



# 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

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# We need to produce more food to feed the world

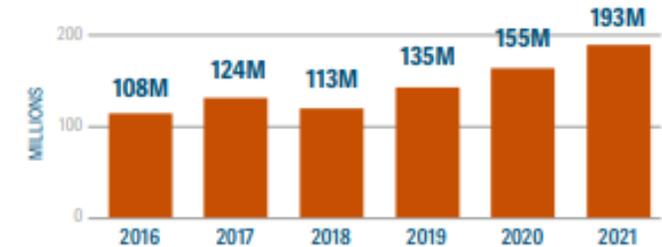
Global Network Against Food Crises

FSIN Food Security Information Network

## 2022 GLOBAL REPORT ON FOOD CRISES

JOINT ANALYSIS FOR BETTER DECISIONS

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 SEFSec 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.



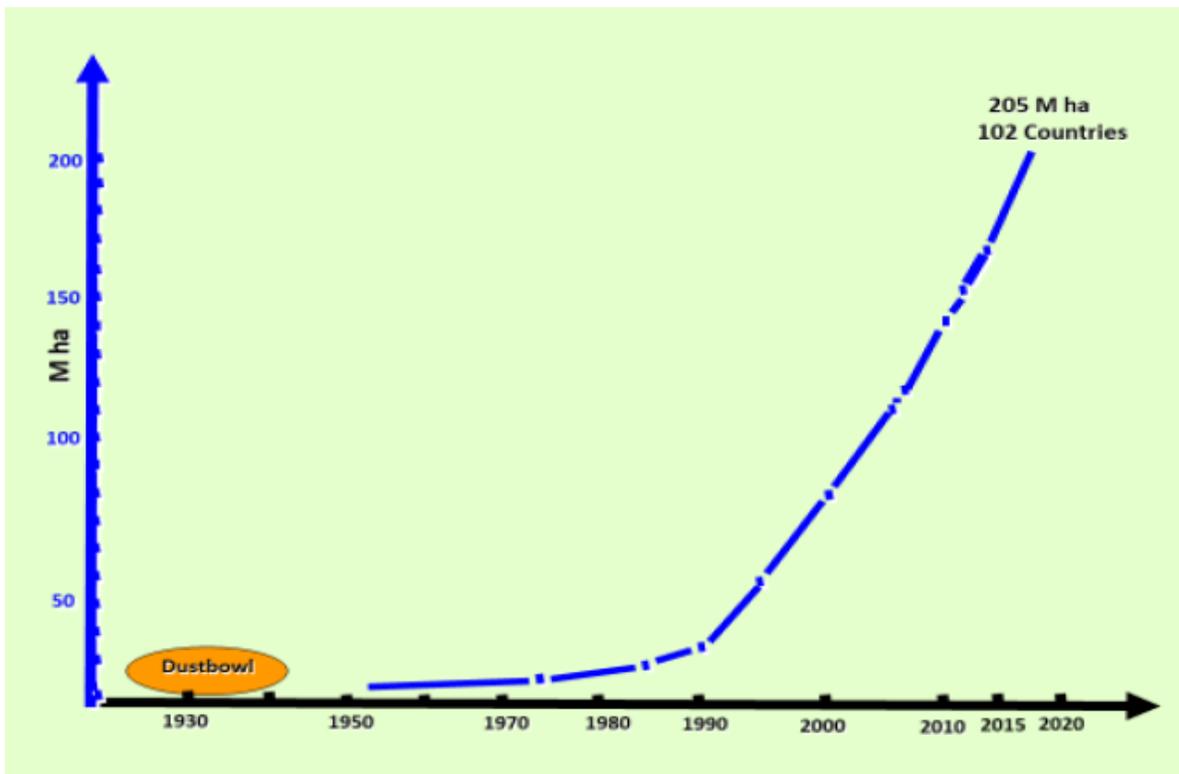
## Three principles

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

## Three benefits

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**1** Economic benefits that improve production efficiency
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**2** Agronomic benefits that improve soil productivity
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**3** Environmental benefits that protect the soil and make agriculture more sustainable

# Global Status of CA adoption in South and North countries



Region	CA Area 2007-08 (Ha)	CA Area 2018-19 (Ha)	Decadal growth (%)	Continental Share (%)	North vs South
S and C America	69,895,000	82,996,000	118.74	41.26%	91.51%
N America	40,003,000	65,937,000	164.83	32.78%	
Australia NZ	12,162,000	22,665,000	186.36	11.27%	
Russia & Ukraine	100,000	6,900,000	6900.00	3.43%	8.49%
Europe	1,560,000	5,601,000	359.04	2.78%	
Asia	2,630,000	13,930,000	529.66	6.92%	
Africa	485,000	3,143,000	648.04	1.56%	
Totals	126,835,000	201,172,000	63.05	100.00%	100.00%

(Adapted from Kassam et. al., 2022)



# Spread of CA in the AP Region

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

## 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

Li et. al. 2016

- ❑ 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%
  - ❖ And 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

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



Centre for Sustainable Agricultural Mechanization



China



Cambodia



Myanmar



Vietnam



### ABOUT SACAN

SACAN was registered in March 2013 in an effort to formalize SACAN's charity work which has been in progress since 2008. Development work in Pakistan has been marred by corruption, mismanagement and inefficiencies resulting in billions of dollars spent; with little change to show for. Citing

### Conservation Agriculture Network for South-East Asia (CANSEA)

- The 9 founding members of the network
- In **Australia**: the University of Queensland (UQ);
  - In **Cambodia**: the Ministry of agriculture, forestry and fisheries (MAFF);
  - In **China**: the Yunnan Academy of Agricultural Sciences (YAAS);
  - In **Indonesia**: the Indonesian Agency for Agriculture Research and Development (IAARD);
  - In **Laos**: the National Agriculture and Forestry Research Institute (NAFRI);
  - In **Thailand**: the University of Kasetsart;
  - In **Vietnam**: the Northern Mountainous Agriculture and Forestry Science Institute (NOMAFSI), and the Soils and Fertilizers Research Institute (SFRI);
  - Le Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), which cooperates with all the partners of South-East Asia.



Conservation Agriculture Alliance of Australia and New Zealand (CAAANZ)

# Regional CA platforms in RAP

## 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

