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DEPARTMENT OF AGRICULTURAL ENGINEERING

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AI3018-AGRICULTURAL BUSINESS MANAGEMENT

UNIT 4 : AGRICULTURAL BUSINESS FINANCE

CONCEPTS AND DETERMINANTS

Prepared by:

Mr.Arunpandian.N.

Assistant Professor,

Department of Agricultural Engineering

Business project scheduling of raw material procurement in agricultural business finance

- **Business project scheduling of raw material procurement in agricultural business finance** refers to the strategic planning and management of the sourcing and supply of raw materials (inputs such as seeds, fertilizers, pesticides, machinery, labor, and other necessary items) required for agricultural production. Effective scheduling and procurement are critical to ensure smooth operations, prevent stockouts or overstocking, and optimize costs. It helps agricultural businesses maintain the right amount of raw materials at the right time, minimizing waste and ensuring efficient use of resources.

1. Concepts in Raw Material Procurement and Scheduling

- Raw material procurement and scheduling in an agricultural business involve several key concepts and processes, including **demand forecasting, inventory management, lead time management, and supply chain coordination**. Below are some of the important concepts:

a) Demand Forecasting

- Demand forecasting is the process of predicting the quantity of raw materials required for agricultural production over a given period. Since agriculture is highly seasonal and dependent on external factors such as climate, market conditions, and crop cycles, forecasting demand accurately is critical.
- **Historical Data:** Past production volumes and raw material usage patterns can provide insights into future needs.
- **Market Trends:** Market prices, demand for agricultural products, and expected harvests can influence the demand for raw materials.
- **Weather and Environmental Factors:** Forecasting weather conditions is essential, as droughts, floods, and other environmental factors can affect the supply of raw materials like water, seeds, and fertilizers.

b) Inventory Management

- Efficient inventory management ensures that the business has the right quantity of raw materials when needed. It also helps minimize the cost of holding excess stock, which ties up working capital.
- **Just-in-time (JIT):** This inventory strategy aims to reduce holding costs by procuring raw materials only when they are needed for production. However, in agriculture, JIT can be challenging due to unpredictable factors such as weather.
- **Economic Order Quantity (EOQ):** EOQ is a mathematical model that helps determine the optimal order quantity that minimizes both ordering and holding costs.

c) Lead Time Management

- Lead time refers to the time it takes from placing an order for raw materials to the delivery of those materials. Managing lead time is crucial because delays in the procurement process can disrupt the production cycle.
- **Supplier Lead Time:** The time required by the supplier to process and deliver the ordered materials.
- **Internal Processing Time:** Time taken internally to process orders, inspect goods, and prepare them for use in production.
- Managing lead time ensures that raw materials are available just before they are needed, preventing both shortages and excess stock.

d) Supply Chain Coordination

- Agricultural businesses often rely on multiple suppliers, especially in large-scale production, which means that coordinating the supply chain effectively is essential. Strong relationships with suppliers, clear communication, and long-term agreements help to ensure timely delivery of raw materials.
- **Supplier Relationships:** Establishing long-term partnerships with suppliers can help secure favorable terms, reliability, and timely deliveries.
- **Logistics Coordination:** Efficient transportation and distribution are necessary to ensure raw materials are available at the production site on time.

2. Determinants of Raw Material Procurement and Scheduling

- Several factors or **determinants** influence the procurement of raw materials and the scheduling process. These factors include internal and external elements that affect decision-making. Below are the key determinants:

a) Seasonality of Agricultural Production

- The agricultural production cycle is highly seasonal, with peak demand for raw materials often coinciding with planting or harvesting periods. For example, seeds, fertilizers, and pesticides are in high demand during planting seasons, while post-harvest machinery and packaging materials are required during harvest.
- **Impact on Raw Material Procurement:** The business must schedule procurement to ensure materials are available during peak seasons, without overstocking when demand is low.

b) Availability and Quality of Raw Materials

- The availability of raw materials can vary depending on weather conditions, market demand, and other environmental factors. For example, fertilizers or pesticides might be in short supply during the planting season due to a sudden surge in demand, or poor weather might affect the availability of seeds.
- **Impact on Scheduling:** A shortage of raw materials can cause delays in procurement, potentially disrupting the production process. Therefore, businesses must factor in availability when scheduling procurement.

c) Market Prices

- Fluctuations in raw material prices are another key determinant. Prices of inputs such as seeds, fertilizers, and fuel can vary based on demand, supply chain disruptions, and global commodity markets.
- **Impact on Procurement Decisions:** Agricultural businesses must plan and schedule procurement to take advantage of price fluctuations. For instance, buying inputs in bulk during periods of low prices can help reduce overall costs, though it requires careful inventory management.

d) Financial Capacity and Cash Flow

- The financial health of the agribusiness influences its ability to purchase raw materials in advance or during peak demand periods. Businesses with limited working capital may face challenges in procuring large quantities of raw materials.
- **Impact on Procurement Scheduling:** Cash flow constraints can affect the ability to place orders in advance, meaning businesses may need to rely on shorter procurement cycles or credit terms with suppliers.

e) Supplier Lead Times

- The reliability of suppliers and their lead times are key factors in the procurement process. Longer lead times may require businesses to place orders well in advance, while shorter lead times may allow for more flexibility.
- **Impact on Scheduling:** Businesses must schedule procurement well in advance to account for the time required to receive and process raw materials, especially when dealing with international suppliers or long-distance shipping.

f) Technological Advancements

- Technology plays a crucial role in improving procurement and scheduling efficiency. Modern inventory management systems, real-time tracking, and advanced forecasting tools can help agricultural businesses manage their raw material procurement better.
- **Impact on Procurement Decisions:** With the help of technology, businesses can improve forecasting accuracy, automate procurement processes, and reduce manual errors, making raw material procurement more efficient.

g) Government Regulations and Subsidies

- Government policies, including subsidies for fertilizers, seeds, and other agricultural inputs, can impact the cost and availability of raw materials. Regulations related to import/export restrictions, tariffs, and environmental standards also affect procurement decisions.
- **Impact on Procurement:** Businesses must stay informed about government policies and subsidies that can affect the price and availability of raw materials. Regulatory changes may lead to delays or changes in procurement strategies.

3. Business Project Scheduling for Raw Material Procurement in Agricultural Finance

- Project scheduling in raw material procurement involves the strategic planning of when and how to acquire the necessary materials for production. Effective scheduling ensures that the business does not face delays in production or disruptions in the supply chain.

a) Setting Procurement Timelines

- Establishing clear timelines for raw material procurement is essential for managing cash flow and ensuring that production schedules are met. Businesses should establish deadlines for ordering raw materials, receiving deliveries, and preparing for use in production.
- **Planning for Seasonal Peaks:** During high-demand periods, procurement schedules should be adjusted to account for longer lead times and higher market demand.
- **Safety Buffer:** A safety buffer in procurement schedules can help accommodate unexpected delays or shortages.

b) Inventory Replenishment Scheduling

- Scheduling raw material replenishment is critical for maintaining the right inventory levels without overstocking.
- **Reorder Point:** Businesses should establish reorder points based on lead times

- and expected demand, triggering orders when inventory reaches a certain threshold.
- **Economic Order Quantity (EOQ):** The EOQ model helps determine the optimal order quantity to minimize costs. It considers ordering costs, holding costs, and demand.

c) Coordination with Suppliers

- A well-coordinated relationship with suppliers ensures that raw materials are delivered on time. This involves discussing delivery schedules, lead times, and quantities with suppliers and ensuring mutual understanding of expectations.
- **Long-term Supplier Agreements:** These agreements can help secure better terms and ensure timely deliveries, especially for critical raw materials like fertilizers and seeds.

d) Monitoring and Adjusting Schedules

- Since the agricultural industry is prone to unexpected events like weather fluctuations or market price changes, monitoring procurement schedules and adjusting them as needed is important.
- **Real-time Monitoring:** Using software to track inventory levels and procurement schedules can help identify potential issues and allow for quick adjustments.
- **Flexibility:** The ability to adapt procurement schedules based on unforeseen changes, such as supply chain disruptions, is crucial for mitigating risks.

Conclusion

- **Raw material procurement and scheduling** in agricultural business finance is a strategic process that requires careful planning, coordination, and management of various factors. By forecasting demand, managing lead times, maintaining strong supplier relationships, and leveraging technological tools, agribusinesses can ensure timely availability of raw materials for production. The key determinants — seasonality, market prices, financial capacity, and government regulations — significantly influence procurement strategies, and scheduling must be flexible to accommodate uncertainties. By effectively managing procurement schedules, agricultural businesses can optimize their cash flow, reduce costs, and improve overall productivity and profitability.