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RIGHTS OF FARMERS FOR DATA, INFORMATION AND KNOWLEDGE

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[CIARD](#), with the support of the [GFAR](#) Secretariat and [FAO](#), organized an E-discussion from 20 October until 10 November 2014 for global participation on the Rights of Farmers to Data, Information and Knowledge.” The outputs of the E-discussion and supplementary research will be used to develop a briefing paper for policy makers, actors and stakeholders on the rights of farmers for data, information and knowledge.

The purpose of this document is to summarize the opinions received from approximately 100 contributors registered to participate in the E-discussion. The document compiles the opinions and discussions on the following questions, aiming to cover several dimensions to get a clear understanding of issues, possible solutions and actions regarding rights of farmers to data, information and knowledge: i) What do we mean by the rights of smallholder farmers to data, information and knowledge? ii) How do farmers benefit and lose from these rights or the lack of them? iii) What is the state of the recognition of these rights by the international community and their implementation in different parts of the world? iv) How should these rights be implemented and protected? v) What should be done to include farmers in the mechanisms of data, information and knowledge management to ensure that their rights are included, implemented and protected institutionally and through technology?

Background

Governments, research and extension organizations, non-government organizations, farmer organizations and private companies collect a lot of data, even in developing countries. Many times it is used without permission or even acknowledgement. In case of farmers' knowledge, in many cases, there is abuse with the knowledge being used for profit and even for exploiting the farming communities.

Governments collect data stating that they need it for governance, but providing the data governments need and use for its own purpose, costs time and money for farmers. Many farmers are reluctant to give their data for privacy and legal reasons. And yet, there are policies that force farmers to part with data that may be detrimental to their own interests and over which they may have little control once given. This is a form of taxation, which is sometimes unfair. What are the Governments' and farmers' rights in this area?

With the advent of new technologies and innovations in farming a lot of data is generated when farmers use machinery, farm management tools and other facilities such as for storage and transport. Many times this data is exchanged with commercial companies without farmers even being aware of such exchanges. Collectively, such data results in what now is called “Big data” and with new analytic methods information about farms and

farmers, which till now was obscured is revealed. Such analysis, for example potential crop yields from a large tract of farms can be used to set up prices by those who procure farm products and may give unfair advantages to those who buy farm products from farmers. How to ensure fair collection and use of data and information?

On the other hand, aggregation is now a necessity for smallholders and family farmers to collectively participate in markets and share resources necessary for farming such as farm machinery, storage and transport. Aggregation of these farmers can also be done virtually through data and information collected from these producers and farms and used collectively. This would bypass the needs physical aggregation of land and farm management, which is not popular and a reason for failure in programs of collectivization of farms and even some cooperatives movements. What are the issues when data is collected from farms and farmers, aggregated and used?

Farmers also need new information and knowledge especially when farming and agriculture, driven by being market orientated with the need to be globally competitive, becomes more knowledge intensive. While farmers in developed countries can either buy the information they need or exchange it with those, such as seed, fertilizer and pesticide companies, who can and provide information the farmers' need, smallholder resource poor farmers in developing countries may not be able to afford to pay a price for this critical resource.

So far, agricultural development was considered a public responsibility of governments, but now public sector farm extension has been significantly reduced and even withdrawn in many developing countries. New models of information transfer such as through using information and communication technologies (ICTs) and paid advisory services are now being tried and implemented. The use of ICTs in information transfers raises many questions regarding information availability, access, affordability, applicability, trustworthiness and the ability to effectively use it.

Denial to information, especially when ICTs are used, can be through many means. Availability of information can be restricted, for example, by policies, institutional structures and functioning. Access can be denied through control of infrastructure especially cost of ICT hardware, software and connectivity. Affordability can be directly influenced by pricing information or indirectly, adding costs to farm inputs and marketing of produce. Applicability of information on technologies can be directed to targeted users, for example about a pesticide and denied to those who do not use that particular brand of pesticide. The use of ICTs, with its facelessness, can affect trustworthiness. The ability to effectively use information can be denied or severely reduced when the necessary capacities are not created. Do farmers and farming communities have the right to effectively avail, access and use information they need for their livelihoods and progress becomes a major question.

What do we mean by the rights of smallholder farmers to data, information and knowledge?

As humans we are doomed to observe. We measure and collect observations/ data. We analyze facts and configure behavioral actions going back to the real world. We are not only destined to observe, but also at the same time we interfere with the real world. Data is unprocessed information and information is converted into knowledge.

Farmers of most developing countries have inherited useful knowledge required for sustainable agriculture and related development in cost effective manner. Farmers can and do innovations on their own volition even in the absence of external support. They have developed over many years of practical experience useful tools and strategies that can enhance their coping mechanisms with the emerging challenges such as climate change.

When we discuss about data and information that can be used to co-create knowledge, three aspects are relevant: i) language ii) access and iii) power. Language is key to communicate information, as well as language of data is crucial. On the other hand, one needs access and the tools and skills to analyze data/information. We are at the moment on the best way to monopolize information not only of single people, but also of smallholder farmers in general and their assets – the land. Lastly, when dealing with data and information some believe that power is at play. The general thinking that “information is power” should be converted to a new model where distributed information guides better decision-making.

Researchers, government officials, extension organizations, private companies and non-governmental organizations use smallholder farmers’ information and knowledge on plants and animals, local resources, including farmers land, water and native seeds, and produce reports and data for their research articles and higher studies. As they collect data from farmers during surveys by interviewing them, they should be obliged to disseminate results to the farmers.

Farmers are not always given proper recognition, not even acknowledged or compensated for sharing their information and knowledge. Sometimes, they are less informed about data collected in their farms. Few of them know that some equipment are collecting and transmitting some data to central databases somewhere else. Or when farmers know about the collection of data from their farms, they are not well informed about their further use.

Prior informed consent from farmers for accessing their data and information should be a requirement. Whenever researchers, extension agents or business entities, identify a farmer’s led initiative such professional entities should attribute the original source to the farmers who originally owns the idea or initiative.

Some participants agreed that it is not possible to divide ownership of land and ownership of information of this land. Splitting between private ownership of land and ownership of the related information destroys the sustainable farming community. This means that new models are needed, including legislation relevant to social and private responsibility of private land.

The rights of farmers to data includes the right to access, control and use data to get information useful for his/her farm management; avoid information to be used for unbalanced relations with his/her customers or his/her suppliers; and the right to get some return when his/her data is necessary for further processes. This is important considering that some companies which are looking for ways to analyze farm data to deliver high value information to the farmers about nutrition, animal health and others are more reluctant to open the data to other users.

Rights to data, information and knowledge also mean sharing and exchanging data, information and knowledge in ways that both smallholder farmers and other groups benefit from it and no one gets into financial and moral damage. Farmers have the right to know and agree on how their data is being used and for what purpose. If research is financed by public money, data and information should be a public good.

Farmers also need support for documenting their knowledge, which is disappearing or is at risk of misappropriation.

How do farmers benefit and lose from these rights or the lack of them?

Farmers and local groups and communities take decisions all the time with a direct impact on food security and development. For seed of most crop species, farmers are now dependent upon markets as they are lured up to use modern varieties and fertilizers instead of farmyard manure. As markets are flooded with seeds and fertilizers, farmers ought to know of such varieties, chemicals, pesticides and fertilizers used in agriculture. They also would like to know the enhancement in productivity by use of costly seeds, fertilizers, their impact on soil, health and ecology.

According to a survey conducted in 2014 on “Shandong farmers information right”, respondents believed that access to agricultural information is helpful for farmers. Respondents highlighted the strong demand from farmers to get useful agricultural production technological information; market information to help increase their production and incomes; weather information; policies and regulations information; education; and training information. According to the survey, the main ways that farmers’ access to information is mainly through television, friends, broadcast, Internet, newspapers, magazines and governmental messages.

Smallholder farmers are often neglected and ignored to data, information and knowledge relevant for their farm management. The absence of rights of smallholder farmers to data, information and knowledge implies a limitation to their right to assess and decide by the path(s) they want to take for their own growth. As more and more sensors and equipment used on farms start automatically sharing data including farmers’ private data available on these machines through data clouds on the Internet into what is called “Big data” many dangers emerge. As with Facebook posts and Google searches that we do and then get targeted with advertisements, this Big data can help profile a farm and its productivity, inputs, outputs, etc. This can put farmers to severe disadvantage and make the country vulnerable in its food security, trade and even sovereignty.

Sometimes, the lack of benefits from data, information and knowledge may not be due to the discrimination of being smallholder farmers per se. It may perhaps be also the result of their living conditions (isolation, lack of infrastructures in general) and the lack of interest brought to rural areas by innovators. Smallholder farmers may lack of proper guidance and application skills of information technology.

If farmers have access to data, information and knowledge such as market information, they may be able to spot the best and fair buy, the cheapest one, etc. Farmers could also benefit from the actionable information or key conclusions and knowledge arising from student researchers that could positively inform management decisions on-farm.

Access to data and information is key in decision-making at policy level. In this way, access to relevant data and information can be considered a non-monetary asset that has direct impact on both production (what to produce; in which way) and income (how to increase income; markets.) but also indirectly on the realization of other primary rights.

In cases where crop varieties are developed by farmers or innovators from informal systems, they should receive benefits in terms of awards/promotions and incentives for their efforts.

What is the state of the recognition of these rights by the international community and their implementation in different parts of the world?

The rights of smallholder farmers to data, information and knowledge is limited, perhaps due to current laws which may not consider smallholder farmers as credible partners who could even influence policy.

At the international level, some conventions and international laws recognize and protect intellectual protected rights over innovations and plant varieties. Patents are recognized to the farmer or innovator/inventor, if s/he is the inventor/applicant of the application filed for protection of valuable commercial information. Plant Variety Protection Rights are granted to the farmers or breeders, if they are applicant/breeder/benefit claimers for the inbred/variety application filed for seeking rights.

Farmers are being recognized by the International Treaty on Plant Genetic Resources for Food and Agriculture for their past, present and future contributions in conserving, improving and making available plant genetic resources for food and agriculture, which constitute the basis of food and agriculture production throughout the world. The Treaty recognizes farmers' rights, including the protection of traditional knowledge relevant to plant genetic resources for food and agriculture; the right to equitable participate in sharing benefits arising from the use of plant genetic resources for food and agriculture; the right to participate in making decisions on matters related to the conservation and sustainable use of plant genetic resources for food and agriculture; the right to save, use, exchange and sell farm saved/seed and propagating material.

On the other hand, according to the Convention on Biological Resources

Contracting Parties shall respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.

It becomes quite apparent that the rights of farmers to data, information and knowledge are not yet examined in the detail they should be even in developed countries. Farmers are at the most covered with rights that ordinary citizens have. For developing countries, the consideration of these rights for farmers is still very distant in the horizon. In this context, very few countries have regulatory mechanisms including statutory bodies that include farmers to oversee the management of agricultural data and information and its dissemination.

During the past thirty years, the government of China has issued a lot of policies to improve the infrastructure of rural areas, including the agriculture information infrastructure. Now days, almost every village in China, no matter how remote it is, can receive satellite radio broadcasting and television signals, and has access to the Internet. It is no doubt that the information right of China's farmers has been improved significantly. But on one side, some farmers' income is not very high, which can't afford to buy the computer and Internet service. On the other side, some farmers are lack of awareness of the strong power of information, they may not willing to consume the information. So there is a lot of potential to make full use of the information power and improve some farmers' information right.

Protection of Plant Variety and Farmers' Rights Act, 2001 of India was enacted on October 30, 2001 to provide for the establishment of an effective system for protection of plant varieties, the rights of farmers and plant breeders and to encourage the development and cultivation of new varieties of plants. However, there is a need to sensitize farmers about this Act in large scale to extend benefits to farmers in real sense.

The Indian Information Technology Act of 2002 defines data as "a representation of information, knowledge, facts, concepts or instructions which are being prepared or have been prepared in a formalized manner, and is intended to be processed, is being processed or has been processed in a computer system or computer network, and may be in any form (including computer printouts magnetic or optical storage media, punched cards, punched tapes) or stored internally in the memory of the computer.

In Egypt and a number of Arab/African counties, the key issues for smallholder farmers is more access to the information and knowledge in the quality and quantity required to maintain their livelihoods, rather than protecting their individual information.

How should these rights be implemented and protected?

Policy changes are needed at national, regional and international levels to support the rights of farmers to data, information and knowledge. Agricultural information policy, for example, should emphasize on farmers' information availability, access and use.

Governments should also integrate information to ensure the accuracy and timeliness of information release as far as possible, helping farmers to use better reasonable information and promote agricultural development.

On the other hand, all organizations of the United Nations can contribute to dialogues globally about the rights of farmers to data, information and knowledge. They can advocate and contribute building capacities that will support the protection of these rights. Neutral organizations, such as the United Nations for Food and Agriculture Organization- FAO should continue dialoguing to have a common understanding of the rights of smallholder farmers to data, information and knowledge, which are vital for sustainability.

The United Nations could also consider the adoption of an International Treaty on the Use of Data and Information Related to Agriculture that includes the rights of farmers to data, information and knowledge. Considering that many countries would not have capacities to generate, manage, analyze and make effective use of “Big data”, the United Nations must create facilities for these countries to manage and use their data.

In addition, International Organizations, including the CGIAR, should build capacities in developing countries to manage and use their research data effectively for the country’s agricultural development. As most countries lack of capacity in collecting, managing, processing, analyzing data and therefore creating knowledge base on agriculture, the international organizations could support them by creating a system and developing facilities to fulfill the mentioned gaps.

International organizations need to do more in terms of capacity building of research institutions and staff in order to ensure that agricultural research outputs are simplified, synthesized and adapted to the format that farmers can appropriately incorporate and utilize.

New institutions such as data repositories and data trust centers and data collections with catalogues will be needed.

What should be done to include farmers in the mechanisms of data, information of knowledge management to ensure that their rights are included, implemented and protected institutionally and through technology?

Increasing awareness of smallholder farmers to defend their rights to data, information and knowledge is crucial. Farmers need to enrich their knowledge and ability to identify effective information in order to adapt to the changes of social development. The role of advisory and extension services is important to provide training for smallholder farmers.

Improving farmers’ understanding and use of information is also important. They need to have the knowledge and skills needed to gradually adapt to the demands of the new information society.

In addition, educating and empowering farmers with access to knowledge enable them to grow into better controlling their livelihoods and their environment was identified as important towards including farmers in the mechanisms of data, information and knowledge. Increasing farmers' awareness, education and empowerment is necessary for farmers to call for their rights and have their share in the research and information gathered.

Inclusion of farmers' representatives in the development of farm data standards and in decision making about data and information flows will also be needed.

The recognition of ownership of farmers to original data, information and knowledge will also motivate other smallholder farmers to collaborate and be willing to share their hard-earned experiences with potential partners who are scouting for such in order to collect, analyze and interpret them for enhancing farmers' productivity and efficiency.

Where farmers can neither read nor write, various options are available for reaching them. Among the communication channels are pictorial charts and video documentary. Even when wording are not expressed in local languages, farmers have their own ways to subjectively appraise, interpret and assimilate relevant information being presented to them.

Finally, in regard with how smallholder farmers' knowledge should be properly acknowledged, shared and paid for, it should be a standard practice to recognize the responsibilities and rights of smallholder farmers and indigenous peoples to the preservation and continued development of their cultures and languages and to control their lands, territories and traditional resources as key to the perpetuation of all forms of diversity.

Researchers must recognize the traditional intellectual property rights of smallholder farmers; ensure the active participation of smallholder farmers in research; ensure reciprocity; mutual benefits and equitable sharing from processes, results, outputs of research, etc.