Knowledge gap, small farms and insecure land tenure limit the adoption of research-based recommendations for cocoa swollen shoot virus disease control

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Cocoa Swollen Shoot Virus Disease (CSSVD)

➢ One of the major limitations for cocoa productivity in West Africa (Ghana and Côtes d’Ivoire).
Vector, symptoms and current control

➢ CSSVD first observed/described in 1922/36, respectively (Steven, 1936)

➢ Eradication program cut > 300 Mio. infected trees since 1946 (Dzahini-Obiatey, pers. Comm.)

➢ Despite these efforts, CSSVD still prevalent (Ameyaw et al., 2014)

➢ Potential control options (PCOs) not implemented by farmers (Ameyaw et al., 2014)  Insecticide against vector, tolerant planting material, barrier crops
Potential control options are not implemented by farmers (Ameyaw et al., 2014)

- Control of vectors
- Use of more tolerant planting material
- Barrier cropping

What are the socio economic constraints for farmers?
Methodology

Quantitative survey – Questionnaire

→ Using tablets for face-to-face interviews
→ Four districts:
   1. Nkawkaw
   2. Oyoko
   3. Sefwi Bekwai
   4. Boako

→ Total 388 filled in forms

Focus group discussion

→ Dig deeper into the complex of problems around adoption of recommended CSSVD prevention measures

Transdisciplinary multi-stakeholder workshop

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2. Barrier Cropping

- 10m barrier with non-host crops (e.g. citrus, oil palm)
- When mealybugs move into new plantings through barriers, they become non-infective
## Preliminary results PCO “barrier cropping”

### Barrier-Cropping

<table>
<thead>
<tr>
<th>Factors</th>
<th>P-value</th>
<th>p&lt;0.05?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge: No/Some</td>
<td>0.000</td>
<td>YES</td>
</tr>
<tr>
<td>Farm size</td>
<td>0.039</td>
<td>YES</td>
</tr>
<tr>
<td>Certified: Yes/No</td>
<td>0.633</td>
<td>NO</td>
</tr>
<tr>
<td>Owner/Share-Cropping</td>
<td>0.042</td>
<td>YES</td>
</tr>
<tr>
<td>Farming years: More or less than 15</td>
<td>0.223</td>
<td>NO</td>
</tr>
<tr>
<td>Experience from infection No/Some</td>
<td>0.413</td>
<td>NO</td>
</tr>
<tr>
<td>Social network</td>
<td>0.002</td>
<td>YES</td>
</tr>
</tbody>
</table>

- Farmers with some knowledge are **24 times** more likely to adopt Cordon-Sanitaire than farmers with no knowledge!
- An increase in 1 acre is increasing adoption by **11%**
- Landowners are **3 times** more likely to adopt than share-croppers
- Farmers who know more than 1 person who adopts barrier-cropping are **4.7 times** more likely to adopt than farmers who know 1 or less
What are farmers **challenges** in adopting the recommended CSSVD prevention measures?

**Challenges: General**

<table>
<thead>
<tr>
<th>Count</th>
<th>Statement by farmers</th>
</tr>
</thead>
<tbody>
<tr>
<td>146</td>
<td>I have no knowledge</td>
</tr>
<tr>
<td>29</td>
<td>I have no money</td>
</tr>
<tr>
<td>22</td>
<td>I have no challenge</td>
</tr>
<tr>
<td>8</td>
<td>I have not enough time</td>
</tr>
</tbody>
</table>
Preliminary results general needs

What are farmers **needs** in adopting the recommended CSSVD prevention measures?

<table>
<thead>
<tr>
<th>Count</th>
<th>Statement by farmers</th>
</tr>
</thead>
<tbody>
<tr>
<td>181</td>
<td>Education, technical advice</td>
</tr>
<tr>
<td>71</td>
<td>Chemicals</td>
</tr>
<tr>
<td>61</td>
<td>Money</td>
</tr>
<tr>
<td>61</td>
<td><strong>Machines</strong> (Chainsaw, knapsack sprayer, spraying machines, cutlass)</td>
</tr>
<tr>
<td>17</td>
<td><strong>Access</strong> to improved cocoa, citrus and oil palm seedlings</td>
</tr>
</tbody>
</table>
Preliminary conclusion

Farmers’ survey revealed that:

➢ Knowledge is highly associated with adoption
➢ Social network size has higher effect on adoption than educational level
➢ Farm size plays an important role for adoption
➢ Limited access to hybrid seedlings
➢ Trends (increasing adoption)
  ▪ Younger farmers
  ▪ Land owners
  ▪ Experience with CSSVD
Transdisciplinary multi-stakeholder workshop

Results:

➢ Need for more participation of stakeholder in research, information sharing, quality assurance and policy making

➢ Facilitated information exchange at demonstration farms (incl. traditional leaders) to monitor & steer activities on the ground

➢ Call to revise land tenure systems with in participatory process with traditional leaders (chiefs)
Thank you for your attention!

Project partners:

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Swiss Federal Institute of Technology Zurich

UNIVERSITY OF GHANA

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