Community-Based Forecasting: A Local Approach to Fall Armyworm Monitoring and Response in Malawi

Austen Moore, AgReach
University of Illinois at Urbana-Champaign
AgReach Symposium
Champaign-Urbana, IL
Fall Armyworm in Malawi

• FAW declared a “state of disaster” on Dec. 8, 2017, affecting:
  • 22 of 28 districts
  • >200,000 hectares
  • 133,083 farming families

August 2017 article in *The Nation*
Fall Armyworm in Malawi

• Catastrophic impacts to food security expected
  • 30% crop losses, mostly to maize

• Maize in Malawi:
  • World’s highest per capita maize consumption
  • >75% of total cropped land
  • Grown by ~97% of households
  • ~60% of total caloric intake
Fall Armyworm dynamics

- Fall Armyworm lifecycle is particularly devastating to Malawi, because:
  - Moths fly in large swarms that overwhelm fields
  - Females lay hundreds of eggs at once
  - Caterpillars quickly consume crops before pupation
  - Cycle can repeat for 12 generations per year

- Damage is quick and devastating, yet response is often slow
  - Highlights the need for real-time monitoring and rapid response

- Effective monitoring and response requires “boots on the ground”
  - Public extension workforce is overstretched and rife with vacancies
  - Few NGO or private extension workers

- Communities (not just extension workers) must track and respond to FAW
Current Fall Armyworm response in Malawi

- Response is similar to many other SSA countries:
  - Mobilize and equip farmers with pesticides
  - Awareness campaigns
  - Trainings of identification and treatment

- Often a “top-down” process
  - Led by development partners and the MOA
  - Reliant on functional systems and adequate supply chains

- Specific efforts are still required that:
  - Empower communities to own FAW response
  - Build from existing systems in place
  - Put more “boots on the ground”
SANE/MOA community-based monitoring

- SANE is implementing a community-based monitoring approach for Fall Armyworm in Malawi
  - Developed jointly with the Ministry of Agriculture
  - Leverages existing extension workers in communities
  - Builds from the national extension system (DAESS)

- National Task Force on Fall Armyworm – public and private sector partners – has adopted and is promoting the approach
DAESS Extension System in Malawi

• DAESS – District Agricultural Extension Services System – is:
  • A coordinated, multi-layer system of stakeholder platforms
    • Lower levels include farmer participation
    • Higher levels include mix of farmers and service providers
    • Extension workers involved at every level
  • A forum for farmers to voice needs
  • A communications structure for information flow between levels
  • A body to enhance coordination, collaboration, and communication between development partners
  • A link to Local Government committees where funding decisions are made

• The SANE project is tasked with improving the functionality of the DAESS
DAESS Extension System in Malawi
1) SANE provided pheromone traps and training on their use to communities
   - Each community identifies 3+ Community Forecasters to manage the traps
2) Forecasters record the number of moths trapped per day
3) Totals are reported to the local extension worker
   - Extension workers provide support on day-to-day monitoring, with SANE backstopping
4) Emergency village meetings called if moths reach critical threshold (12-14 /day)
   • Inform community of the impending attack
   • Devise response with local agricultural officials
5) Results are disseminated through levels of the DAESS extension system
   • Village Agriculture Committees, Area Stakeholder Panels, and District Stakeholder Panels
   • Platforms are comprised of farmers and extension providers
6) Larger-scale data is organized by mapping traps to identify hotspots and allow for proactive forecasting
Community Based FAW Monitoring- Reporting and information sharing structure

- **Ministry of Agriculture**
  - National FAW forecasting

- **District Agriculture Office (DAO)**

- **Extension Planning Area**

- **AEDO**

- **Community Fall armyworm forecaster**

- **District Agriculture Stakeholder panel**

- **Area Stakeholder panel**

- **Village Agriculture Committee**

- **Farmers**

**Notes:**
- Reporting line
- Feedback, support
- Shares information with
Benefits of the approach

• Empowers communities to lead in monitoring and controlling attacks by utilizing existing resources and community leadership

• Promotes sustainable, community-led approaches that continue beyond project interventions
Benefits of the approach

- Integrates FAW monitoring and control into the existing DAESS agricultural extension system, to:
  - Improve coordination between stakeholders
  - Enable rapid response when outbreaks are detected
  - Reinforce the central role of farmer-extension collaboration in pest management

- Leverages local support and resources for cost-effectiveness

- Organizes pest data/maps for proactive decision-making by stakeholders
Next steps

Improve FAW data management and extension services through ICTs

1) Target data management issues to improve real-time reporting
   • Huge volume of data will be generated through community-based monitoring
   • Smartphones record trap results and geo-locations
   • Results uploaded to web-based dashboard stakeholders can access
   • Data displayed in tables and as heat maps to allow for predicting further outbreaks

2) Improve spread of FAW messaging and training
   • Extension workers can show videos via smartphones (and Pico projectors) to farmers
     • FAW videos already developed/under development by various partners (including SANE)
Summary

- FAW mitigation requires a multitude of approaches
  - Top-down and bottom-up

- Extension systems (not just workers) can be a mechanism for FAW efforts

- Community-based approaches:
  - Put more “boots on the ground”
  - Identify outbreaks more quickly
  - Increase likelihood of sustainable control
  - Leverage benefits of other programs and resources
Thank You

Please contact us for more information:
Austen Moore, PhD
Deputy Project Director - SANE
acmoore@illinois.edu
+1-217-265-6536

AgReach / FTF Malawi Strengthening Agricultural and Nutrition Extension
University of Illinois at Urbana-Champaign
agreach.illinois.edu / https://agreach.illinois.edu/sane