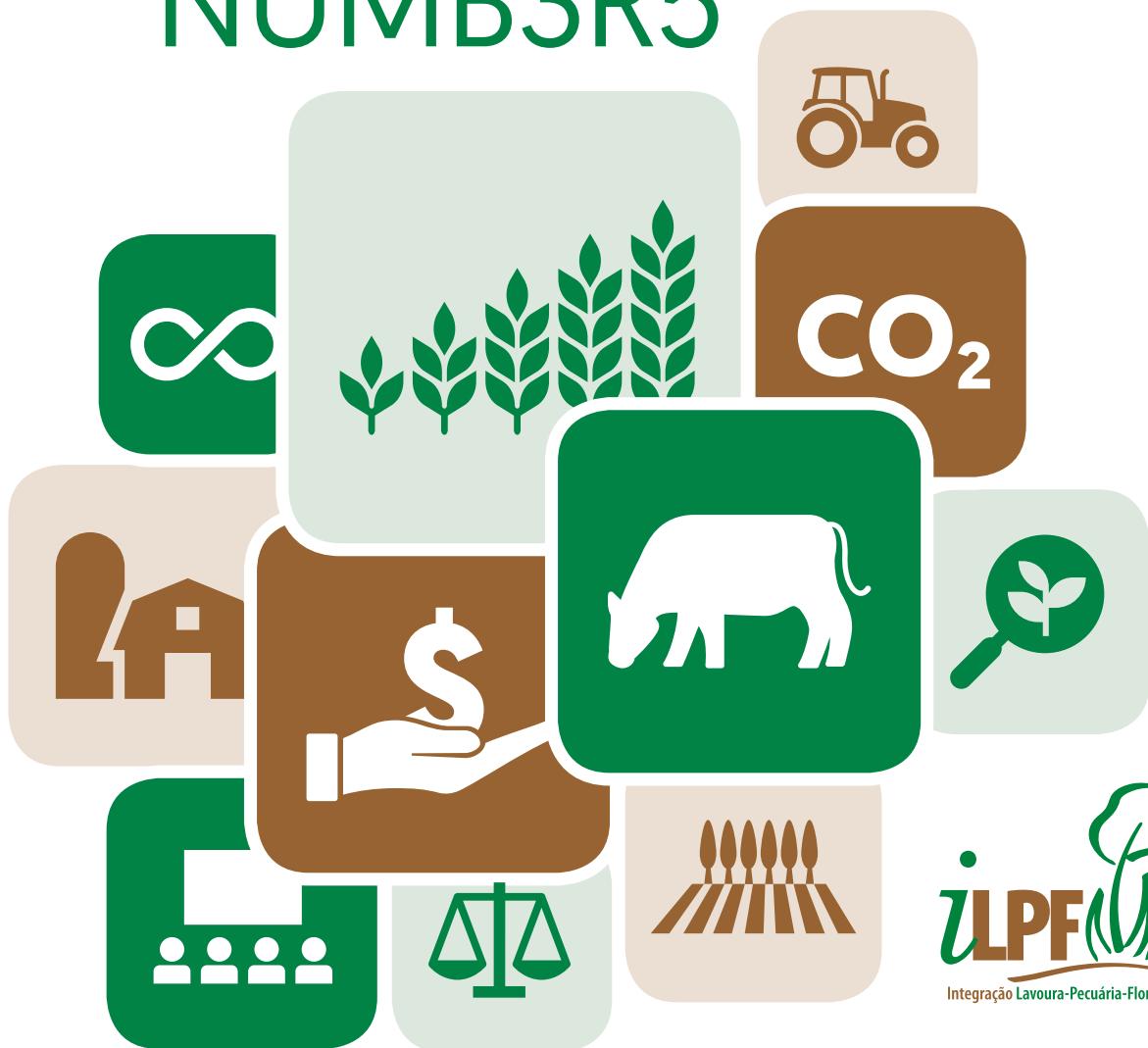


ICLF IN NUMB3R5



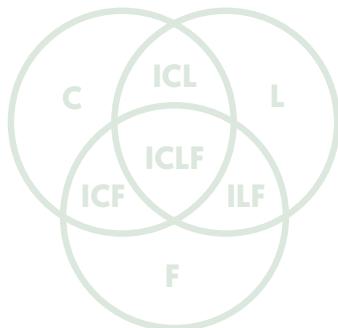
WHAT IS ICLF

Integrated crop-livestock-forest (ICLF) is an agricultural production strategy that integrates different production systems — agricultural, livestock and forestry — within the same area. It can be implemented using mixed, rotating, or succession crops, so that there is interaction between each component, thus generating mutual benefits.

ICLF can be implemented in different ways, with a wide range of crops and various animal species. It is adaptable to regional characteristics, climatic conditions, the local market, and the producer's profile, and can be adopted by small, medium, and large producers.



ICLF can be used in different configurations, combining two or three components in one production system:



	Components	Acronym	System
Integration	Crop-livestock	ICL	Mixed farming
	Crop-forest	ICF	Agroforestry
	Livestock-forest	ILF	Livestock-forestry
	Crop-livestock-forest	ICLF	Agro-livestock-forestry

BENEFITS



Optimization and intensification of soil nutrient cycling



Biodiversity conservation and sustainable agriculture



Increase in net income allowing greater capitalization for the producer



Improvement of the quality and conservation of the soil's productive characteristics



Increased production of grains, meat, milk, timber, and non-timber products from the same area



Greater efficiency in the use of resources (water, light, nutrients and capital) and increased energy balance



Applicable to farms of all sizes and profiles



Reduction of labor seasonality and rural flight



Improvement of animal welfare due to greater thermal comfort



Mitigation of greenhouse gas



Creation of direct and indirect jobs



Improving the public image of farmers within the society



Pressure release, by creating new areas of native vegetation



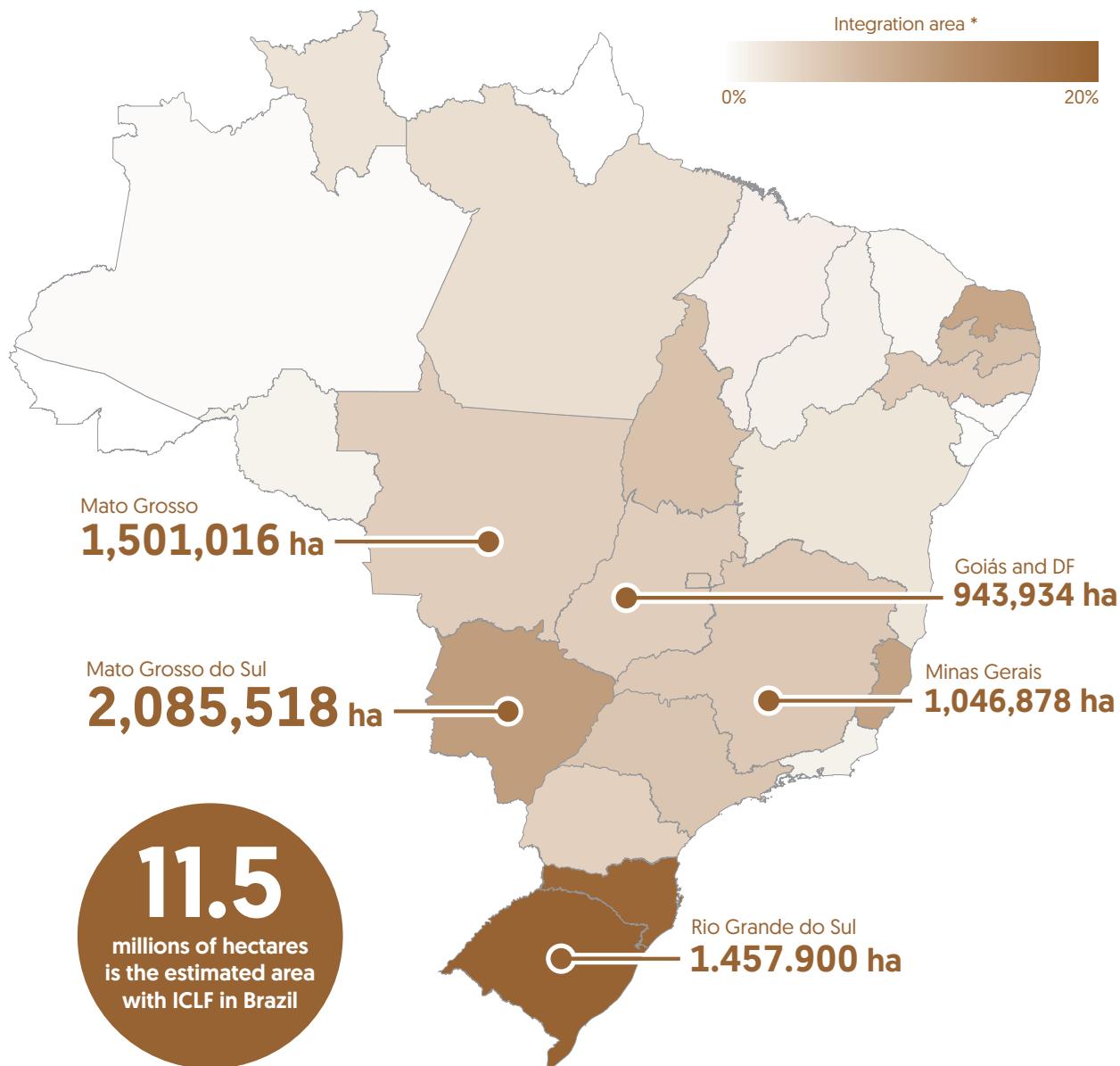
Greater optimization of processes and production factors



Economic stability, by reducing risk and uncertainty through production diversification

ICLF IN BRAZIL

Research commissioned by the ICLFI Development Network and carried out by the Kleffmann Group during the 2015/2016 harvest estimated that 11,468,124 hectares [ha] of land in Brazil are used for integrated agricultural production systems.

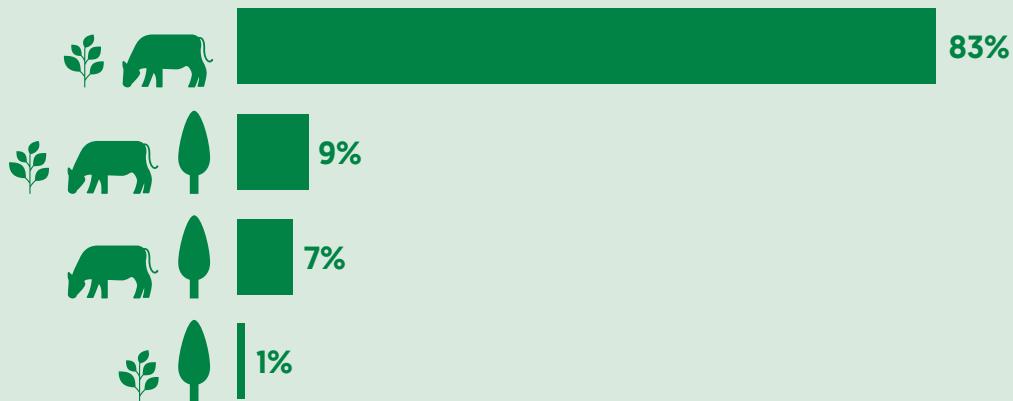


		Areas under agricultural use [ha]	Integration area * [ha]	[%]
North	Acre	1,550,224	321	0.02
	Amazonas	2,221,744	9,407	0.42
	Amapá	242,498	0	0.00
	Pará	13,493,870	427,378	3.17
	Rondônia	6,700,660	78,258	1.17
	Roraima	710,225	18,422	2.59
	Tocantins	8,065,233	500,302	6.20
Northeast	Alagoas	1,555,272	4,619	0.30
	Bahia	21,996,268	545,778	2.48
	Ceará	5,142,852	41,380	0.80
	Maranhão	4,797,636	69,087	1.44
	Paraíba	2,152,310	136,217	6.33
	Pernambuco	4,273,523	217,673	5.09
	Piauí	5,599,900	74,119	1.32
	Rio Grande do Norte	2,298,618	221,491	9.64
Midwest	Sergipe	1,281,116	1,774	0.14
	Goiás e DF	19,745,814	943,934	4.78
	Mato Grosso	30,957,213	1,501,016	4.85
Southeast	Mato do Grosso do Sul	19,504,048	2,085,518	10.69
	Espírito Santo	1,186,482	118,121	9.96
	Minas Gerais	19,217,726	1,046,878	5.45
	Rio de Janeiro	1,016,170	11,981	1.18
South	São Paulo	14,916,482	861,140	5.77
	Paraná	9,387,407	416,517	4.44
	Rio Grande do Sul	7,108,887	1,457,900	20.51
	Santa Catarina	3,517,399	678,893	19.30
Total		208,639,578	11,468,124	5.50

* Values extrapolated from research data based on the area under agricultural use.

CONFIGURATIONS

Among the four possible production configurations, crop-livestock integration is the most adopted by producers.



ADOPTING ICLF

The main reasons for producers to adopt ICLF are:

	Livestock farmers	Crop farmers
1 st	Reduced environmental impact	Increased profitability per ha
2 nd	Pasture recovery	Reduced financial risk
3 rd	Crop rotation due to technical necessity	Crop rotation due to technical necessity
4 th	Increased profitability per ha	Pasture recovery
5 th	Reduced financial risk	Reduced environmental impact

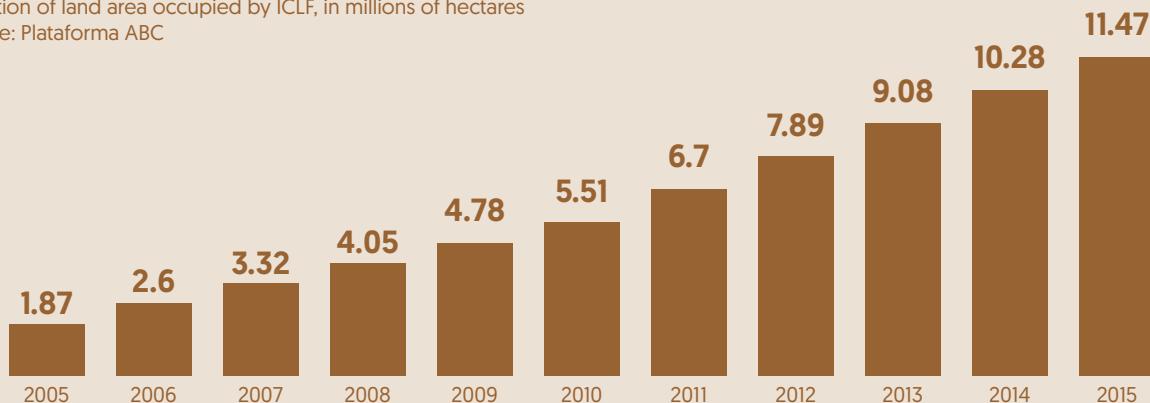


GROWING TECHNOLOGY

In ten years, the land area occupied by ICLF has increased by almost 10 million hectares. The graph below shows the projection of the expansion of this system of production, predicted by Plataforma ABC, considering a linear evolution between 2005 and 2015.

Evolution of land area occupied by ICLF, in millions of hectares

Source: Plataforma ABC



FEATURED NUMBERS

29% of those who use ICLF adhered to the system between 2011 and 2015.

In this same period, the average percentage of farm area utilizing ICLF increased from **4.3%** to **9.4%**.

Among the livestock farmers using ICLF, the average area allocated to ICLF is expected to reach **20,6%** of the farmland by 2030.

35% of the non-ICLF livestock farmers have stated that they would be willing to adopt the technology. **29%** are indecisive

84% of the livestock farmers are satisfied with the ICLF systems.



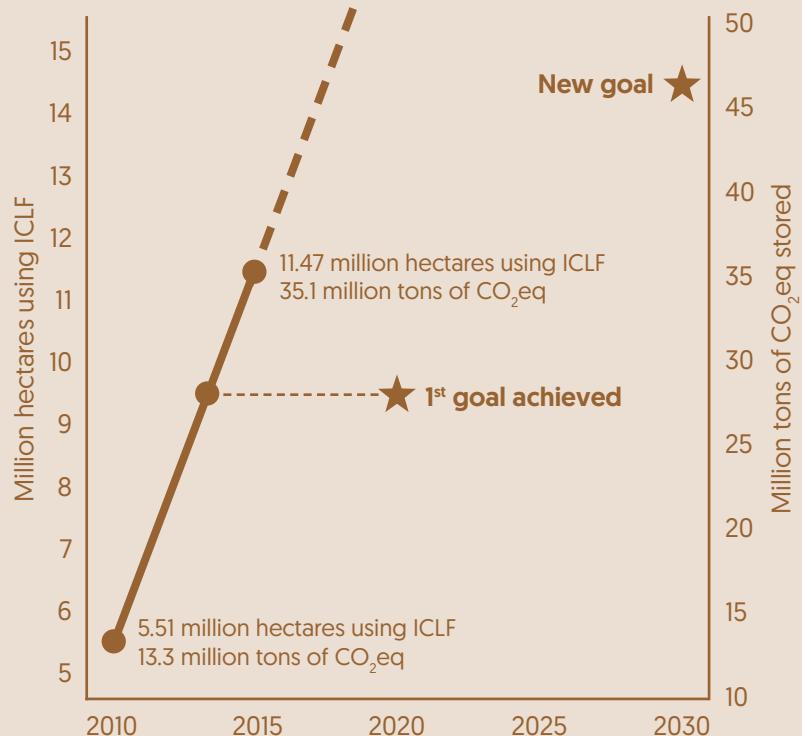
COMMITMENTS

The goal set by the Low-Carbon Agriculture Plan (Plano de Agricultura de Baixa Emissão de Carbono – ABC Plan) in 2009 was to increase the land area using ICLF in Brazil by four million hectares by 2020. According to the preliminary estimate of the ABC Platform, a multi-institutional group formed to monitor the reduction of greenhouse gas emissions, between 2010 and 2015 the increase of 5.96 million hectares of ICLF was responsible for the sequestration of 21.8 million tons of carbon dioxide equivalent (CO₂ eq).

The ratification of the Paris Agreement on Climate Change by the Brazilian government in 2016 added another five million hectares of farmland using ICLF systems to the goal set by the ABC Plan, totaling nine million hectares by 2030.



Evolution of total area using CLFI and tons of CO₂eq stored
Source: Plataforma ABC

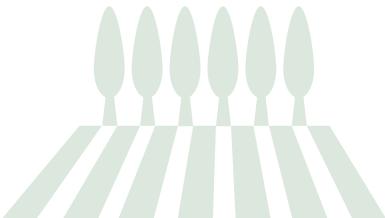
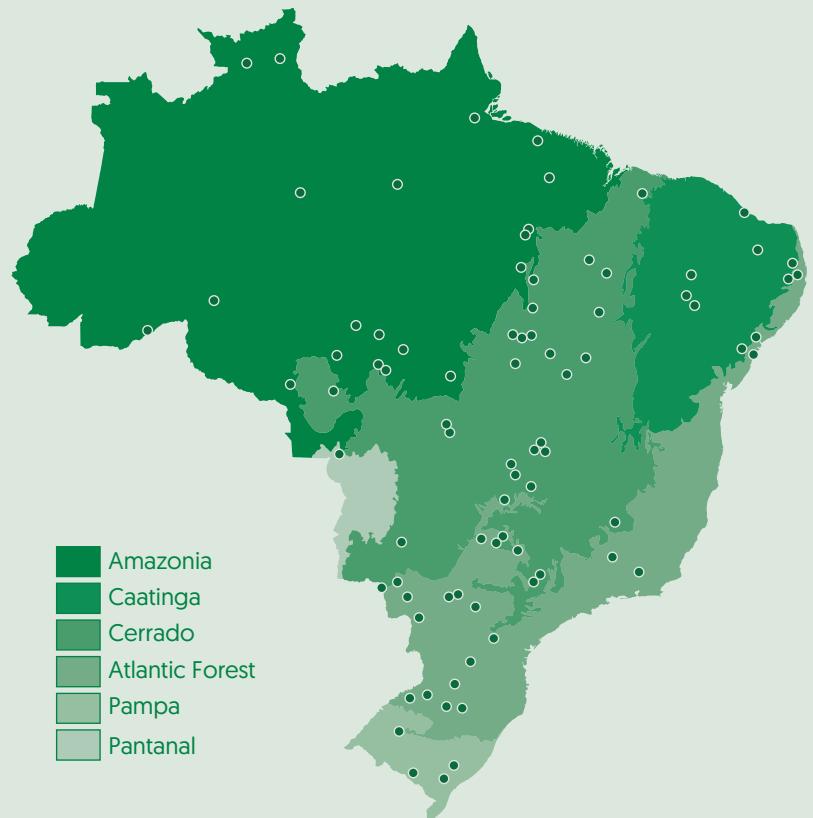


TECHNOLOGY TRANSFER WITH ICLF

The ICLF Development Network is a public-private partnership formed by Cocamar, Dow AgroScience, John Deere, Parker, Syngenta and Embrapa. Its objective is to accelerate the wide adoption of integrated crop-livestock-forest systems by rural producers as part of an effort aimed at the sustainable intensification of Brazilian agriculture.

Initiated in 2012, the Network, which is co-financed by private companies and by Embrapa, supports a network of 97 Technological Reference Units (TRUs) distributed in all Brazilian biomes and involving the participation of 19 Embrapa Research Centers.

Distribution of the Technological Reference Units across all biomes



TECHNOLOGICAL REFERENCE UNITS

TRUs are areas run by rural producers or institutions linked to a production sector in which a ICLF configuration has been adopted. These areas are monitored by the Embrapa technical team and are used to evaluate and validate technologies. In addition, they are important instruments of technology transfer, by hosting technical visits and field days.

Possible uses for Technological Reference Units



Technical visit



Research, development and
technological innovation



Field day



Technology Validation



Training

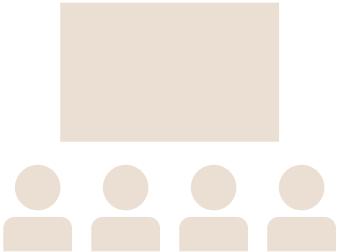
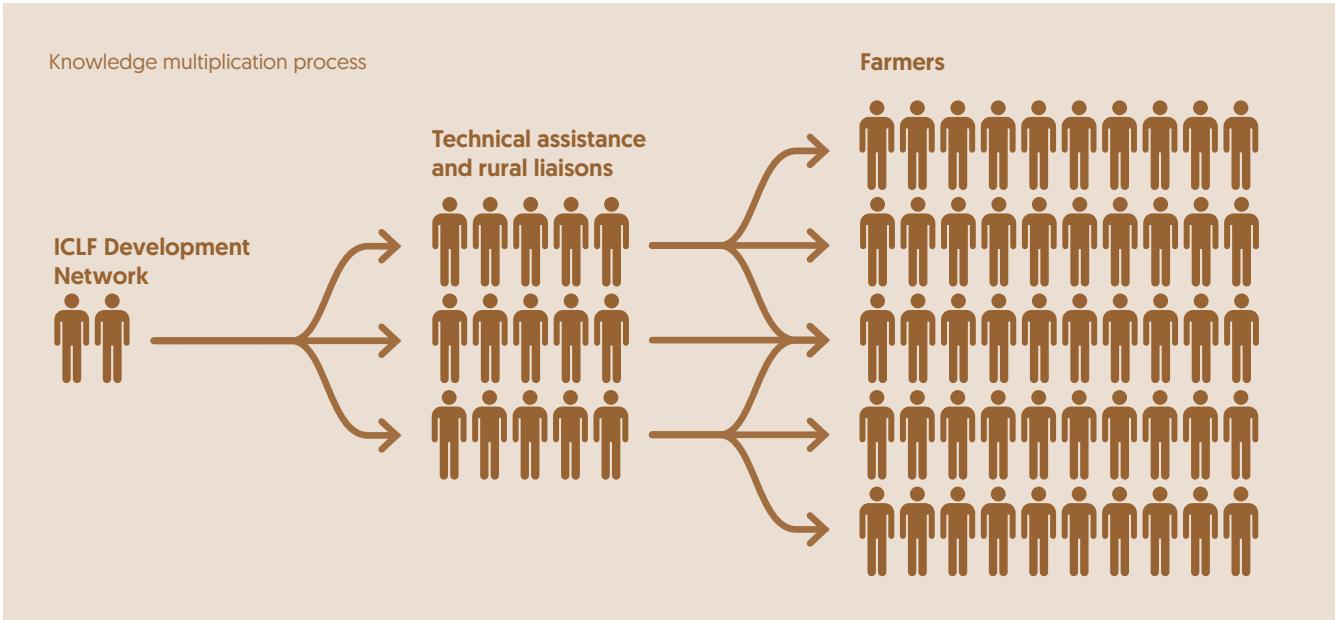


Data collection
[sustainability indicators]



CONTINUOUS TRAINING

TRUs are also used as a learning tool, for the training of private consultants and public agents working as technical assistants and rural liaisons. In many Brazilian states, this training takes place on a continual basis, with two to three modules being taught each year, in an ongoing process of training and improvement.





Get to know the experiences of those who already use ICLF, access publications, watch videos and lectures and keep in touch with ICLF events at:

www.ilpf.com.br

ICLF Development Network



Dow AgroSciences



JOHN DEERE



syngenta



MINISTRY OF
AGRICULTURE, LIVESTOCK
AND FOOD SUPPLY

