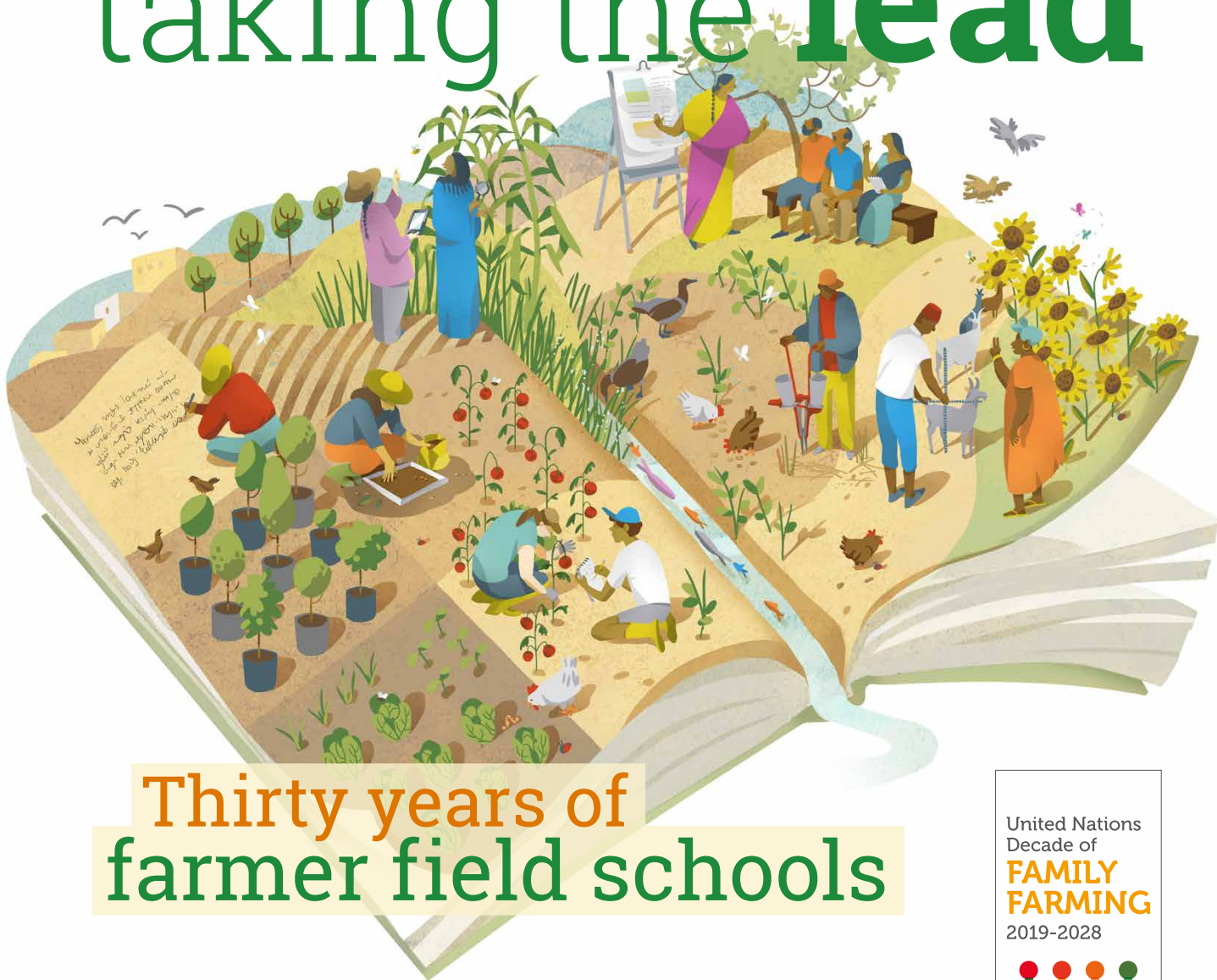




Food and Agriculture Organization
of the United Nations

Farmers taking the lead



Thirty years of
farmer field schools

United Nations
Decade of
**FAMILY
FARMING**
2019-2028



Farmers taking the lead

Thirty years of
farmer field schools

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ISBN 978-92-5-131569-9

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Design and layout: studio Bartoleschi

Illustration: Elisa Lipizzi/studio Bartoleschi

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Acronyms

AESA	AgroEcoSystem Analysis
BPH	Brown planthopper
CARE	Cooperative for Assistance and Relief Everywhere
CCA	Climate change adaptation
CIP	International Potato Center
FAO	Food and Agriculture Organization of the United Nations
FAW	Fall Armyworm
FBS	Farmer business school
FFS	Farmer field school
FWS	Farmer water school
GIZ	German Society for International Cooperation
ICT	Information and communication technology
IFAD	International Fund for Agricultural Development
ILRI	International Livestock Research Institute
IPM	Integrated pest management
IPPM	Integrated production and pest management
JFFLS	Junior Farmer Field and Life School
NGO	Non-governmental Organization
REFECA	Regional Network of FFS Facilitators – Ayacucho
SDGs	Sustainable Development Goals
SOFT	Society of Facilitators and Trainers
TITAN	IPM Trainers Association of Nepal
UN	United Nations
UNDP	United Nations Development Programme
VSF	Veterinarians Without Borders
WHO	World Health Organization



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Thirty years of farmer field schools



Thirty years ago, in 1989 in Indonesia, the Food and Agriculture Organization of the United Nations developed the farmer field school concept on integrated pest management for rice. A platform for farmer education and empowerment, FFS strengthens knowledge for holistic agro-ecosystem management, improves decision-making skills and facilitates group collaboration and action. FFS was recognized as a dynamic and promising approach for interacting with farmers and managing complex systems and FAO leads the way in advocating it.

The FFS approach has since addressed a wide range of topics in many countries and regions, adapting its key features of ecological literacy, field-based learning and group collaboration to different ecosystems. Farmers continue to drive the innovations that enrich FFS programmes, while institutions and organizations actively integrate FFS in their activities. FAO programmes commonly use the FFS concept, and FAO facilitates sharing of knowledge and experiences for a large and diverse community of FFS practitioners.

This brochure captures the major developments of the farmer field school over 30 years, highlighting innovations in different regions and contexts. A vast number of additional stories and experiences exist, some of which can be accessed at the global FFS platform website. This document summarizes key messages on FFS and provides insights for new directions: how communities of smallholder farmers can address contemporary challenges in the agricultural sector to provide food and other services in a sustainable and equitable manner.





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Empowering small-scale farmers across the world



We must promote and learn from farmers' experience and knowledge. Pragmatic, field-based and farmer-centric education can and must play a key role in making agriculture more sustainable. At the end of the day, sustainable intensification will mainly be the result of the collective action of millions of small-scale family farmers, who through their daily decisions are key to determine the trajectory of agricultural ecosystems across the world.

José Graziano da Silva, Director-General, FAO

Transforming agriculture

Sustainable development of agriculture is high on the global agenda. Recent decades have seen agricultural intensification driven by increased use of external inputs to increase production and food security. However, unsustainable agricultural practices have resulted in environmental degradation and pollution, exacerbated by climate change. Global concerns exist about sustainable food production capable of feeding growing populations and enhancing social equity. It is crucial to move towards sustainable production systems that optimize ecosystem processes and services to provide food for future rural and urban populations.

Engaging small-scale family farmers

Small-scale family farmers¹ play a major role in producing food for rural and urban populations. Farming practices based on a deep understanding of local ecosystems and the socio-economic and cultural context pass down the generations. However, rural communities often lack scientific knowledge; they have limited access to opportunities and services to help make production systems more sustainable and profitable. Furthermore, young people in rural areas may opt to create their livelihoods elsewhere, in other sectors.

Farmers must adapt and fine-tune practices for growing and marketing their produce sustainably, but “ecological intensification” requires adaptive management reflecting the local context: ecological literacy and farmer collaboration are key.

¹ Small-scale family farmers include smallholder agriculturalists, indigenous peoples, pastoralists, fishers and other groups involved in agricultural production.





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3

Farmer field schools **Facts and figures**

Thirty years ago, the farmer field school (FFS) approach was developed in Asia in an FAO project promoting integrated pest management (IPM) in rice (section 6.1). The FFS model enhances understanding of complex agro-ecosystems and was gradually adapted around other entry points. Communities are encouraged to change practices and take a lead role in defining the future: FFS embraces sustainable agriculture anchored in ecology and farmer empowerment.

What is a farmer field school?

NON-FORMAL EDUCATION PROCESS
characterized by hands-on group learning.

FARMER-CENTRED APPROACH adapted by local people.

SEASONAL TRAINING PROGRAMME
LASTING AT LEAST ONE PRODUCTION CYCLE – from seed to seed, from egg to egg, or from calf to calf.

The FFS approach:

- **builds on local knowledge systems** while testing and validating scientific concepts developed elsewhere;
- **enhances participants' skills for critical analysis** and problem-solving;
- **develops observation skills** transforming them into scientific evidence;
- **promotes collective action**, fostering group cohesion and community decision-making to improve agriculture and livelihoods;
- **helps rural communities transform current production systems**, driving changes towards more sustainable practices and systems.

An FFS group:

- **comprises 20-30 farmers** (or livestock or fish producers) – from the same locality and interested in learning about improved practices;
- **is supported by a trained facilitator**;
- **meets regularly during the growing season/productive cycle** – often on a weekly basis;
- **carries out experiments** – farmers identify production problems, brainstorm potential solutions, then set up study plots to compare local practices and improved practices;
- **promotes empowerment beyond the field**; and
- **fosters social capital building** at community level.

A weekly session includes:

- **AgroEcoSystem Analysis (AESA)**. FFS participants observe and monitor all elements of the agro-ecosystem and farm and learn how to make management decisions. They work in small groups and collect all the data on their experiments. Each group prepares a poster to summarize the findings, discuss the situation observed and present management options. Participants debate the proposed options and agree on the best. FFS facilitators ensure full participation and help the group reach a sound technical decision. The collective recommendations are implemented in the learning plot, and the process is repeated throughout the season. AESA is used not only for crops, but for livestock and fish, measuring different elements but always looking at the wider production ecosystem. [Photo A]
- **Group dynamics activities**. These are used as icebreakers and to learn about teamwork. They enhance group cohesion and make learning more fun. [Photo B]
- **Special topics**. Through the “topic of the day”, participants gain in-depth knowledge about specific issues. A wide range of topics may cover technical issues or any subject of importance to the group, such as basic business skills, nutrition, gender roles and HIV/AIDS. For example, “setting up an insect zoo” is a discovery learning process that teaches about functions of insects and about predation: pests and their natural enemies are put together in a vial, and farmers observe what happens. [Photo C]

More information on FFS can be found on the website of the **Global FFS platform**: www.fao.org/farmer-field-schools



FFS Planning

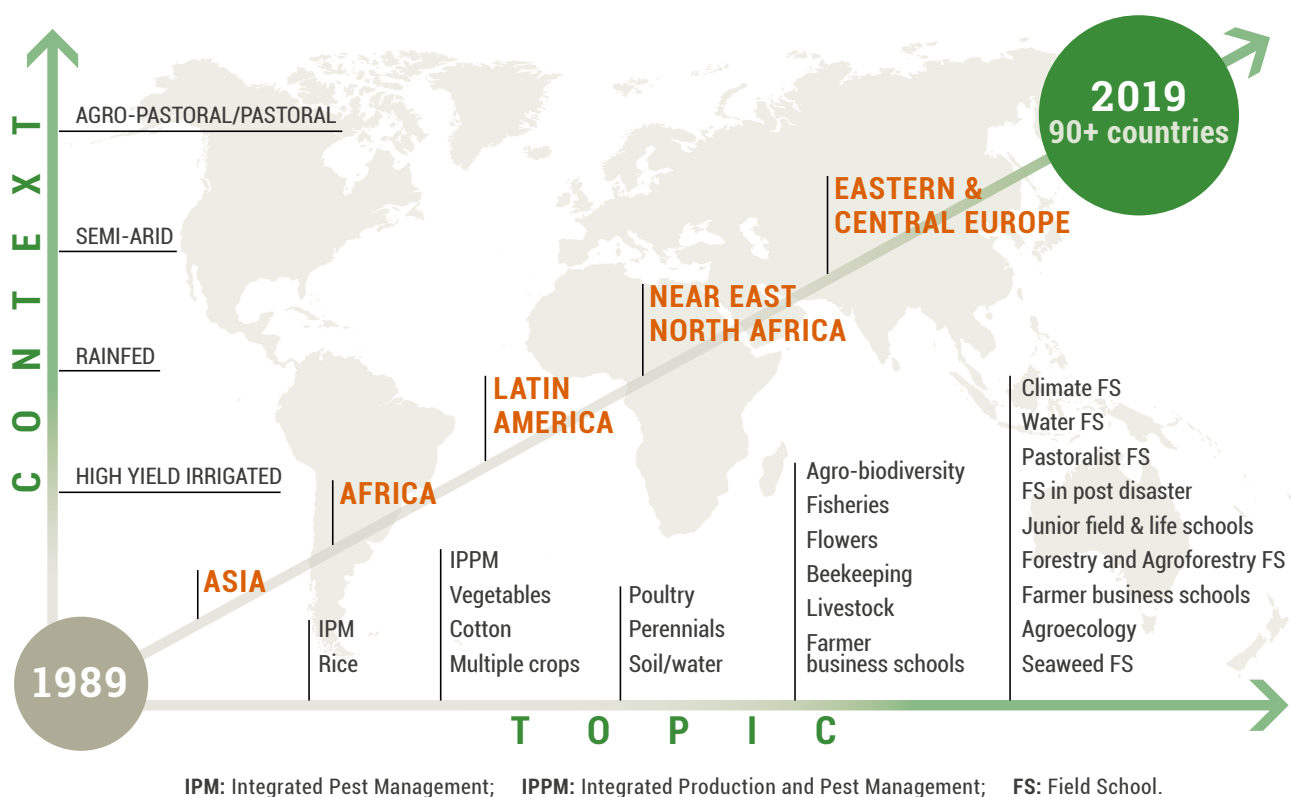
The *Farmer Field School Guidance Document – Planning for quality programmes* was developed in 2016 with input from FFS practitioners from different regions. In addition to information on FFS, it provides the “do’s and don’ts” of planning an FFS programme:

- Understanding problems and opportunities – identified with farmers – is crucial for adapting the content to address local issues. During planning, it is essential to identify whether FFS is the best approach to address a particular problem; other approaches (e.g. information campaigns) may be more suitable.
- Qualified and trained facilitators are required with the technical, facilitation and organizational skills needed for quality implementation. Building the capacity to implement FFS requires upfront investment at programme level and the field-based meetings during the FFS also require funds; this must be considered when developing a FFS programme.
- Post-FFS activities are important for sustainability of learning and development at community level; during programme design, it is essential to consider whether conditions are conducive for FFS, and to ensure that investments to train facilitators and farmers can be sustained. In many countries, FFS continue activities afterwards through self-financing by group members.



©FAO/Ami Vitale

Evolution of the farmer field school approach



A detailed timeline can be found in section 5.

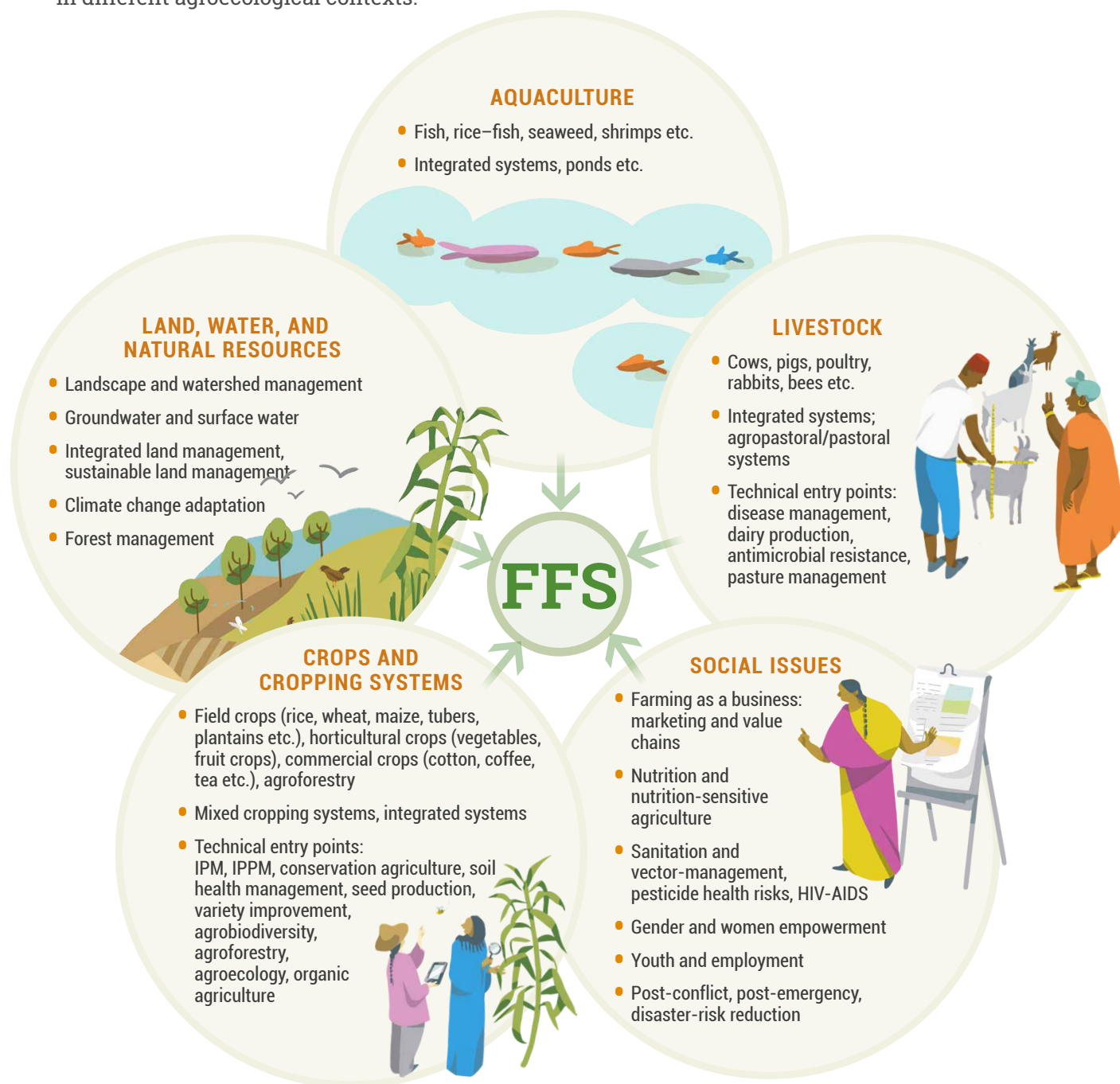
FACTS&NUMBERS

- > Currently **over 90 countries** use FFS approaches, in Asia, Africa, the Near East, Latin America and Europe.
- > Every year, **between 400 000 and 1 million farmers** participate in FFS. An estimated **20 million farmers** have participated in FFS since they started.
- > FFS have **adapted to different agroecological zones**, from irrigated systems to rainfed and arid zones.
- > FFS have **adapted to a wide range of farming systems**, from crop-based systems to agropastoralist systems.

What topics are covered?

FFS began with rice IPM but have since been adapted to a wide range of **entry points** in different agroecological contexts.

The focus is usually on one specific topic, but the FFS programme also reaches further.



FFS stakeholders at multiple levels²

- **FAO** pioneered the FFS approach, in collaboration with **governments** in the Asian region.
- **Farmers** responded enthusiastically – a core partner, implementing FFS and driving innovations.
- **Facilitators** ensure quality education – irreplaceable partners, they include governments, Non-governmental Organizations (NGOs) and farmer communities. Women and men committed to working with a community, they organize and implement FFS, often providing support afterwards; make regular visits to the community during the season; interact with farmers and are a source of inspiration for the fieldworkers.
- **Organizations** and **partners** promote farmer education and ecology. Ministries of agriculture engage in implementing FFS programmes, using field agents in extension and/or technical departments to work with farmer communities. Many governments now fund FFS.
- **Research organizations** (international and national) provide support to FFS programmes in many countries.
- **Non-governmental organizations** (international and national) integrate FFS in their programmes, both small- and large-scale. Community-based organizations also participate in and implement FFS programmes.
- **Donors** are critical for the promotion of FFS. They include development organizations, funding institutions (e.g. World Bank and IFAD), donor governments, UN organizations and international NGOs (e.g. CARE).

² Many other organizations are involved in FFS, too many to name in this document.

FFS promoted worldwide – some examples

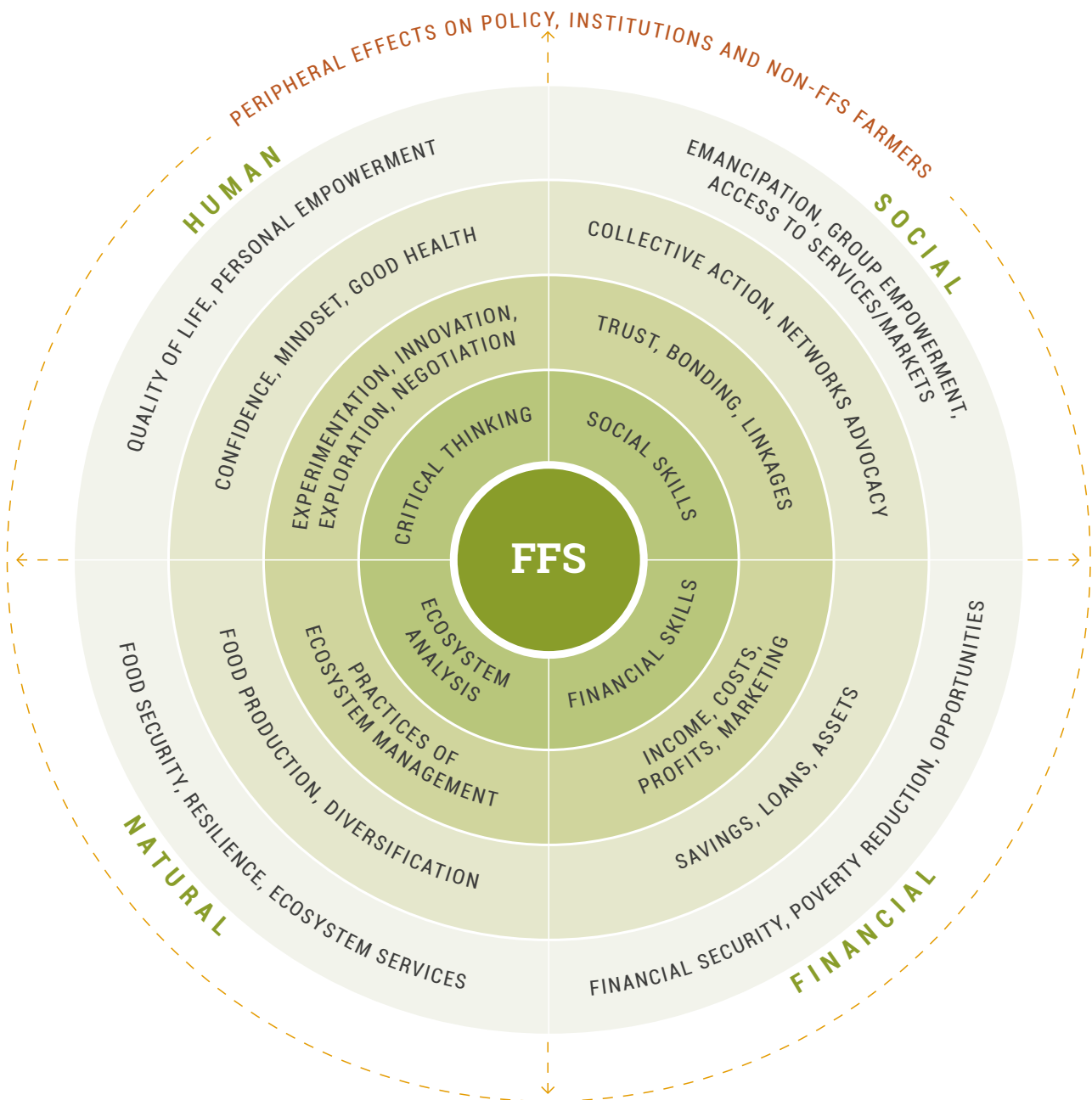
- **Indonesian IPM Farmers Association** was formed in the early 2000s by IPM farmers graduating from FFS on rice IPM. Today the association has 1.2 million members, organizes regular events and advocates farmers' rights.
- **CARE** implements over 130 projects and programmes with a FFS component, all with a strong emphasis on women's empowerment.
- **SOFT Pakistan** was set up in 2009 by FFS facilitators and links 43 organizations of smallholder farmers graduating from FFS programmes. It provides training to new facilitators in a wide range of programmes and continues to innovate FFS and networks.
- **IFAD** and **World Bank** continue to fund agricultural development programmes with significant FFS components in different regions.



What are the impacts?

The learning in the FFS goes beyond trying to change a simple behaviour as a result of a straightforward message. A global synthesis of FFS evaluations conducted in 2018 shows that changes take place in four domains:

human, social, natural, financial (see figure), with positive impacts including farmer empowerment, emancipation, food security and poverty reduction.



Examples of FFS impact documented in the 2018 global synthesis study

- **Kenya:**
 - Increased production (maize yield from 555 kg/ha in 1997 to 3 335 kg/ha today) and reduced chemical inputs.
 - Emancipation of women, as mixed FFS groups promoted equal participation, breaking social customs related to gender roles. This increased the role of women in agriculture, and changed perceptions of the role of women in the community.
- **Bangladesh.** Evolvement of FFS groups into functioning farmer clubs, with continued group meetings and activities.
- **Democratic Republic of the Congo.** Formation of farmer business associations with better market access. Households traditionally sold produce individually: after 2 years, 68% of farmers negotiated as the FFS group, 56% operated in a farmer business association and 30% sold through agricultural collection centres.
- **East Africa.** Adoption of good practices: after 5–7 years, FFS graduates used improved crop varieties, vaccination of livestock and improved soil fertility.
- **Cambodia.** Reduction in pesticide use, with a 50% decrease 6 years after the FFS.



FFS participants in Burundi with their kitchen garden.

©FAO/Philbert Yandemye



©William Settle

4 Key messages



The learning process is empowering and dynamic. FFS content is developed with the farming community and reflects local needs and opportunities. Interaction during the FFS identifies new ideas for action, drives locally appropriate innovations, transforms agricultural systems and strengthens local institutions.

Quality is crucial. Human capacity (facilitators from governments/NGOs or the community) development ensures key stakeholders have the necessary technical, facilitation and organizational skills. Investment in human capacity may seem costly, but is compensated for by the positive impacts of FFS.

FFS create a platform for further action. Following the learning process lasting just one production cycle, post-FFS activities ensure continuity at community level and allow groups to take leadership in rural development, interacting with community members, producer organizations and outside agencies to build local institutions. FFS graduates can train other farmers, plan their own agricultural development activities and interact with local government and other institutions to advocate for change.

FFS farmers become researchers. FFS groups co-create the learning process and co-produce innovation, creativity and flexibility in dealing with agro-ecosystems. Farmers explore issues and ideas through observation experimentation, comparison, presentation and discussion. Partnerships with local research institutes and universities ensure the technical soundness of experiments.

FFS build on four capitals of sustainable livelihoods: natural, human, social and financial. Most documented impacts relate to natural capital. To better assess what investments to make, impacts related to the other capitals must be documented using both quantitative and qualitative methods.



Sustainable Development Goals and the contribution of FFS

In September 2015, the 193 Member States of the United Nations adopted the 2030 Agenda for Sustainable Development, built around 17 Global Goals. The Sustainable Development Goals (SDGs) guide the actions of governments, international agencies, civil society and other institutions between 2015 and 2030. The SDGs aim to end poverty and hunger, while restoring and sustainably managing natural resources.

FFS develop the skills and knowledge of producers, allowing them to create more efficient and sustainable production systems and contribute to the achievement of the SDGs.



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FFS improve the livelihoods of poor people through **increased productivity** and **market access**.



FFS promote sustainable agriculture and enhance food and nutrition security through **increased, better-quality food production**.



FFS can impact many areas: **integrating nutrition education** for mothers and children; proposing **improved sanitation practices** to tackle HIV-AIDS, and vector-borne and water-borne diseases; introducing **IPM** to reduce pesticide poisoning; and imparting **best practices for livestock production**.



FFS provide hands-on education to adult farmers to **improve livelihoods**.



FFS promote **gender equality and equity** in all activities and roles.



FFS reduce reliance on and overuse of external inputs. They **facilitate understanding of ecosystems**, thus reducing pollution of natural resources, protecting water-related ecosystems and increasing water-use efficiency.



FFS create **employment opportunities**, promote **entrepreneurship** for adults and youth, **facilitate networking** and strengthen associations



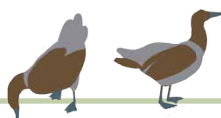
FFS promotes **climate-smart agriculture** and supports disaster risk reduction, **promoting mitigation and adaptation practices**



FFS activities revolve around **agro-ecosystem analysis** to support the understanding and sustainable management of ecosystems. They promote the **conservation of ecosystems**, genetic diversity and land restoration practices.



Key events



1989

Farmer field school concept developed in Indonesia (IPM in rice)

- > FFS originated in the FAO Regional Rice IPM Programme for South and Southeast Asia.
- > Adopted in national IPM programmes in Asia – ground-breaking approach focusing on local problems.
- > Developed through interaction and inputs of rice entomologists and ecologists and non-formal adult educators working closely with farmers.

1991 onwards

Expansion of the FFS approach in Asia (focus on rice)

- > Training of FFS facilitators for Rice IPM in Philippines, Viet Nam, Bangladesh and other Asian countries.
- > First facilitators from Indonesia, then from other Asian countries.
- > Increasing use of FFS in Asian countries – initially for rice IPM.

Farmer-driven innovations in Asia (extending to other crops)

- > Farmers as facilitators. Farmers spontaneously organized FFS in community after FFS participation.
- > 1992: IPM and FFS concepts applied to other crops, leading to FAO programmes on vegetable IPM (mid-1990s to the present) and cotton IPM (early 2000s).
- > Mid-1990s: expansion to disease management, soil management, rice–fish systems and aquaculture.



1995, 1996

FFS in Africa

- > First Training of Trainers on FFS on rice in Ghana, with help from Asian resource persons.
- > Visits to Philippines by Kenyan facilitators to learn about maize.

1996 onwards

FFS expansion in Africa

- > Regional trainings (followed by national trainings) with support of Asian and African trainers for widening range of crops.
- > Shift from IPM to IPPM to reflect African farming systems.



1993

Global IPM study tour to Asia (extending to other countries)

- > Visits to Asian IPM FFS by representatives from Africa, Latin America and Near East.
- > Interest in FFS approaches generated elsewhere.

1995–2005

FAO Global IPM Facility (further expansion)

- > Support to expansion of FFS and IPM in new regions (Africa, Latin America, Near East, Eastern Europe).
- > Collaboration with other FAO divisions, increasing entry points and topics.



1997 onwards

Community IPM programmes in Asia

- > Collaboration with existing FFS groups to develop local plans to promote IPM and FFS
- > Farmers as local leaders.

Innovations in Africa

- > First farmer business school in Uganda, adding business skills to curriculum.
- > Community forestry FFS in Kenya.
- > Farmer networking, self-funding models of FFS in eastern Africa.
- > Increasing number of topics and cropping systems.
- > FFS for landscape and watershed management in Kagera Basin.



1998 onwards

Response to AIDS crisis in Cambodia and Africa

- > Development of Farmer Life Schools and Junior Farmer Life and Field Schools.

2001 onwards

FFS for livestock

- > Systematic effort with ILRI (Kenya) to expand to livestock.
- > Development of livestock and agropastoralist FFSs in increasing number of countries in Africa and elsewhere



1999

FFS in Latin America

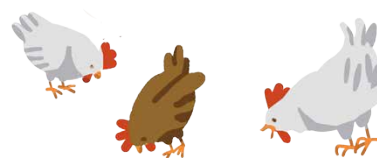
- > Regional training on potato FFS.
- > Resource persons from CIP and Asia.



2003 onwards

FFS reaches further

- > FFS IPM horticulture programmes in Near East.
- > FFS specialized in western corn rootworm in Eastern Europe.
- > FFS focused on cotton, conservation agriculture etc. in Central Asia





2015 onwards

Progress at subregional level

- > FFS networks created for Eastern Africa, Southern Africa, West and Central Africa and the Near East.

2017

Global FFS platform initiated

- > Gathering resources, news and expertise on FFS as well as connecting practitioners across the world.



2019

FFS mainstreamed of FFS impacts

- > FFS approach adopted in FAO projects and programmes.
- > FFS concept embraced by governments, donor agencies, civil society and community organizations.

2010 onwards

Response to climate change

- > Development of FFS on climate change adaptation.

2016

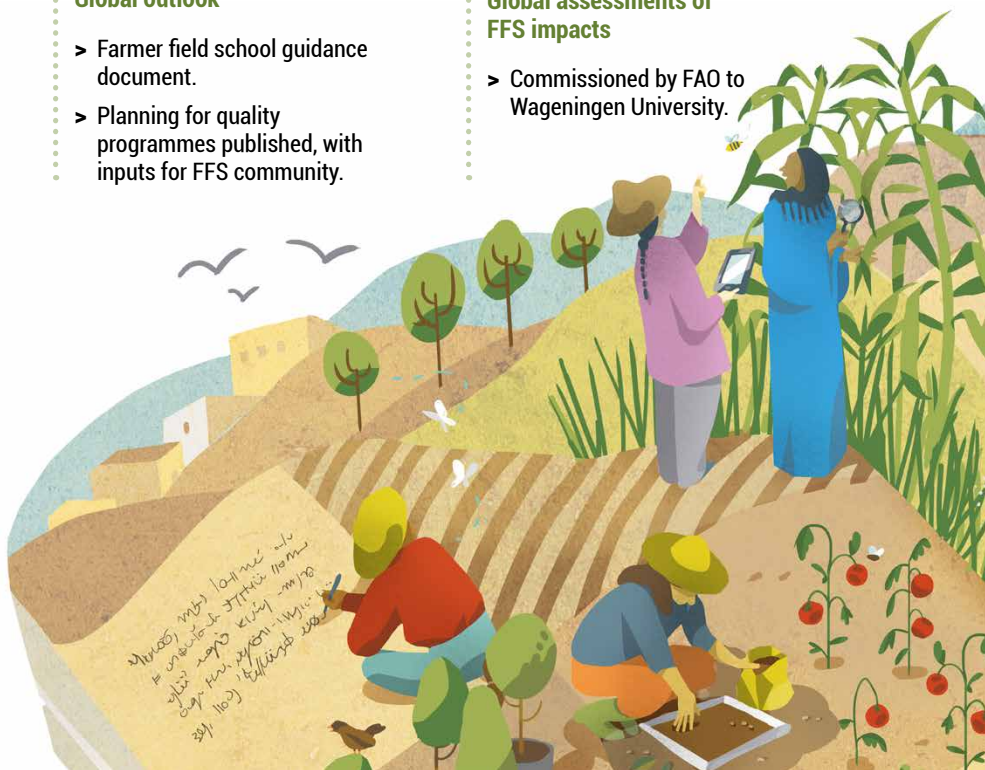
Global outlook

- > Farmer field school guidance document.
- > Planning for quality programmes published, with inputs for FFS community.

2004, 2018

Global assessments of FFS impacts

- > Commissioned by FAO to Wageningen University.





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Highlights of thirty years of farmer field schools



6.1 The early years: Rice, IPM and FFS

Rice is the staple food for large populations in Asia. In the 1960s, the green revolution promoted technical packages of inputs (high-yielding varieties, fertilizers, pesticides, better access to irrigation). This led to major increases in rice production, as well as self-sufficiency in some major rice-producing countries, improving food security in the region.

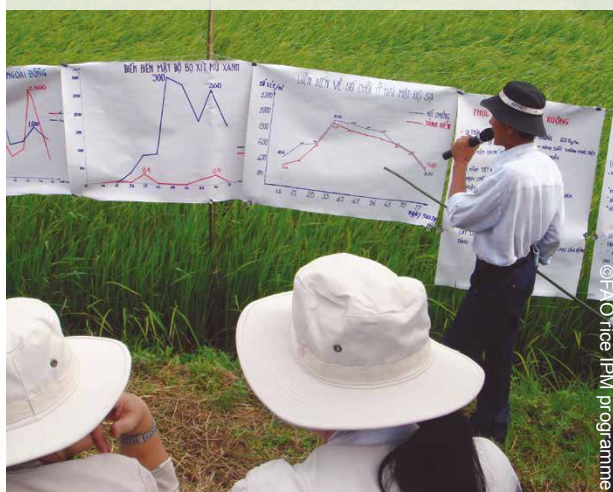
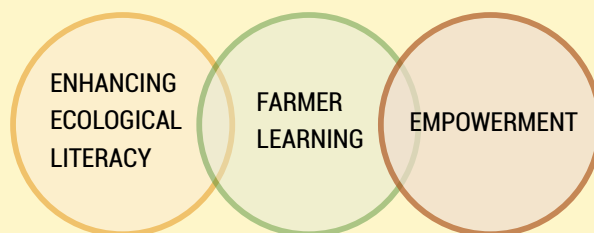
However, in the 1970s and 1980s, outbreaks of the brown planthopper (BPH) began to threaten food security. The excessive use of insecticides targeting pests resulted in the decimation of natural enemies in the rice ecosystem, leading to secondary pest outbreaks of BPH. The BPH outbreaks were of major concern to governments where rice is the staple food, threatening production and self-sufficiency. Managing the BPH and other pest problems in rice requires an understanding of all elements and interactions in the ecosystem as the crop develops. This complex knowledge cannot be conveyed in simple messages. The need to promote ecological literacy underpinning sound integrated pest management (IPM) was first recognized in Indonesia. It was in this setting that the farmer field school approach was developed.

IN DEPTH

The FFS concept Bringing together ecology and non-formal education

At the end of the 1980s, the FAO Regional IPM Programme included the entomologists/ecologists, Peter Kenmore and Kevin Gallagher, and a non-formal education expert, Russ Dilts. Together they developed a practical approach for farmers to learn about ecology and IPM. The idea was to build on local knowledge systems, learn in groups, and use field-based hands-on learning to empower farmers. The concepts of learning and farmer empowerment reflected theories of Paolo Freire, David Kolb and Jurgen Habermas. The experiences and innovative ideas of Kenmore, Gallagher and Dilts led to the development of the farmer field school concept in 1989.

FFS promotes a paradigm of agriculture based on:



FFS: non-negotiable principles

- Farmers' needs and interest define and drive FFS.
- Farmers' local knowledge – alongside science-based knowledge – co-produces and co-creates new knowledge, science and public services.
- The learning process is non-formal:
 - Sessions take place in fields or with animals
 - Training is in groups.
 - Education is hands-on, experiment-based: learning through discovery.
 - Local and outside knowledge are integrated through observation, critical analysis, sharing and debate.
 - Conclusions and implementation are based on the knowledge generated, enhancing decision-making skills.
 - Learning is a continuous process – regular meetings are held at critical crop/animal production stages.
- Diversity – in age, gender and experience – enriches FFS.
- Building trust is key, enabling:
 - critical analysis skills;
 - feedback and evaluation skills;
 - planning skills; and
 - group work and collaboration.
- Facilitators smooth the learning process – they must be qualified (technical, methodological, organizational).
- FFS content is adapted to local context – activities are specific to the situation/location.

FFS: an Indonesian initiative

In the **1980s**, evidence in rice fields indicated that increasing brown planthopper (BPH) outbreaks were the result of overuse of insecticides that disrupted natural biological control. The ensuing threat to rice self-sufficiency had to be addressed.

1986 the Government of Indonesia issued a presidential decree:

- banning the use of over 50 insecticides in rice;
- phasing out government subsidies for pesticides; and
- initiating large-scale training programmes for farmers on rice IPM using FFS.



1989 the Government of Indonesia launched Farmer Field Schools:

As part of the national IPM programme and with technical support from FAO, plant protection workers were trained as FFS facilitators on rice IPM in intensive hands-on season-long training of trainers' events. By the end of the 1990s, the facilitators had trained over 1 million farmers in Indonesia.

2018 a case study was carried out on the evolution of FFS in Indonesia:

With the support of FAO, the study assessed how FFS and IPM developed after the end of the national IPM programme (1989–1999) and of the community IPM programme (1999–2004):

- The Indonesian IPM farmer association (initiated in the early 2000s) is still active and has over 1.2 million members.
- The basic concepts and quality of the training are maintained by the Plant Protection Directorate of the Government of Indonesia.
- Investments in training facilitators have decreased.
- FFS on IPM continue to take place, but the number of trained farmers is decreasing.
- FFS on integrated crop management have been organized; however, they do not follow the same ecology-based farmer education approach.
- Two conflicting paradigms coexist in the agricultural sector:
 1. ecology-based (farmer education, co-creation of local innovations, ecological literacy); and
 2. technology-based (technologies, inputs, standardized messages).
- Pressure to increase pesticides is high, and occasional outbreaks of brown planthopper occur, a sign of disrupted ecosystem services.
- The FFS concept has been applied in other contexts, sometimes under a different name:
 - Science field shops support farmers to address climate change.
 - Rice–fish FFS have been pioneered.
 - FFS are used for wastewater management at community level and for watershed management.





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6.2 Expansion of farmer field schools for IPM across Asia

Before IPM field schools, we planted our rice and prayed that we might have a good harvest. Now we know that we can actually control many of the factors that influence our harvests.

An IPM farmer from Thai Binh Province, Viet Nam

Expanding beyond Indonesia

In the early 1990s, as FFS were being developed in Indonesia, the FAO Regional Rice IPM Programme shared the experience across the Asian subregion. FFS was perceived as an important mechanism to strengthen farmers' knowledge and skills on rice IPM, and to reduce risks related to overuse of pesticides in rice, including pesticide-induced pest outbreaks, environmental pollution and public health issues. From 1991, an increasing number of countries in South and Southeast Asia initiated farmer field schools on rice.

In 1993, the FAO Regional Rice IPM Programme organized a global study tour on IPM with participants from Africa, Latin America and the Near East. Four groups of participants visited IPM FFS activities in Bangladesh, Indonesia, the Philippines and Viet Nam, before convening in Thailand to compare experiences and consider how they could be applied to other regions.

Building capacity: FFS facilitator training and South–South exchanges

Quality FFS require trained FFS facilitators!

- At the outset, full-time season-long training of trainers courses were organized in Asia.
- Subsequently, Indonesian FFS facilitators helped other Asian countries to run initial training of trainers on rice IPM FFS: 1991, in the Philippines; 1992, in Viet Nam; gradually expanding to other countries.
- At country level, qualified FFS facilitators gained experience running FFS and then became master trainers to train more FFS facilitators.

South–South cooperation helps spread FFS!

- Asian trainers helped initiate FFS training in Africa (rice IPM in Ghana in 1995) and provided support to regional FFS trainings in Africa and Latin America.
- Two Kenyan facilitators joined a training of trainers on maize FFS in 1996 in the Philippines, planting the seed for further expansion across Africa.
- Each region developed networks of qualified FFS facilitators: creating capacity at country level, while initiating FFS programmes in other countries and regions.



Rice FFS driving initial FFS innovations in Asia

Farmers who participated in rice IPM FFS deepened their knowledge on rice and became drivers of other innovations, such as disease management, soil health activities, rice–fish systems, and maintenance of variety quality (evolving to participatory breeding of rice). Farmers started requesting farmer field schools on other crops (e.g. vegetables and cotton). Consequently, FAO implemented a regional vegetable IPM and pesticide risk reduction programme in Asia (1996–2019) and a cotton IPM programme in Asia (2000–2005).

FARMER-FACILITATORS

Initially, farmers participating in FFS in Indonesia and other Asian countries became equipped to teach hands-on practical learning and facilitate a group. They spontaneously organized FFS and became farmer-facilitators.

Subsequently, FFS programmes around the world ensured that farmer-facilitators were part of programme strategies to run farmer field schools and engage in post-FFS activities.

Today, **farmer-facilitators are key in running FFS and developing post-FFS activities** in numerous programmes in different regions.

FACTS&NUMBERS

FARMER-FACILITATORS ARE ON THE RISE:

- > In **2012**, the **ratio** of government/NGO facilitators to farmer facilitators was **50/50**.
- > In **2018**, for each government/NGO facilitator, there were **6–7 farmer facilitators**.



Reducing pesticide risks through IPM in Asia

From 1980 until today, FAO supported work on IPM and pesticide risk reduction in Asia. Projects trained farmers and communities on IPM and pesticide risk reduction (PRR), organizing FFS on rice and vegetables IPM to:

- support improved pesticide policies and legislation;
 - reduce reliance on pesticides;
 - improve farmer's understanding of alternative pest management options;
 - explain how to select least hazardous products when use is justified; and
 - ensure proper use to reduce exposure.
- using IPM at field level
 - gaining awareness on existing production standards;
 - assessing and reducing risks for storage of pesticides in households and shops; and
 - developing a system for better disposal of empty pesticide containers.

Table 1
FFS training (2009): pesticide use and farmer knowledge change while yield levels remain similar¹

	Reduction (kg/household)	% reduction
Cambodia, Battambang Province		
Annual pesticide use	-2.44 kg	-74%
Highly hazardous products ²	-2 kg	-83%
Pesticide cocktails (% of farmers using them)	-	-29%
Viet Nam, Hanoi Province		
Annual pesticide use	-4.9 kg	-69%
Moderately hazardous products ³	-	-18%
Pesticide cocktails (% of farmers using them)	-	-38%
Farmer knowledge of safe vegetable standards rose from 63% to 85%		
Viet Nam, Thai Binh Province		
Annual pesticide use	-4.3 kg	-60%
Moderately hazardous products ³	-	-30%
Pesticide cocktails (% of farmers using them)	-	-6%
Farmer knowledge of safe vegetable standards rose from 39% to 100%		

¹ Based on data collected in 2008 (before FFS) and 2010 (after FFS).

² WHO class I.

³ WHO class II (use of WHO class I pesticides is banned in Viet Nam).



Community IPM in Asia

In the mid-1990s, FFS evolved towards “community IPM” activities. Graduates of FFS on rice IPM created dynamic groups in many communities, promoting IPM to improve livelihood options, and they had the support of the FAO programme on rice IPM.

Community IPM was based on:

- further education and learning;
- farmer organization; and
- generation of knowledge.

Community IPM action included:

- organization of additional FFS for other farmers in the community;
- implementation of field research and studies to deepen knowledge on specific issues;
- organization and networking with other farmers in the community and with FFS groups in other communities; and
- negotiation with stakeholders (e.g. local government) to support local activities.

Farmers evolved from learners to facilitators, researchers, planners, advocates, networkers and policy influencers.

Building local institutions through FFS

FFS empower farmers to define local actions aimed at more sustainable and profitable agriculture. Farmers network with local government and other stakeholders, and farmers from in and outside the community interact. Local institutions are strengthened and local ownership is promoted.



Women Open Schools set up by the SOFT in Pakistan.

©FAO/Jam Muhammad

Innovative South–South mechanisms: the Global IPM Facility, 1995–2005

The Global IPM Facility was based in FAO Rome. Inspired by the success of the IPM programmes in Asia, other regions began building capacity for FFS and developing policy support. The Global IPM Facility relied on expertise developed in the Asian IPM FFS programme. It collaborated with other UN organizations, the World Bank and development partners to initiate activities in Africa, Latin America, the Near East, Central Asia and Eastern Europe.

The Global IPM Facility:

- enabled sharing of expertise;
- adapted successful programme development strategies and policy support to promote IPM for interested countries;
- invested in human capacity development for FFS by supporting trainings of facilitators;
- developed IPM projects with farmer education as a core activity.



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6.3 FFS in Asia

Following the expansion of FFS from rice to vegetable crops, Asian countries adapted the FFS approach to other areas, including multicrop farming, livestock rearing, fisheries, forestry and natural resource management.

FFS and aquaculture

Rice–fish FFS were first developed in Viet Nam in the mid-1990s. Aquaculture field schools have since been developed in Asia, Africa and Latin America for rice–fish systems, pond aquaculture and seaweed production. Aquaculture field schools support small-scale farmers, especially when applied in conjunction with other approaches, such as farmer participatory research, training of trainers, access to rural microfinancing programmes and formation of producer associations.

Aquaculture field schools build on the FFS approach of group and individual learning, capacity building, experimentation and critical discussion to help small-scale producers increase production through:

- technological adaptation;
- co-creation of good aquaculture practices;
- better processing; and
- enhanced market leverage.

Aquaculture requires a high level of technical knowledge. FAO supports FFS approaches to improve seaweed farming techniques in the Philippines, Saint Lucia and Kiribati, and to promote integrated aquaculture approaches in many African countries, and in Guyana and Suriname (mostly rice–fish farming).



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FFS CAN EVEN TAKE PLACE UNDERWATER:

In the Philippines, seaweed farming FFS had **underwater study fields**. The underwater FFS on local seaweed species *Gracilaria* spp. and *Kappaphycus alvarezii* focused on:

- > production and harvesting techniques; and
- > added value.



©Austin Sankus

Reviving rice–fish systems

Under the Asia and the Pacific Regional Rice Initiative, FFS supported the uptake of rice–fish systems across Asian countries. FFS on rice–fish

promote efficiency in rice farming practices and value chains, as well as reduction in pesticide use through IPM.

Viet Nam

An aquaculture component was introduced in the mid-1990s within the rice IPM FFS programme aimed at reducing the overuse of pesticides in rice fields. In mountainous areas of the country, traditionally characterized by rice–fish systems, overuse had led communities to abandon fish production in rice fields. An IPM rice–fish training was organized with local communities to re-establish fish production in the rice fields as well as reducing and phasing out chemical pesticides that were toxic for fish. FFS on rice–fish systems were subsequently organized in the Mekong Delta.

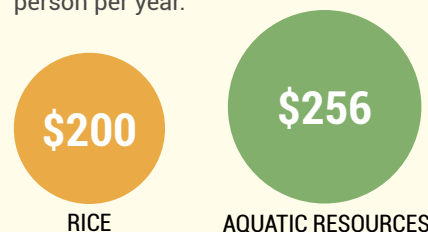
Lao People's Democratic Republic

Aquatic animals and plants are vital to the food security and nutrition of local people, especially in rural and remote areas. FAO supported the Department of Livestock and Fisheries in the implementation of farmer promotion trials to facilitate small-scale aquaculture development, and connected these trials to ongoing FFS IPM activities. The value of these aquatic resources highlights the triple win benefits of integrated agriculture-aquaculture, as shown in the below figure.

Rice–fish systems are a **sustainable approach** to improving resource-use efficiency, while increasing production, ecosystem services and livelihoods – a **triple win scenario**:



For rural farmers, the monetary value of aquatic resources in rice fields was found to be more than the average value of rice consumed per person per year:



Source: RRI Aquatic Resources Promotion Trials, Lao People's Democratic Republic, 2013–2017.

Rice–fish beyond Asia

- **Latin America – Suriname and Guyana.** A training programme enabled facilitators to better conduct FFS. Farmers learned how to maintain the balance of the three main components of rice ecosystems (crops–pests–natural enemies), ensuring higher crop yields and household income, while reducing use of chemical pesticides and improving environmental quality. From this work, a Rice–Fish FFS curriculum was developed.
- **Africa – Guinea-Bissau and Mali.** The FFS approach has been used to support the development of rice–fish farming.



FFS and livestock

Over time, farmers requested also field schools on livestock.

CASE STUDY

A success story – Livestock FFS in Pakistan

Muhammad Insha, a smallholder with only ten years of formal education and no technical livestock knowledge, became a livestock trainer and local service provider and in 2004 participated in an FFS on IPM in cotton. In 2012, he again participated – this time in an FFS on integrated livestock and poultry management, implemented by Pakistan's Society of Facilitators and Trainers (SOFT).

He strengthened his technical skills in specialized livestock production and adopted methodologies designed to help local smallholders provide better livelihoods to their families and communities. He later developed an organization of livestock trainers who provided guidance and training to help livestock producers increase their income. FFS transformed his livelihood.

“ Before taking part in FFS I considered myself useless, I had no aim in life and no interest in doing work. I am now enjoying a better livelihood than before with dignity and honour. I have purchased a new house and car and am providing quality education to my six sons.

Muhammad Insha



© Muhammad Insha/One Society

FFS and water

Water is a scarce resource; smallholders need to understand groundwater dynamics and work collectively for effective water management to sustain their livelihoods.

Farmer water schools (FWS):

- demystify groundwater science, achieving farmer-to-farmer outreach;
- disseminate key messages on groundwater management;
- encourage water saving and harvesting;
- Contribute to improved agricultural productivity and water-use efficiency; and
- promote low investment organic agriculture.



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Farmer water schools in India

The Andhra Pradesh Farmer Managed Groundwater Systems (APFAMGS) project established a participatory hydrological monitoring programme to build farmer capacity for groundwater management. In total, 638 Groundwater Monitoring Committees (GMCs) were formed to monitor local groundwater resources at village level. These were federated into 63 Hydrological Unit Networks (HUNs) at the hydrological unit (HU) level. The GMCs and HUNs in each HU estimated the total groundwater available and planned diversified climate-resilient cropping systems that matched

water availability. As a result of the APFAMGS project, groundwater abstraction reduced substantially across most of the pilot area.

The FWS model has been adapted to surface irrigation to strengthen capacity of water user associations (WUAs) in 19 districts of Uttar Pradesh for integrated water resource management. The Government of India acknowledges the FWS approach as an effective model for groundwater management and adaptation to climate change in rain-fed areas of the country.



6.4 FFS in Africa

Following the global IPM study tour to Asia in 1993, African countries became interested in developing FFS approaches starting with IPM. In 1995, FAO helped organize a season-long training of trainers for rice IPM FFS in Ghana. Experts from Asia worked with African experts to adapt the content to the local context and initiate capacity building. Other training workshops were subsequently organized in different countries on various crops, creating a core of African FFS facilitators who expanded FFS in the region. They continue to actively foster, fine-tune and expand innovations reflecting the African context, demands and opportunities.

FROM INTEGRATED PEST MANAGEMENT (IPM) TO INTEGRATED PRODUCTION AND PEST MANAGEMENT (IPPM)

In Southeast Asia, the original FFS approach was suited to the monocrop rice and vegetable production system. In Africa, FFS had to adapt to the complex and diverse smallholder farming systems where pest management is just one of the many production challenges faced by farmers. Integrated pest management (IPM) needed to be incorporated in the production process; a broad, flexible, more holistic approach was needed, leading to the birth of “integrated production and pest management” (IPPM).



FFS for forestry

In the mid-2000s, a social forestry training project in Kenya (supported by Japan International Cooperation Agency – JICA) promoted farmer forestry for local residents in semi-arid areas in Kenya. The FFS approach reached out to large numbers of farmers, leading to the formation of farm forestry field schools in collaboration with the Ministry of Forestry. This approach continues to be used in Kenya but has also spread across the world, reaching, among others, Honduras, Guatemala and Haiti.

FFS can play a key role in incubating forest and farm producer organizations and enterprises – focusing on market access and business development that can create lasting groups that will continue their collective action thanks to the initiation of the FFS processes. In fact, one of the ways to institutionalize the FFS approach is by embedding it within large producer organizations themselves as conveners and initiators, and even content providers.



FFS for livestock and agropastoral field schools

In 2001, the International Livestock Research Institute (ILRI), with the support of FAO and DFID, first applied FFS to livestock production in Kenya. The approach has since been implemented by FAO and other development stakeholders (e.g. World Bank, IFAD, VSF, and Heifer International) throughout Africa and beyond. FFS was used to work with livestock in a wide range of contexts, environments and livestock production systems, including pastoralism and agropastoralism, poultry production, rabbit production, pig production, camel production, small ruminant production and beekeeping. The names may change, but the core principles and activities remain the same.

Livestock FFS help small-scale livestock farmers:

- reduce environmental impacts;
- improve farm and breeding management;
- improve nutrition and feeding;
- apply biosecure housing and sanitary standards; and
- adopt good manufacturing and storage practices; and
- add value to products through marketing strategies.

When livestock rearing is not the only farm activity, the FFS touch on the interactions between activities and provide basic knowledge on agricultural economics and management.

In pastoral and agropastoral settings, vulnerable communities face environmental uncertainty, increasingly exacerbated by climate change. Across Africa's arid and semi-arid lands, (agro)pastoral field schools have helped build **resilience against drought**. The pastoral field schools recently implemented by FAO and partners in Kenya and Ethiopia have contributed to restoring the livelihoods of livestock-dependent communities affected by recurrent droughts, degraded rangelands and reduced access to traditional grazing lands.



CASE STUDY

Combatting drought in Kenya through agropastoralist field schools

Climate change can cause longer and more frequent dry spells – a particular problem for pastoralists in the Horn of Africa, where it leads to livestock losses, increased food insecurity and spiralling poverty.

In 2016, in Mandera County, northeastern Kenya, the partnership programme on drought resilience between FAO and the Intergovernmental Authority on Development (IGAD), with support from the Agency for Technical Cooperation and Development (ACTED) and funded by the Swiss Agency for Development and Cooperation (SDC), assisted agropastoralist field schools (APFS) to learn about producing, managing and utilizing fodder.

“ Like any other crop, pasture can be grown, nurtured and stored for use in times of need, allowing for a great rate of recovery of degraded land when rested.

FAO Livestock and Pastoralism Officer Paul Opio

Participants study each stage of feed production and preservation. The learning cycle takes four months to complete and can be undertaken twice a year, matching the rainy seasons. **Comparative experimentation** is key: for example, participants compare production of feed with and without the

use of manure and discuss innovative and problem-solving techniques. APFS also introduce and explore new breeding and animal husbandry practices.

Participation in APFS sessions is equal among men, women and youth, helping to overcome traditional barriers:

“ Women and youth have benefited from experimenting as well as from the learning process as a whole, since initially they were not part of decision-making in the community. With the APFS, women are able to produce, store and sell hay bales and are therefore no longer dependent on men for most of their upkeep.

Shanqaray Hassan Mohamed, Vice-Chair,
Girissa APFS group, Mandera

APFS bring a wide range of benefits:

“ We are seeing improved pasture availability and restoration of degraded lands, while livestock body conditions have improved and mortality has been reduced. For pastoralist families, food security is improved and incomes are higher. In short, communities have become a lot more resilient.

Khalif Ibrahim Barrow, focal point for the Mandera County FAO/IGAD Partnership Programme.

FFS for climate change adaptation

As described in the case study above, the effects of climate change (CC), such as drought and degraded rangelands, are increasingly visible in all regions and farmers must adapt their practices over time while facing uncertainty about how CC will manifest itself in different places in the short and long term. The FFS approach – characterized by “grass-roots labs” and innovation – ensures a continuous process for updating the information base needed to cope with CC.

FFS for climate change modify the focus according to the local context:

- Adaptation of agricultural practices to face specific effects of CC – technologies
- include enhancement of moisture retention, improvement of soil fertility, protection from water and wind erosion, and introduction of agroforestry or drought-tolerant varieties.
- Attention to local knowledge on resilient practices – for example, indigenous perceptions of extreme events and their impact at village level and traditional indicators to forecast the weather.
- Analysis of cropping systems and weather patterns to identify risks and promising adaptations – the FFS measures rainfall and temperature, interacts with meteorological centres and evaluates crop water requirements.



FFS for landscape management

Initially, FFS focused on management at field level. However, current land-use practices are unsustainable, with farmers facing the consequences of overuse of natural resources such as water, land, and biodiversity. The FFS process innovated, considering the wider ecosystem and including integrated sustainable landscape management. The FFS learning process integrates:

- sustainable use of natural resources;
- rangeland rehabilitation;
- revitalization of the local seed system; and
- watershed management.

FFS for disaster risk reduction

All of the above experiences on CC, livestock, landscape management of natural resources have been combined together in FFS to fit the local context. In areas affected by natural or social disasters, FFS have been set up linking emergency, rehabilitation and development approaches. In addition, FFS focus on:

- conflict management;
- enhancement of social capital; and
- strengthening of local safety nets, including early warning systems.



Land management in the Kagera River Basin

The Kagera Transboundary Agro-ecosystem Management Project promoted an integrated landscape approach for sustainable resources management in the Kagera River Basin, which is shared by Burundi, Rwanda, the United Republic of Tanzania and Uganda.

Key entry points: restoration of degraded lands; carbon sequestration and adaptation to climate change; conservation and sustainable use of agrobiodiversity; and increased agricultural production.

The FFS developed and defined multi-year catchment/watershed plans, local land use plans, grazing agreements, soil and water conservation zones, riparian corridors and shelter belts.

Within each micro-catchment, neighbouring FFS groups created local networks for scaling up sustainable land agroecosystem management

(SLaM). The groups shared experiences and harmonized best practices. They collaborated to improve marketing, protect and restore the micro-catchment, and better their incomes and livelihoods.

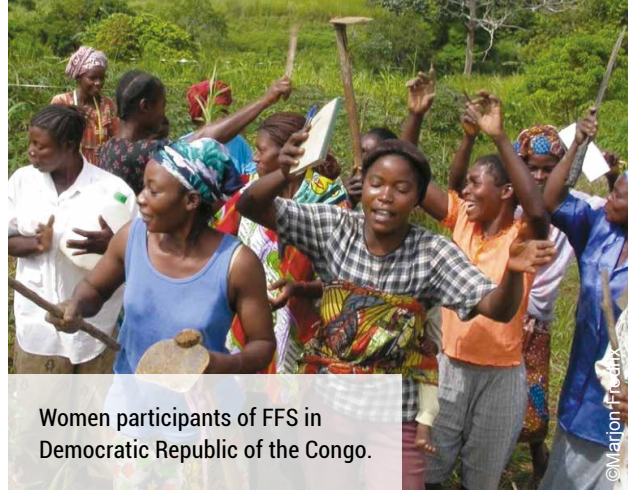
Training was provided in Participatory and Negotiated Territorial Development (PNTD) to promote dialogue and resolve conflicts between farmers, livestock keepers and transhumant pastoralists. Issues of potential conflict include fodder resources, burning of residues, grazing rights, and pressure on the land and water resources.

Continued collaboration among FFS groups was key. At the end of the FFS on sustainable land management, “adoption contracts” were introduced to ensure continued practices for sustainable land management by individual farmers.



Empowering rural smallholder farmers across Africa

Overall, the FFS in Africa evolved with a strong focus on supporting communities to address social and economic issues and opportunities and inspired other regions as well.



Women participants of FFS in Democratic Republic of the Congo.

FFS: gender equality, social inclusion and community empowerment

Women's and men's experiences in Senegal

One of the reasons for women's non-willingness to participate in public activities is a possible criticism from other community members because it might be seen as inappropriate. This changed in our community with FFS; it became normal that women participate in public affairs.

FFS graduate – woman, Niayes

A woman never sits next to a man here. The fact that we were sitting all together in the same place is a huge change. This is valid even more, because today at the same meeting there was also the head of the village.

FFS facilitator, man

Our relation improved because of mutual comprehension, shared responsibilities in terms of family income, and generally we have more in common now.

FFS graduate – woman, Niayes

As facilitator I encountered resistance from some of the members. They were afraid that tradition of religion might not be respected in a way, but finally we managed to convince them.

Matar – man, Niayes

I was so shy and full of complexes, because I only completed primary school, so I didn't want to talk in front of others. ... I completely changed. Everybody knows me now, people have confidence in me and come to ask for advice or help; I'm able to mediate conflicts, to solve problems. Even elderly women come for a piece of advice.

FFS graduate – woman, Kolda

We met cultural based resistance and had to make real efforts in order to dissolve these barriers. If we mention the issue of gender equality, there were men basically afraid of something new, afraid of losing control over their household and habitual dynamics. They were convinced women would turn against them afterwards. Sometimes we had to go to the household discussing, convincing and explaining that we really need the woman to come with us to FFS. These situations are surely more frequent in cases where only one of the partners participates in FFS.

FFS facilitator – man, Kolda



Through FFS, the collaboration among 24 villages has been strengthened. After FFS, 10 new organizations (economic interest groups) emerged. Nowadays, when I go to another village, I'm not a stranger anymore and that's really nice.

FFS graduate and facilitator – woman, Niayes

Apart from the practical changes in my agriculture-related activities, increased opportunities and increased income, I definitely started to care more about others and to share systematically what I learnt. I'm more sensitive.

Matar – man, Niayes

There are fewer conflicts in the community. Conflicts don't arise or are solved immediately, before they could even deteriorate.

FFS graduate – man, Tambacounda

FFS is extremely important for women because it just helps you to understand who you are and what is your potential.

FFS graduate – woman, Niayes

I see that the increased income, especially in case of women (who mostly take charge of school-related expenses for kids), had a positive impact on education. More resources are available for example for school supplies.

FFS graduate – woman, Niayes

I was never helping my wife and nor was she helping me. We changed, we are helping each other and it's easier. You know, a person without education is like a blind.

Arouna – man, Tambacounda

Farmer business schools – farming as an enterprise

An FFS helps farmers improve productivity, incomes and sustainability. They then reflect on the quality of their production and on income-generating activities and livelihood diversification. In Uganda in the early 2000s, a module on farming as a business was included in the FFS curriculum to instil entrepreneurial skills.

While some FFS programmes coined the term “farmer business school” (FBS), both FFS and FBS use the same adult learning

tools. FBS focuses on enhancing efficiency of productivity (minimizing production costs and maximizing returns on agricultural investment) and on making “business choices” (when to store, when and where to sell, and what measures to take). The objectives of FFS (production centred) and FBS (business centred) are complementary and should be implemented concurrently to equip farmers with the skills to make better management decisions on their farms.



FBS in practice

Farmer business schools – in various forms and under different names – have been implemented in over a dozen countries in West, Central and East Africa. In addition, in francophone West Africa, production-related FFS incorporate modules on quality and marketing (COQUA), including food safety, food quality, market research and enterprise development. In 2018, FAO – with support from the Royal Tropical Institute (KIT) and CARE – developed the Women's Empowerment Farmer Business School (WE-FBS), widening the gender focus. The WE-FBS approach strengthens the capacities of rural men and women farmers to create profitable enterprises and transform gender relations in the household, community and markets. GIZ has developed FBS on cocoa, cotton and other commercial crops.

An estimated 400 000 farmers – 20–40 percent women – have been trained by FAO in business-oriented field school approaches and farmer business schools, farmer marketing schools and related approaches continue to grow around the world.

“ We had a contract with a customer on green beans: he had proposed 500 FCFA/kg but when the moment of the sale came he wanted to take 450 FCFA/kg. We refused to sell and the green beans remained in our hands. But after Nadie (the facilitator) came and calculated the costs, the cost was around 200 FCFA/kg and we understood that we should have sold at 450 FCFA/kg. We were making profits but were not aware of it, and with the facilitator, we calculated our gross margins and we saw that we were gaining as much as a civil servant and employing a lot of people. Green beans are harvested several times, before we spent without counting, we calculated nothing, and in the end we had nothing, now we keep records and we manage to save.

Farmer from Kuinima, Burkina Faso

Afidha, a member of a farmer field and business school in Mgwasi village, Tanzania.



CARE FFBS model

Marketing is at the core of the farmer field and business school (FFBS) model. A flexible model, it can be tailored to a variety of contexts, but there is always a focus on gender, engaging men and leaders in dialogue to assist women farmers and communities reach their full potential. The key pillars of FFBS are: production techniques; proper nutrition; gender equality; marketing; and business management. Evidence shows that FFBS can provide dramatic changes in gender equality outcomes in as little as 2 months and significant yield and income benefits.

Junior Farmer Field and Life Schools – empowering youth

Junior Farmer Field and Life Schools (JFFLS) teach vulnerable children and young people more than farming; they also focus on life skills, social tools, problem-solving and self-confidence. JFFLS use theatre, dance and role-

playing to approach sensitive topics (e.g. abuse and child labour), often showing productions in public to further discuss these issues at community level. JFFLS promote progressive attitudes, including gender equality.



JFFLS over the years

JFFLS: a response to the HIV and AIDS orphan crises

FAO first developed JFFLS in response to the growing number of orphans and vulnerable children in the HIV-AIDS crisis. Based on FAO-pioneered FFS and on an adult life school tackling the rapid spread of HIV in Cambodia, JFFLS was born. The methodology was field tested in Mozambique and Kenya in 2004. After a successful pilot, FAO and other partners introduced similar JFFLS initiatives in other sub-Saharan African countries suffering from the AIDS-HIV crisis. By the end of 2009, more than 20 000 children and youth had graduated from over 500 JFFLS in 12 countries and territories.

Innovations in the JFFLS approach

JFFLS adapts to local needs, incorporating a wide range of life skills in the curriculum and shifting the targeted group according to the context. In addition to orphans, JFFLS have targeted demobilized child soldiers and young combatants (e.g. Sudan and South Sudan), young refugees and internally displaced people (IDP) (e.g. Kenya, Uganda and Mali), young migrants (e.g. Tunisia) and children and youth returning to their homes after conflict. The methodology has also been used in contexts of protracted crises (e.g. West Bank and Gaza Strip), working with youth who have learnt no farming or other survival skills from their parents, enabling them to earn a living and avoid risky behaviours that could increase their vulnerability and food insecurity. JFFLS continue to innovate and new life skill topics relate to youth employment, youth migration, green jobs and climate change, job creation and farming as a business, targeting young people up to 35 years old.

FACTS&NUMBERS

To date **more than 25 000** young women and men have participated in JFFLS in **over 20 countries**.

CASE STUDY

How FFS became a platform for local development in Malawi

In Malawi, diverse experiences have seen FFS gradually transform into the community learning platform it is today – a reflection of the dynamic way in which FFS have evolved in programmes across Africa.

In the late 1990s, FFS arrived in Malawi, but it did not become mainstream, in part due to its narrow focus on IPM. FFS were later adapted to address other challenges (e.g. climate change adaptation in 2010) and livelihood analysis became a core part of the context-specific content. More topics were gradually included, such as crop management,

livestock, human nutrition, business skills and, more recently, resilience. The FFS curriculum continues to expand, promoting agricultural diversification, food and nutrition security, and income improvement.

At community level, different services and stakeholders support FFS and problem-oriented, field-based learning remains key. At decentralized level, FFS is increasingly perceived as an important approach to support rural development.

The challenge for the future is to maintain education principles and quality.

6.5 FFS in Latin America

In 1997, FFS were introduced to Latin America. The arrival of FFS signalled a change of policy direction, giving rural communities greater responsibilities than under the extension and advisory services system and helping them to better adapt to their local agro-, eco- and socio-economic realities.

FAO, in collaboration with the International Potato Center (CIP), organized the first season long training on FFSs on potato IPM with

participants from Bolivia, Peru and Ecuador. FFS was subsequently incorporated into research programmes, and trained facilitators from Bolivia, Ecuador and Peru supported FFS programmes elsewhere in Latin America as well as in Portuguese- and Spanish-speaking African countries. Latin American and Caribbean NGOs, foundations, national agriculture research/education institutes and public institutions have also implemented FFS projects.



Initially, we were a bunch of community members without any direction or objective. Then we got the chance to form an FFS group. After many years of being part of an FFS, we became a formal association operating inside the community. We then decided to set up a consortium of seven communities, and invited other communities to join us. Now we are a solid cooperative producing, processing, adding value and marketing native potatoes to national and international markets. We still work with FFS, and have adopted its methodology in our work. All this was achieved thanks to farmer field schools.

Community member from Chuquitambo, Huancavelica, Peru

CASE STUDY

FFS: bringing potato IPM to Latin America

In the mid-1990s, in response to a request from farmers in Central Viet Nam, a partnership between the International Rice Research Institute (IRRI), FAO, the NGO Searice, the plant protection department and a research institute supported FFS on improved disease management, which reduced disease pressure, decreased fungicide use and adopted new varieties with higher resistance.

The pathologist in IRRI who was a key contributor to the FFS on disease management on rice later moved to CIP in Peru to work on potato late blight. The FFS work in Viet Nam inspired the development of FFSS on potato late blight in Peru. These efforts paved the way for the first training on potato IPM and FFSS in Ecuador in 1999, supported by FAO and CIP.

FACTS&NUMBERS

Between 1997, when the first programmes were launched in Latin America and the Caribbean, and 2005, more than **800** FFS were set up, **840** facilitators trained, and **14 000** farmers included in FFS projects.



CASE STUDY

FFS in the Caribbean: redefining the role of agriculture in a food-import-dependent region

In the Caribbean, FFS were introduced with the objective of improving the capacity of local food producers to face climate challenges while ensuring food security.

In 2002, an EU-funded IPM-FFS project – supported by the Centre for Agriculture and Biosciences International (CABI) and FAO – introduced FFS in six countries, namely, Dominica, Dominican Republic, Haiti, Jamaica, Suriname and Trinidad and Tobago. FFS curricula initially featured crop and pest management, but have since expanded to include topics such as livestock nutrition/housing, land management, backyard gardening, business skills, enterprise development and HIV-AIDS.

In a region dependent on food imports, FFS have made an important contribution, increasing farmer's self-sufficiency by promoting the production of affordable and nutritious food crops through environmentally and economically sustainable agricultural systems. Today, FFS are implemented in 11 Caribbean countries, involving more than 30 000 farmers.

CASE STUDY

Mainstreaming gender in FFS in Honduras

The National University of Agriculture (UNA), Honduras, has for a long time collaborated with cattle farmers. When FFS began in 2009, only men were involved. However, as the men consolidated their activities and earned higher income from cattle breeding, they needed the women to manage their finances. Women seized the opportunity and asked their husbands to intercede with UNA to ensure that they be included in the chicken and pig FFS. Four years later, the women were generating their own income. Participating households now had two income streams, with resources to spend on cattle improvement (i.e. insemination, veterinary services). The FFS also opened a "communal bank" managed by the women.

FFS can address complex gender dynamics and strengthen women's potential for collective action.

"The learning processes in farmer field schools created spaces for men to realize the benefit of working with women equally. The learning process allows women to communicate and men to learn from the women's knowledge about the seeds, diversity and crop production."

Female professor, University of Agriculture, Catacamas, Honduras



Institutionalizing and mainstreaming FFS

The FFS approach is widely used, but institutional support is essential to ensure sustainability and quality in the long term. FFS in Latin America has successfully integrated local, indigenous knowledge with the latest scientific findings, reaching far into the community, including to minority groups and the illiterate.

CASE STUDY

FFS farmers' networks: the case of REFECA in Peru

The regional network in the Central Andes (REFECA), established by a group of 25 FFS facilitators trained by FAO, became an association in 2006. One of its FFS experts has worked in other regions, training over 200 facilitators and promoters, and implementing more than 400 FFS since 2003.

Regional and global networks are vital to the process of institutionalization:

- promoting standardization and quality compliance;
- fostering knowledge exchange; and
- creating synergies (between facilitators and field practitioners, and between organizations and countries).

Other farmers' networks emerging from FFS include the SOFT network in Pakistan and TITAN in Nepal, in addition to the global FFS online discussion group set up by FAO in 2017.



FFS for action against desertification in Haiti.

©Jean Jacob Rival

CASE STUDY

The role of higher education institutes: examples from Honduras and Costa Rica

The National University of Agriculture (UNA) in Honduras and the Tropical Agricultural Research and Higher Education Center (CATIE) in Costa Rica offer structured courses to train future extension advisors in participatory research methods, adult education and the FFS approach. UNA works mainly at national level, while CATIE also pioneers education, training and research, and establishes FFS (including follow-up activities) across the Mesoamerican region.

Key lessons on institutionalization

- **Institutionalization of the FFS approach is a reality.** It develops institutional capacity and creates a conducive environment for the adoption of FFS and similar participatory approaches and the nurturing of local innovation processes.
- **Institutionalization is not a linear process.** It goes beyond incorporating FFS into public agriculture extension systems. It may be formal (e.g. integration of the FFS approach in policies or institutions) or informal (e.g. local FFS groups coming together for learning and exchange).
- **Integration is possible.** The FFS approach can be incorporated in formal education systems, government services, farmer organizations, the private sector (exporters, agroprocessors) and NGOs. There are challenges: maintaining quality of the FFS process, providing flexibility to adapt to local contexts and investing in capacity building of facilitators. Mainstreaming the principles of farmer empowerment and literacy is more important than keeping the name!



6.6 FFS in the Near East and North Africa

In the late 1990s, FFS on rice were organized in the Islamic Republic of Iran, with inputs from Asian facilitators. In the early 2000s, a regional IPM FFS programme on horticulture started in the Near East, initially in Egypt, Iran (Islamic Republic of), Jordan, Lebanon, Palestine and the Syrian Arab Republic, expanding in a second phase to Algeria, Iraq, Morocco and Tunisia.

As of 2019, FFS is used in 12 (out of 19) countries in the region, with the focus on a range of topics, for example, cereal, tomatoes and small ruminants in Yemen. Further, the

regional network on FFS was established in 2015 in close collaboration with the Near East Plant Protection Organization, with a focus on enhancing IPM for smallholder producers in the region. The network performed a study on social inclusion and gender in Tunisia and Jordan.

FACTS&NUMBERS

Regional IPM FFS project on horticulture:

- > trained **2 303** IPM FFS trainers and facilitators (**28%** of which women);
- > completed **1 110** IPM FFS; and
- > trained **16 585** farmers (**13%** of which women).



FFS: gender equality, social inclusion and community empowerment

Women's and men's FFS experience in **Jordan**



©Lucie Chochołata

My voice changed, I started speaking more loudly and with more confidence. ... I have much more self-confidence and self-esteem. My knowledge improved, we regularly share information with other farmers, we discuss. And my family respects me. ... We didn't have resources available before starting practising FFS. ... Now we are sending two of our kids and our youngest sister to university and we could also afford to travel three times to Mecca for pilgrimage.

Asma (woman, Karak, South Ghor – Safi), joined an FFS group on tomatoes, later became a farmer-facilitator for women's FFS



Asma is another person today. She became strong and self-confident, able to express and to defend her opinion. She is guiding and inspiring other people now.

Nayel, Asma's sister

Everybody used to work on his/her own. The FFS changed us a lot, we strengthened our relations and we work very often together nowadays. We trust each other. ... Even if men are still more critical towards women than towards other men, we are now recognized by them much more because of our knowledge and capacities in the field work. So basically we now decide what we do.

Woman from the FFS group facilitated by Asma

That mutual trust, we lost in the past due to the failure of the association, but we regained the trust thanks to FFS. ... Communication within my family is very open now. I started sharing everything, my thoughts, my doubts and we discuss everything including economic issues. This is an important example for our kids. You, know, my wife knows much more about the difficulties I'm facing in my agricultural activity now. I feel my family very close to me, I feel supported. ... FFS changed my way of thinking, I see others in a different way. I think when we improve ourselves, we are improving the whole society.

Sameh (man, Jordan Valley, Dear Alla), joined an FFS group

Communication with my family improved so much. In FFS we learned how to listen to the other person. I'm now using dialogue, discussion to solve everything. ... We listen to the others' opinion, we respect it. Previously we were not really listening.

Hasan (man, Karak, South Ghor – Safi), joined an IPM FFS group

Islamic Republic of Iran: a sustainable market model born from FFS

The Islamic Republic of Iran lacks food safety standards and processes and consumer and farmer awareness is low. The market for safe and organic products in the Islamic Republic of Iran is only just emerging.

In response to concerns about increased input us and overuse of pesticides, researchers addressed the issues of food security and safety and agricultural sustainability, and IPM was promoted.

FFS farmers then created the IPM Group for the direct supply of IPM products:

- supplying direct to customers and consumer groups (including the Women's Association with around 500 members);
- demonstrating that linking sustainable production to markets is feasible;
- activating international safe food standards through internal inspection systems;
- creating a new market model; and
- spreading the message of food safety.

The IPM Group, which emerged from IPM FFS groups, is a promising alternative for achieving food security and safety, poverty eradication and increased income for small farmers.

FACTS&NUMBERS

By 2013, about **7 000** farmers had been trained by FAO and UNDP on IPM through FFS, covering **over 60** crops and animal husbandry.



CASE STUDY

Rapid response – IPM for *Tuta absoluta*, Jordan

In 2010, the invasive pest, *Tuta absoluta*, seriously damaged the tomato crop in Jordan. The Ministry of Agriculture and the National Agriculture Research Centre, with support from FAO through the IPM FFS programme funded by the Italian Government, developed a training programme on IPM for *Tuta*. The regional IPM FFS programme from the early 2000s formed a sound basis for training farmers, facilitating immediate IPM interventions to tackle the infestation in the Jordan Valley, particularly in South Ghours and Mafrq.

Programme activities included:

- information sharing among farmers – raising awareness (biology, ecology, risks of pesticides);

- exchanges of expertise with countries familiar with *Tuta* – study tours, workshops and trainings;
- identification of management strategies – use of pheromones and mass trapping – with better accessibility for farmers; and
- enhancement of biological control options and implementation of appropriate cultural practices.

FACTS&NUMBERS

Pesticide use: down by **41%**

Costs of pesticides: down by **45%**

Costs of chemical fertilizers: down by **40%**

CASE STUDY

Poultry FFS in Lebanon: supporting the resilience of livelihoods in protracted crisis

The massive influx of Syrian refugees into Lebanon has resulted in increased food demand, making it harder for vulnerable Lebanese households to meet basic food needs.

Through the FFS approach, FAO developed a semi-intensive egg production system for Lebanese communities hosting Syrian refugees. Members met regularly over a production cycle to test, validate and adapt poultry production and disease management practices suited to the local context. Topics covered included design and construction of poultry coops compliant with biosafety and biosecurity requirements, book-keeping, marketing and saving methods for re-investment (feed and new hens). Members were provided with the layers and feed necessary to start the business.

Poultry FFS has had immediate positive effects:

- Crisis-affected farmers can sustain food production and initiate an income-generating activity.
- FFS members developed their knowledge and skills.
- The protein intake of Poultry FFS households increased due to the direct consumption of eggs.





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FFS in the future: towards **sustainable** and **resilient** food systems

The FFS approach is characterized by its capacity to adapt to local context and to tackle specific problems at national level. FFS must innovate also at global level as it is crucial for achieving sustainable and resilient agriculture. While the achievements are many, challenges remain, as detailed in the following pages.

FFS succeeds in farmer education and empowerment for sustainable agriculture and livelihoods

The FFS approach for ecological literacy and farmer empowerment must continue to support small-scale farmers as they face the challenge of sustainability. Investments in human capacity development are essential to create dynamic and active groups able to develop agricultural livelihoods. The FFS approach must continue to address and integrate new topics as they occur. Better documentation of impact remains a challenge.



Farmer field schools, healthy soils and agroecology

Soils are an important part of agroecological approaches to farming and vital for sustainable agriculture. FFS curricula on “living soils” were developed in Asia in 2000 and have since been adapted in Africa and Asia. Since 2018, in Andhra Pradesh in India, FFS have been used by the State Government and FAO to train field trainers and farmers on a regenerative farming approach called “Zero Budget Natural Farming” (ZBNF). In these FFS, farmers discover the mechanisms of soil health, improve soil food webs and structure, and prevent pest and disease outbreaks. Under ZBNF, FFS are also adapted for polycropping and agroforestry systems.

Farmer field schools and Fall Armyworm

The transboundary insect pest Fall Armyworm (FAW) originates in Latin America, where smallholder maize producers routinely manage it using agroecological approaches that enhance biological control. In 2016, FAW appeared for the first time in West Africa and by the end of 2018, most African countries were infested. In 2018, it was also found in India, and by May 2019 it had spread as far as Vietnam.

FAO organizes FFS training to support a sustainable response to FAW, including raising awareness, monitoring and surveillance, and promoting IPM and biological control.

FFS serves as a platform for rural development

Groups often choose to continue activities after the FFS learning cycle ends, which contributes to local institutionalization. Such initiative must be nurtured, helping FFS groups play a role in rural development: project and programme design need to incorporate this. The interests of FFS groups go beyond the agricultural domain; they need to be encouraged to collaborate with other sectors and partners, building on FFS principles of education.

Farmer field schools and youth

Youth involvement in agriculture is vital for its sustainability, but many young rural people opt to create a livelihood outside the agricultural sector. Efforts are ongoing in many places to promote farming as a business and make agriculture attractive to young people. FFS can help in re-engaging young people in agriculture, by building skills, knowledge and networks.

Farmer field schools and nutrition

For agriculture to be sustainable, agriculture and nutrition need to be integrated. Kitchen gardens, crop diversification, small animal production, preparation and conservation, and marketing for income generation can all be covered by FFS. Women play a central role in nutrition and health. FFS members can learn saving and credit mechanisms and experiment new elements for production and nutrition.

FFS with indigenous people

Numerous initiatives to adapt FFS to indigenous communities are emerging. In Colombia, FAO was involved in setting up FFS with small and medium indigenous and Afro-descendant farmers. FFS were developed to preserve farmers' cultural identity and traditional production dynamics for self-consumption. In Uganda, the NGO, DIG, setup FFS with displaced Batwa communities.



FFS groups are relevant partners in research and extension

Farmer-facilitators are often trained to lead local FFS training. FFS participants and graduates continue to experiment, individually or in groups to innovate and fine-tune adaptations. These groups and individuals are excellent partners for extension and research systems and it is vital to capitalize on this potential. To achieve this, capacity must be developed and there needs to be a commitment to change the current thinking and praxis.

Farmer field schools and ICT

Farmers and facilitators increasingly access the Internet through smartphones. FFS groups can use apps to set up informal networks

for information sharing. Data collection, monitoring and evaluation are all facilitated by apps. Video material is easily accessible and can be integrated in FFS curricula. FFS also combine with other approaches (e.g. rural radio programmes, participatory video-making and Dimitra Listener Clubs) to multiply their impact and reach a larger rural population.

In short, information and communications technology (ICT) goes hand in hand with FFS.

Farmer field schools and climate change

FFS in Africa and Asia have dealt with climate change adaptation (CCA) for the past two decades. The lessons learned and experiences gained need to be incorporated in the curricula of FFS on CCA. Integration of biodiversity and ecosystem services considerations into FFS learning content is key.



A rainfall observer is measuring rainfall in his field as part of Schience Field Shops in Indonesia, an arena for farmers to learn agrometeorology based on a long-term educational commitment.

©Tara Audina

FFS seeks to strengthen local institutionalization

A wide range of partner institutions is involved in FFS and FFS programme development. However, the process of institutionalization is still in its early stages. Strategy development is required to promote the uptake of participatory approaches in government and other institutions. At local level, FFS groups are vital for the continued innovation of production systems, mobilizing and networking with other farmers and advocating change towards sustainable agriculture. Better connectivity is key.

FFS impact assessment

Systematic assessment focusing on the four livelihood capitals – human, natural, social, financial – is essential to provide concrete

information on the benefits of the FFS. Cost analysis is important to optimize facilitator and farmer training and further expand the FFS approach.

The Global FFS Platform (2017–today)

FFS is not just a name. When a programme says it uses the FFS approach, it is vital to ensure high quality. The Global FFS Platform was developed by FAO in collaboration with a network of organizations, to facilitate sharing of knowledge and expertise related to FFS and their implementation. It includes an online discussion group (currently > 1 160 members from 117 countries) and a website mapping out > 270 FFS key experts and 440 documents. Through daily exchanges and regular updates on global FFS projects, the FFS community is working together to continue improving services and to reach an increasing number of producers and members of the global FFS community.



FFS participants' nursery in Colombia.

© Harber Quinto



Thirty years of farmer field schools





Plant Production and Protection Division (AGP)

Food and Agriculture Organization of the United Nations (FAO)

Viale delle Terme di Caracalla

00153 Rome, Italy

Farmer-Field-Schools@fao.org

fieldschools@dggroups.org

www.fao.org/farmer-field-schools

ISBN 978-92-5-131569-9



9 789251 315699

CA5131EN/1/06.19