Package of Practices
Integrated Disease and Pest Management (IDPM) in Maize

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Crop: Maize
Theme: Integrated Disease and Pest Management (IDPM)
Objective: To promote sustainable maize cultivation by integrating cultural, biological, mechanical/physical, and need-based chemical methods for effective and eco-friendly pest and disease control.

A. Cultural Methods

These practices modify the crop environment to make it less favorable for pests and diseases.

- **Deep Summer Ploughing:** Plough the field deeply during the summer months. This exposes soil-borne pathogens and resting stages of pests (like borers) to the sun's heat and natural predators.
- **Field Sanitation:** Destroy crop residues and stubble from the previous season to diminish overwintering habitats for borers and other insect pests, thereby reducing their population carryover.
- **Timely Sowing:** Opt for early sowing to help the crop evade the peak infestation periods of key pests like stem borers and fall armyworms, minimizing pest-induced crop damage.
- **Optimum Spacing:** Maintain a proper plant density with a spacing of **60 cm x 30 cm**. This improves airflow within the canopy, reduces humidity, and lowers the incidence of foliar diseases.
- **Intercropping:** Incorporate intercrops such as cowpea to enhance agroecosystem diversity. This practice can suppress pest populations and reduce overall infestation levels.
- **Balanced Nutrition:** Apply the recommended dose of fertilizers: **120:60:40 NPK kg/ha**. Avoid imbalanced fertilization, which can make plants more susceptible to pests and diseases.
- **Resistant/Tolerant Varieties:** Cultivate resistant or tolerant varieties suitable for the region, such as **VLQPM Hybrid 45, LQMH-1**, etc.

B. Biological / Botanical Methods

These methods utilize natural enemies, antagonists, and plant-based products for pest management.

- **Seed Treatment:** Treat seeds before sowing with a mixture of ***UmComb* (@ 10 ml per kg seed)** and ***CAU Bioenhancer* (@ 10 ml per kg seed)** to protect against seed and soil-borne diseases and enhance early vigor.
- **Soil Application of Neem Cake:** Apply **neem cake @ 250 kg per hectare** at the time of final field preparation to manage soil-borne pests and nematodes.
- **Enriched FYM Application:** Prepare enriched farmyard manure (FYM) by mixing ***UmComb* (@ 3 litres per 100 kg FYM), *UmBir* (@ 3 litres per 100 kg FYM), and *CAU Bioenhancer* (@ 3 litres per 100 kg FYM)** with cow dung. Apply this mixture in the field one week before sowing.
- **Foliar Application of Bt:** Apply **Bacillus thuringiensis (Bt) @ 1 ml per litre of water** at critical growth stages: **15, 30, 45, 60, and 75 Days After Sowing (DAS)** to manage lepidopteran pests.
- **Application of NPV:** Apply **Nucleopolyhedrovirus (NPV) @ 250 Larval Equivalents (LE) per hectare** at **20, 50, and 80 DAS** to control fall armyworm and other caterpillars.
- **Foliar Application of UmMet:** Apply **UmMet (@ 10 ml/L of water)** at **25, 55, and 85 DAS** for its entomopathogenic properties.
- **Foliar Application of UmComb:** Apply **UmComb (@ 10 ml/L of water)** at **40 and 70 DAS** for its biopesticidal action.
- **Botanical Sprays:** Apply **Neem Oil (@ 4 ml/L of water)** or **Neem Leaf Extract (1 kg leaf in 10 L water)** at **35 and 65 DAS** to repel insects.
- **Release of Egg Parasitoids:** Release **Trichogramma chilonis** (egg parasitoids) cards/tubes to control stem borers and other pests.
    - **Initiation:** Start releases **12-15 days after sowing**.
    - **Frequency:** Repeat **5 times** at an interval of **8-10 days**.
    - **Dosage:** @ 1,00,000 parasitoids per hectare per release.

C. Mechanical / Physical Methods

These methods involve manual operations or physical devices to prevent pest establishment and spread.

- **Manual Removal:** Regularly collect and destroy infested leaves (e.g., those showing shot-hole damage from fall armyworm) and visible egg masses.
- **Pheromone Traps for Fall Armyworm:** Install pheromone traps (lures for fall armyworm) for monitoring and mass trapping.
    - **For Monitoring:** Install **8-10 traps per hectare**.
    - **For Mass Trapping:** Install **40-50 traps per hectare**, spaced approximately **15-20 meters apart**.
- **Bird Perches:** Install **T-shaped bird perches** (10 feet high with a 1-foot crossbar) **@ 25 per hectare** to provide resting spots for insectivorous birds.
- **Light Traps:** Install **2 light traps per hectare** to attract and kill adult moths of various pests, reducing their population.

D. Chemical Methods

These methods are a last resort and should be applied judiciously based on regular field scouting and Economic Threshold Levels (ETL).

- **Need-based Application:** Apply synthetic pesticides or fungicides only when absolutely necessary and pest populations cross the ETL. Choose chemicals that are specific to the target pest and safer for natural enemies.

Additional Important Practice

- **Soil Amendment:** Apply Agricultural Lime **@ 500 kg/ha once in three years**, ideally **21-30 days before sowing**, to correct soil acidity and improve nutrient availability, leading to healthier and more resilient plants.

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