



INNOVATING NEW PRODUCTS TO TACKLE RESISTANCE

A CORPORATE PERSPECTIVE

syngenta®



TM

Outline

The need for new vector control tools and the challenges of development

Overcoming insecticide resistance challenges

- ▶ Short term solutions: Re-formulation of existing AI's
- ▶ Long term solutions: New active ingredients

Summary

Vector control : why new insecticides are needed

No new classes of insecticide have been developed for vector control for 40 years

Extensive insecticide resistance

- ▶ Pyrethroids are the only chemical class used operationally on ITNs and LLINs

New insecticide development has been primarily driven by large agriculture

Insecticides developed in the last 20 years have not had required efficacy for use in public health

Cost to develop a new active ingredient is relatively high (~\$180m) in a small market



Overcoming the challenges: Time to market

Development of new insecticide AI's can take >8 years to bring to market

Therefore, short and long term strategies required if malaria vector control is to be sustainable

Short term project completed

- ▶ Development of non-pyrethroid long lasting formulations – Actellic 300CS

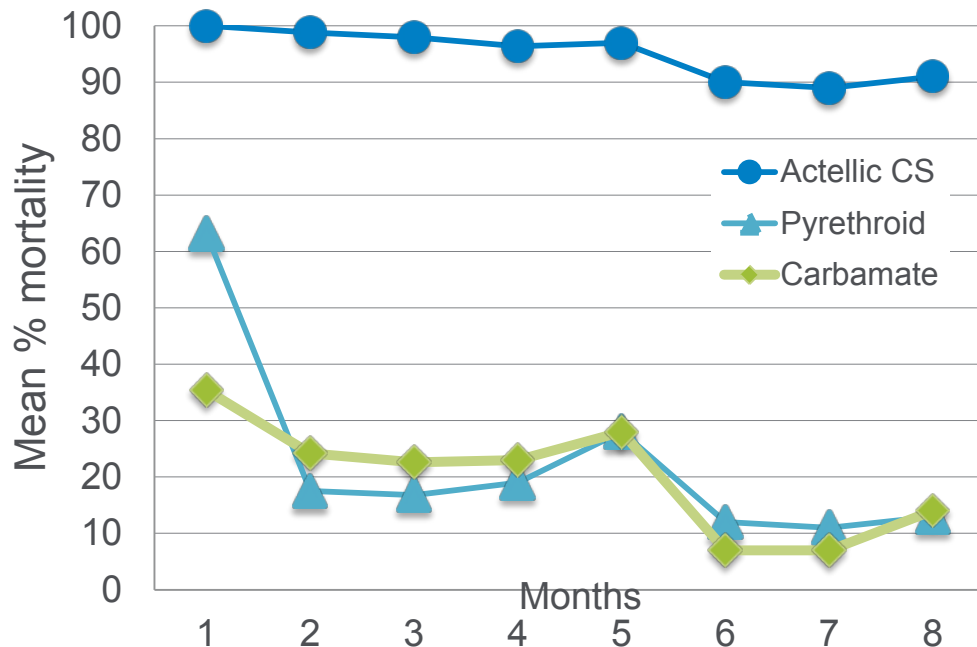
Long term project with IVCC

- ▶ New insecticidal active ingredient with novel MoA



Overcoming the challenges: Development of long lasting non-pyrethroid formulations

Mortality of free flying *An. gambiae* (pyrethroid resistant) in treated cement huts, Benin

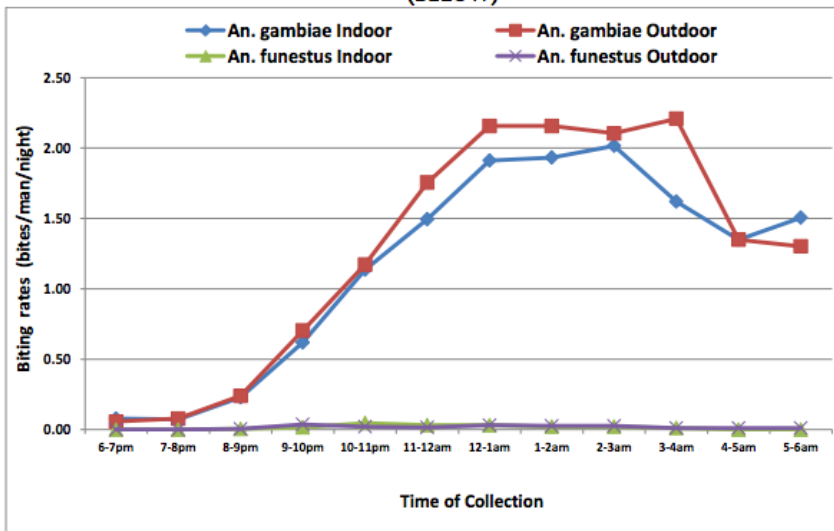


- ▶ Actellic 300CS provides at least 8 months control (including pyrethroid resistant strains) on typical surfaces
- ▶ Potential for only one spray round per year
- ▶ Successful evaluation by WHOPEPES
- ▶ Currently in use by a number of malaria programs across Africa

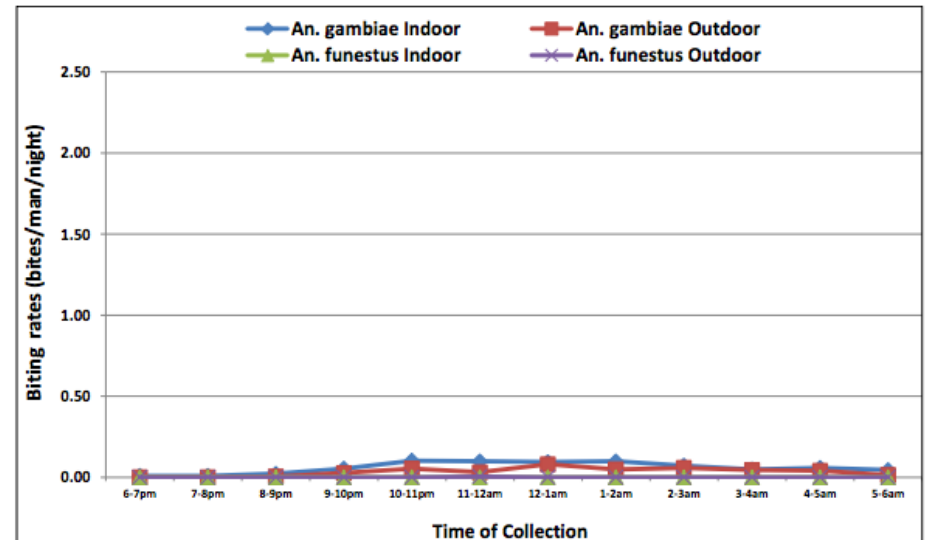
Impact of Actellic 300CS: Ghana IRS program

- ▶ PYR resistant populations present in IRS area
- ▶ Significant reduction in biting rates from an application of Actellic 300CS

FIGURE 6. HOST SEEKING BEHAVIOR (THE PREFERENCE TO EITHER FEED INDOOR OR OUTDOOR, AND PERIOD OF THE NIGHT) OF AN. GAMBIAE AND AN. FUNESTUS COLLECTED INSIDE AND OUTSIDE UNSPRAYED HOUSES IN TAMALE AND TOLON KUMBUNGU (ABOVE) AND SPRAYED HOUSES IN SAVELUGU NANTON AND BUNKUPURUGU-YUNYOO (BELOW)



Non IRS

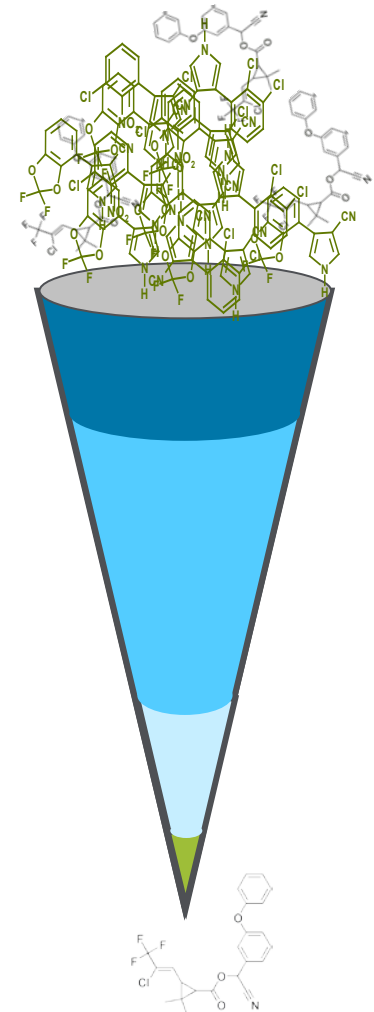


IRS with Actellic 300CS

Source: PMI Africa IRS Project : Ghana End of Spray Report

Overcoming the challenges: Long-term. Development of new active ingredient

- ▶ Accelerating development of new insecticides for vector control via partnership with the IVCC
- ▶ >40,000 compounds screened against mosquitoes
- ▶ Excellent progress to date with ranked list of chemistries identified for development
- ▶ Further work progressing to understand
 - Human safety
 - Cost of manufacture
 - Environmental safety



Summary



- ▶ New long lasting non-pyrethoid IRS tools such as Actellic 300CS are delivering significant impact now
 - Potential for cost savings by reducing need for only one spray round
 - Labour and logistics estimated to be highest proportion of costs for an IRS campaign
 - Impact also delivers cost savings to the overall health systems
- ▶ Research has identified potential new insecticides for vector control
- ▶ Chemistry rapidly moving towards development



Thank you for your attention