Scaling up Conservation Agriculture to Accelerate Agri-food Systems Transformation in Asia and the Pacific

Bo Zhou

RAP-FAO

Thematic Solution Forum 6
Scaling up Conservation Agriculture to Accelerate Agrifood Systems Transformation in the Global South
Global South-South Development Expo 2022, Bangkok
13 September, 2022
We need to produce more food to feed the world.

The population in Crisis or worse (IPC/CH Phase 3 or above) or equivalent nearly doubled between 2016 and 2021.

The percentage of the analysed population in these phases also nearly doubled between 2016 and 2021.

For several countries, FEWS NET produced estimates that were lower than those provided by the IPC/CH Technical Working Groups.

*Source: FSIN & GNACF, 2017-2021; FSIN, using IPC, CH, FEWS NET, WFP, HNO and SIEFSec data.*

570,000 people faced Catastrophe (IPC Phase 5) in four countries in 2021 – the highest number in GRFC history.

*Source: FSIN, using IPC data.*
Conservation Agriculture: an integrated intensive farming system for sustaining food and nutrition security and improving livelihood

Sustainable intensive farming system

Conservation Agriculture is a farming system that promotes minimum soil disturbance (i.e. no tillage), maintenance of a permanent soil cover, and diversification of plant species. It enhances biodiversity and natural biological processes above and below the ground surface, which contribute to increased water and nutrient use efficiency and to improved and sustained crop production.

Three principles

1. Minimum mechanical soil disturbance
2. Permanent soil organic cover
3. Species diversification

Three benefits

1. Economic benefits that improve production efficiency
2. Agronomic benefits that improve soil productivity
3. Environmental benefits that protect the soil and make agriculture more sustainable
Global Status of CA adoption in South and North countries

(Adapted from Kassam et. al., 2022)
## Spread of CA in the AP Region

<table>
<thead>
<tr>
<th>Country</th>
<th>CA Area 2007-08 (Ha)</th>
<th>CA Area 2018-19 (Ha)</th>
<th>Decadal Growth (%)</th>
<th>Country's share (%)</th>
<th>Top three Countries Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>1,330,000</td>
<td>9,000,000</td>
<td>676.69%</td>
<td>64.95%</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>1,500,000</td>
<td>3,500,000</td>
<td>233.33%</td>
<td>25.26%</td>
<td></td>
</tr>
<tr>
<td>DPRK</td>
<td>23,000</td>
<td>23,000</td>
<td>100.00%</td>
<td>0.17%</td>
<td></td>
</tr>
<tr>
<td>Bangladesh</td>
<td>500</td>
<td>1,500</td>
<td>300.00%</td>
<td>0.01%</td>
<td></td>
</tr>
<tr>
<td>Vietnam</td>
<td>500</td>
<td>1,000</td>
<td>200.00%</td>
<td>0.01%</td>
<td></td>
</tr>
<tr>
<td>Cambodia</td>
<td>250</td>
<td>500</td>
<td>200.00%</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Laos</td>
<td>250</td>
<td>500</td>
<td>200.00%</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Nepal</td>
<td>500</td>
<td>1,000</td>
<td>200.00%</td>
<td>0.01%</td>
<td></td>
</tr>
<tr>
<td>Pakistan</td>
<td>400,000</td>
<td>1,320,000</td>
<td>330.00%</td>
<td>9.53%</td>
<td></td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>500</td>
<td>1,000</td>
<td>200.00%</td>
<td>0.01%</td>
<td></td>
</tr>
<tr>
<td>Myanmar</td>
<td>100</td>
<td>200</td>
<td>200.00%</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>3,750</td>
<td>7,500</td>
<td>200.00%</td>
<td>0.05%</td>
<td></td>
</tr>
<tr>
<td>Timor Leste</td>
<td>500.00</td>
<td>1000.00</td>
<td>200.00%</td>
<td>0.01%</td>
<td></td>
</tr>
<tr>
<td><strong>Total Ha</strong></td>
<td><strong>3,259,850</strong></td>
<td><strong>13,857,200</strong></td>
<td><strong>425.00%</strong></td>
<td><strong>100.00%</strong></td>
<td><strong>99.73%</strong></td>
</tr>
</tbody>
</table>

Adapted from Kassam et al 2022
Status of CA development in China and India

- China’s national program started in mid 1990s through collaborative projects with ACIAR (Australia)
- Various national policies and laws from early 2000s give strong support to the spread of CA. A new law on black soil protection came into force on 1 August 2022
- 9 M ha CA areas is concentrated much in the North and NE with focus on non rice based systems
- The CA R&D has strong focus on engineering-machinery with active private sector engagement
- There are substantially commercial availability of machines including small and medium sized planters and seeders
- CA are adopted also in rice/wheat and rice/maize systems with focus on winter crops

CA principles are widely adopted mainly in rice/wheat system and CA efforts covers over 10 M ha
- Most of characterized CA areas (approximately 3 million ha) are considered as partial CA systems where farmer focus is on No-Till winter crops.
- CA practices deliver significant benefits in:
  - A mean yield advantage of 5.8%,
  - A water use efficiency increase of 12.6%,
  - An increase of net economic return of 25.9%,
  - A reduction of 12–33% in global warming potential.
- Government has strong intention to shift CA research to the huge area of non-rice rainfed central plateau area

Li et. al. 2016
Jat et.al. 2021; Kassam et.al. 2022
Practices of Conservation Agriculture in RAP

CA practice using happy seeder for wheat/rice system in Pakistan

No-Till practice wheat/rice system in India

No-Till practice in wheat/maize system in China

CA practice in the Philippines

Strip-Till practice in Bangladesh

Lentil and maize cultivation using Mini-Till/Strip Till (Nepal)

Bean cultivation using Hand Jab Planter in Timor Leste

CA practice in Indonesia
# What we can learn from the North countries on CA upscaling

## Major Scaling Strategies in the West

- **USA:**
  - Enabling policy with focus on improving soil health, water quality, conservation, and diversity
  - Virtual communities and networks composed of farmers, researchers, CA machinery and inputs companies
  - Strong farmers’ engagement

- **Europe:**
  - CA oriented agriculture policy
  - Significant growth of service provision
  - Regional, national, and state CA networks in SA, NA, Europe

## Major challenges in RAP

- CA has been widely known but not widely adopted
- Lack of enabling policies
- Lack of farmer’s capacity, particularly for smallholder farmers
- Unbalanced development among countries
- CA for dry land crops developed quicker than paddy area which is dominant in Asia
- Limit access and unaffordability to tailored CA machines
- Relatively inactive CA networks
Regional CA platforms in RAP

Conservation Agriculture Alliance of Australia and New Zealand (CAAANZ)
Proposed CAAAP roles and functions in promoting CA development in RAP

- To organize regular meeting for knowledge and good practice sharing among CAAAP members
- To coordinate CA related program and projects at regional and national levels
- To support Members for developing roadmap of CA development
- To support the formulation of multinational cooperative projects implemented in Members
- To organize Asia Congress on CA
- To organize special issues or sections on peer-reviewed journals
- To support Members to develop national roadmaps for CA development
- To strengthen partnership with private CA agro-machinery sector (manufacturing and trading) to join the network and particularly share on scaling appropriate and emerging "precision agriculture" CA technologies.
- To organize CA machines exhibition during existing agriculture machines exhibition
- To promote collaboration among Member under SSTC framework
Thank you for your attention