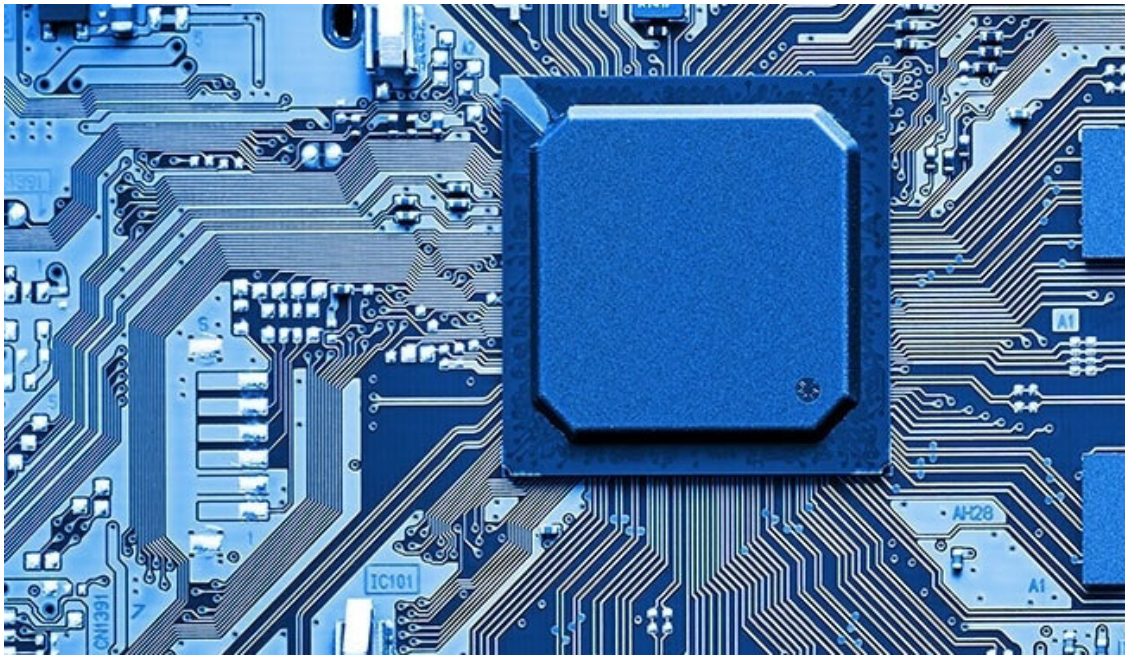

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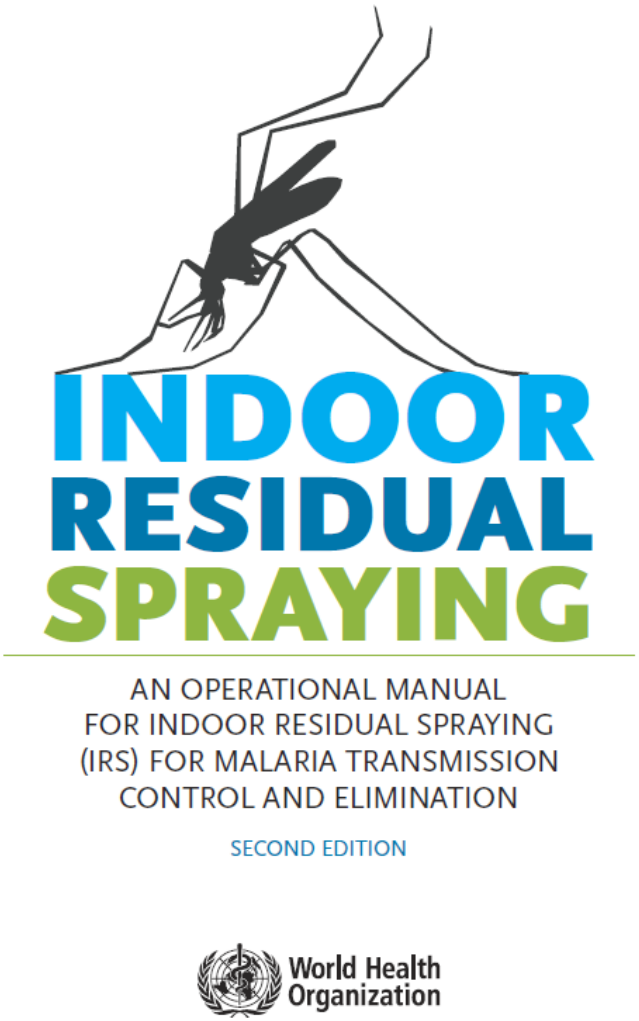
Enhanced Quality Assurance of Vector Control

Mike Coleman

Programmes deserve the tools to allow them to deliver better quality vector control in order to reduce disease burden, mortality and reach their end targets.

Quality assurance



Insecticide Quantification

- Pre-IRS filters on the wall / cutting net
- HPLC quantitative data on insecticide

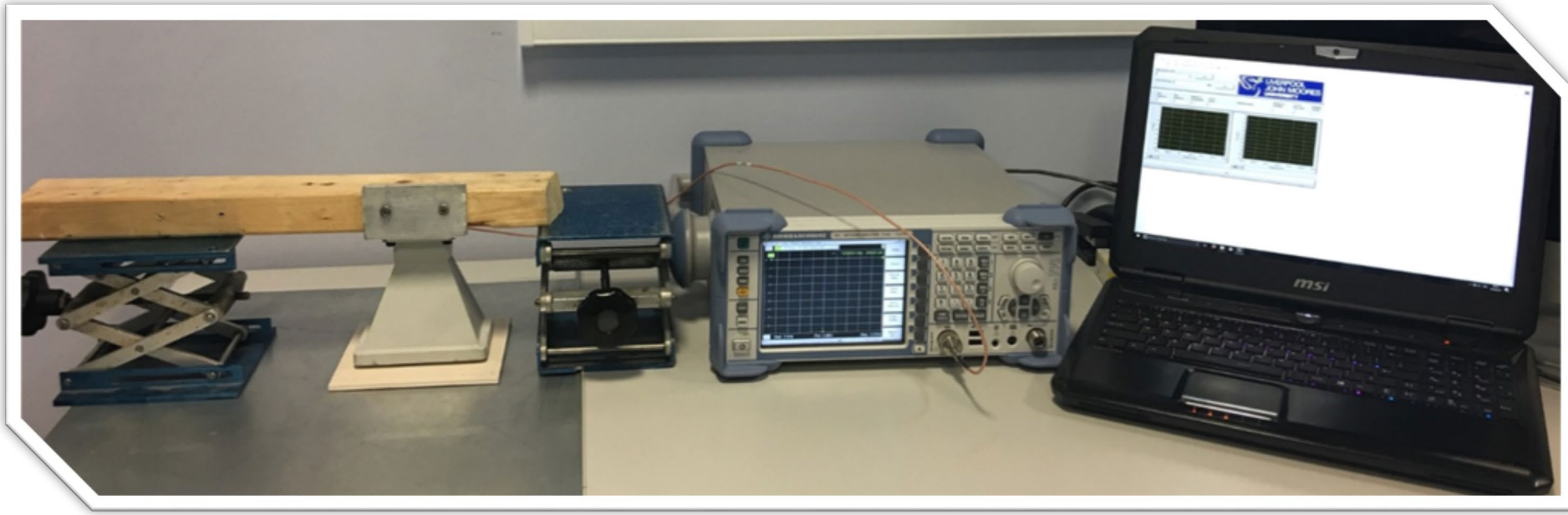
Alternatives

- Cone bio-assays with colony mosquitoes

Challenge

- **Promote better quality assurance practices as part of India's IRS efforts.**
- **Eliminate the need for technical expertise/lab skills/insectaries to perform tests**
- **Produce a hand-held device providing instant accurate feedback on spray quality**
  - Provide categorical output – on target, above target, below target.

Laboratory experiment



Sensor

Vector network analyzer (VNA)

Data acquisition

Field test 1

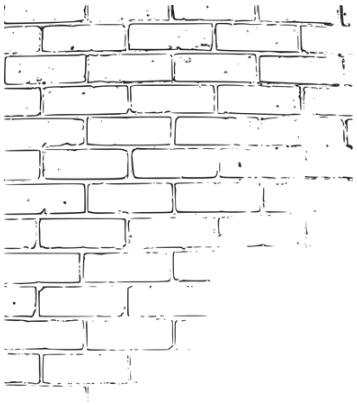
Field test 2

Miniaturization of the tool

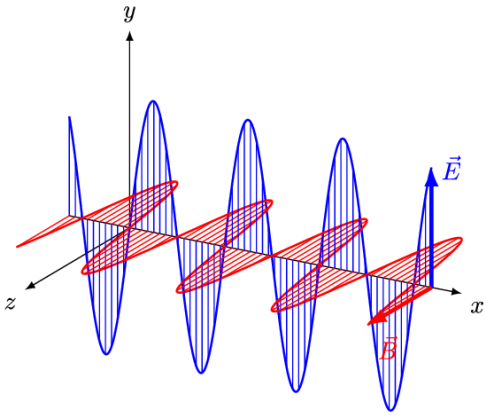
Environmental factors

Torrential rain

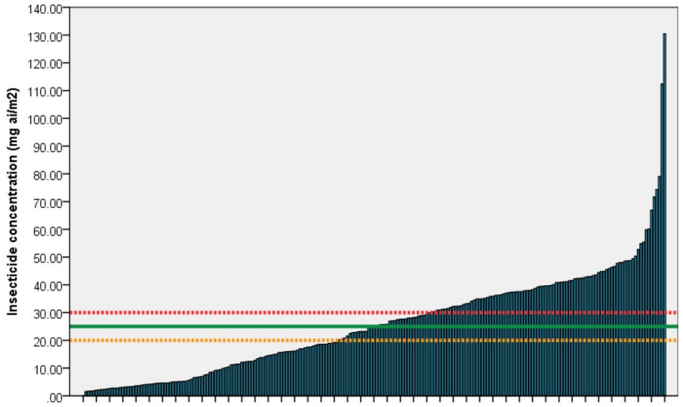
Data for machine learning



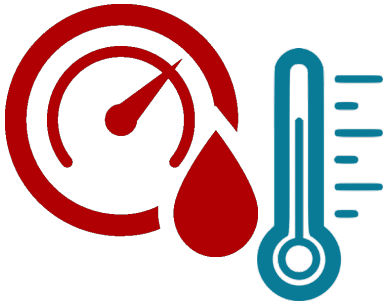
Surface Type



EM Wave Components



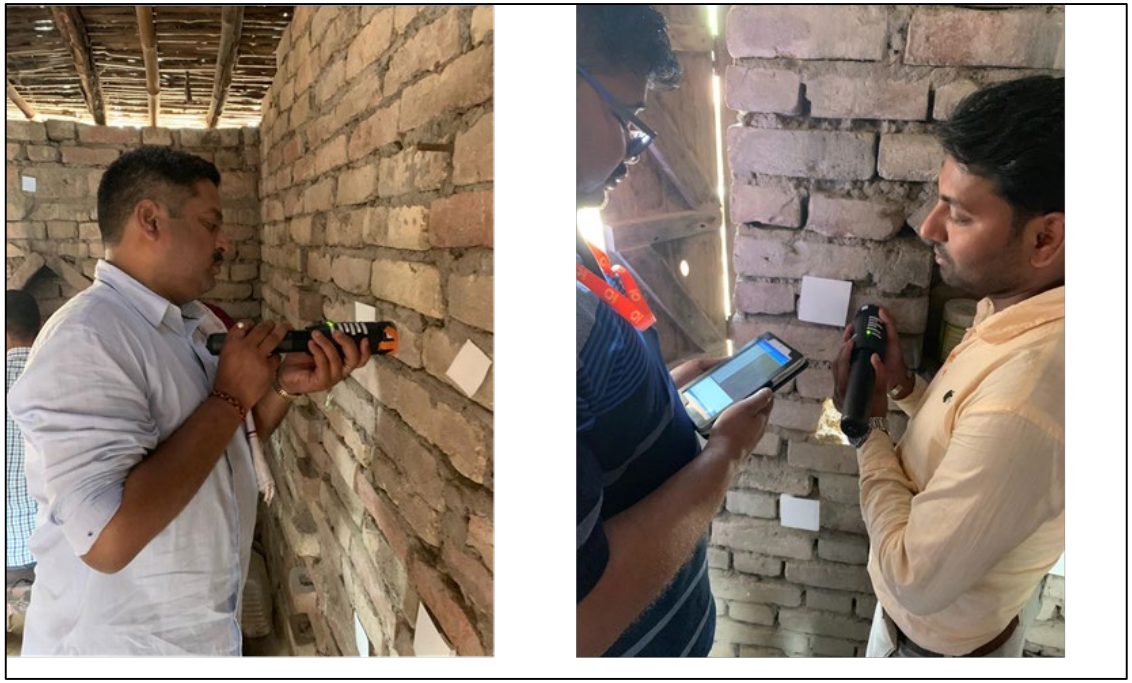
Matched filter paper HPLC analysis



Humidity
Temperature

80-85% correlation with HPLC – currently being improved.

Moving to final tool



Red LL	Amber LL	Green LL	Green Perfect	Green UL	Amber UL	Red UL
>17.0	17.0	20.0	25.0	30.0	34.5	<34.5

Current status

- Continuous machine learning and algorithm refinement to improve sensitivity and specificity
- Final field validation and third party user assessment in March 2020
- Development for other IRS insecticides especially new actives that do not lend themselves to traditional bioassays
- Preliminary studies on nets

Thank you

India, Bihar State

CARE field teams

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Laura MacKenzie