these international organizations?

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MARKETING AND SALES PROCEDURES

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INTRODUCTION

- Marketing is identifying/locating the customer
- Sales is actual taking the product and making the identified customer to buy product and actual receiving payment

- **MARKETING**
 - Aims at satisfying customer demand for quality product and affordable price
 - This is done through sequence of events to promote, advertise or communicate, distribute it to right place, right time and at right price

MARKETING ACTIVITIES cont'd

- To succeed in marketing the customer must be satisfied and objectives must be realized
- Therefore marketing is integrated management process involving all employees/employers at every level of business
- Marketing activities
- Market research and Analysis
 - ❖ Finding out about seed market through study about where and by whom it is needed, at which period and why it is needed

MARKETING ACTIVITIES cont'd

- Product management
 - ❖ Developing and implementing marketing policy for seed product/s

- Advertising, promotion and public relations
 - ❖ Creating product awareness, influence change of farmers/customer attitudes/build up positive perception, acceptance buying decisions (PR)

- Product Sourcing
 - ❖ Licensing varieties and salable product from own or third party

MARKETING ACTIVITIES cont'd

- Sales order administration and dispatch
- ❖ Receiving and processing orders allocating stock and dispatching orders, and maintaining stock records
- Stock control and quality assurance
- ❖ Managing inventory for each crop, variety and seed class to ensure maintenance of specified quality
- Distribution and transport
- ❖ Moving seed from point of storage to point of sale

MARKETING ACTIVITIES cont'd

- Management of information
- ❖ Collating and interpreting order and sales information to assist in planning future marketing activities
- Sales and invoicing
- ❖ Making actual delivery, receiving by customer and receiving payment for it.
- ❖ This is the end o marketing activity
- Customer care
- ❖ Involves after sale service where marketing and sales staff follow up customer for reactions and company compliant office deal with complaints to maintain customer loyalty.
- Discussions on marketing activities

Market MIX

- Marketing is a process as it is a blend of components/items including product, prices, places, period, promotion, advertising and strategies
- Product
 - ❖ Product is the focus, its attributes are important and value especially quality and returns to investment to farmers
- Place
 - ❖ It must be the right place to produce, process, store, and sell seed to Customers
 - ❖ Must be a place easily accessible to Customer at the right time

Market MIX cont'd

- Promotion
 - ❖ Communicating with customers and influencing them to buy.
 - ❖ Successful promotion influences change of attitude about product and increases sales
 - ❖ Always increase visibility in market place and maintain constant flow of messages using all advertising means.

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MARKETING AND SALES PROCEDURE

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SEED MARKETING AND SALES PROCEDURES cont'd

- Seed marketing and sale approaches
- Governments have legislations on seed production, processing and marketing
- Marketing is left to seed providers to promote their products
- Seed providers may have products but remains in store due to inability to market
- Governments let the private sector have varieties under some agreement to market
- Private sector have formed associations to lobby governments and promote their in-country, import and export trade
- Does your country have organized seed grouped and how do they operate?

SEED MARKETING AND SALES PROCEDURES cont'd

- Understanding the market
 - Researching the market
 - ❖ Update information on where markets exist and how old ones react to your products
 - Marketing information
 - ❖ Information to make business decisions and to plan include; what is in market, economic and political position, completion, distributors, policies and legislations, type of farmers and their attitude about your company and products

SEED MARKETING AND SALES PROCEDURES cont'd

- Sources of information
 - ❖ Include internal – production figures, orders, invoices, payments, customer types, dealer network,
 - ❖ and external – government statistics, organizations, studies to gather information
- Market segmentation
 - ❖ Process of identifying and separating a total market into parts so that different market strategies can be used for each part.
 - ❖ Eg dryland, rich neighbourhood, geographical location, maturity, altitude group, hybrid or opv, vegetable seed requiring region

SEED MARKETING AND SALES PROCEDURES cont'd

- Forecasting Demand
- ❖ Do adequate market demand estimates or there will be under or over production at your cost
- ❖ Demand is what the seller is the quantity that buyers are willing and able to purchase at a particular price
- ❖ Factors affecting demand include cropping pattern, seed use and climate, demand for seed, prices, farmer disposable incomes, variety performance relative to alternative, promotion campaigns
- ❖ List other factors that you consider in your project/company to forecast seed demand.

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MARKETING AND SALES PROCEDURES

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SEED MARKETING AND SALES PROCEDURES cont'd

- Market plan or roadmap which have sub plans
 - a) Product plan- type of varieties, yield, quality, class, new or old, quantity, packaging schedules, dates stock required
 - b) Price plan- pricing policy, commissions, margins, discounts
 - c) Place plan- distribution networks, transport, storage, sales areas, customer convenience,
 - d) Promotion plan- target group, which media to use, timing, packing type and design, advertising, PR campaigns, demonstrations, coordination with other agents (use data of at least 3 years)
 - e) Budget plans- sales targets, costs of all activities, gross margins
 - f) Personnel plans-staffing levels, training, cost, scales, bonuses, appraisal systems line management, and responsibilities

SEED MARKETING AND SALES PROCEDURES cont'd

- Strategic planning
- ❖ Review current plan and think into the future
- ❖ What is outlook for seed industry and seed market in the future?
 - Answers external and internal factors that control business
- ❖ How secure is the company's position in the market?
 - Analysis of company position in relations to current and future competitions (SWOT)
- ❖ What is the future of the company's business and how is it going to be achieved?
 - This state objectives and how they are to be achieved.
Eg selling imported vege seed, or ASAL seed for 5 years?

SEED MARKETING AND SALES PROCEDURES cont'd

- Supplying the market
 - Seed as a product is a range of all varieties of all crop species that are being supplied for sale
 - In making decision to buy a customer is informed about the benefits through various marketing methods
 - Companies decide on brand names to use when supplying the markets
 - That brand name must imply quality is assured
 - Aim to grow the supply by increased awareness, and building confidence of farmers in the variety and build quantities to supply stockists in response to demand created at farm level.

SEED MARKETING AND SALES PROCEDURES cont'd

- Developing a product market plan
 - ❖ Design market plan which form basis for production plan.
 - ❖ impossible to make a market driven seed project or company
 - ❖ Unfortunately, in public seed projects production plans are prepared before marketing plans making it sometimes t and sell seed that is produced.
- Have standard market plan form
 - ❖ Variety, grain seed opv/hybrid, vegetables, imported or home grown
 - ❖ Seed volume per class, labelling details, seed dressing, labelling, target distribution channels, transportation means, target cost, gross margins, target date of availability

SEED MARKETING AND SALES PROCEDURES cont'd

- Other media used in marketing
 - Twitter
 - Emails
 - Facebook
 - Public relations
 - Seed extension and demonstrations
 - Catalogues

- Discussions

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SEED MARKETING AND SALES PROCEDURES cont'd

- Seed costing and pricing
 - ❖ To a buyer, price is a cost used as measure of value
 - ❖ A buyer will evaluate and make decision on the value of that seed and buy from one company or the other
 - ❖ To a seller price is revenue and is element in market mix
- ✓ Importance of pricing
- ✓ Setting prices is tactical decision as it influences profits
- ✓ To a government seed company, it means popularity and votes but may affect other seed providers
- ✓ Price is very critical among resource poor farmers
- ✓ Demand may control pricing

SEED MARKETING AND SALES PROCEDURES cont'd

- Cost of seed
 - ❖ Cost is from production, processing, marketing, administration, finance and must be recorded, analyzed and made known to management
 - Costing techniques
 - Production cost plus margins
 - Competitive pricing plus margins
 - Short term prices-promotional or high value product or monopoly in the market
 - Pricing policy
 - ❖ Seed provider decides objectives of pricing after preparing costings

SEED MARKETING AND SALES PROCEDURES

cont'd

- Seed Distribution profit margins
- Price lists
- Terms and conditions of sale
- Effecting sales after locating a market include:-
 - invite order
 - Issue proforma invoice
 - Supply
 - Issue invoice
 - Receive payment
- Customer care after sale

SEED MARKETING AND SALES PROCEDURES

cont'd

- Discussions.

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