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**Microcredit and Crop
Agriculture: New Approaches,
Technologies and Other
Innovations to Address Food
Insecurity among the Poor**

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Abstract

Microcredit¹ and Crop Agriculture: New Approaches, Technologies and Other Innovations to Address Food Insecurity among the Poor.”

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Agricultural finance, especially for crops, is critical to boost food production and help address food security in the world and also to address the livelihood needs of the poor, a majority of whom depend upon agriculture for their sustenance. Yet conventional approaches to agricultural finance from development banks have been difficult, commercial banks have shied away due to perceived risks and costs and microfinance institutions with their relatively high cost, short term microcredit did not offer a solution. Today, agriculture has become more market-linked, microfinance institutions have evolved, strategic partnerships have increased opportunities, and new technologies and approaches to reduce cost and risk in agricultural microfinance have been developed. Understanding and applying these in the design and implementation of microfinance, financing crop agriculture for low-income households can be successful, sustainable and help address food and livelihood security.

¹ In this document the author uses the term ‘microfinance’, meaning credit, savings and other financial services to serve microentrepreneurs and all low-income household. This term is broader than the Microcredit Summit definition of microcredit, meaning loans and savings.

1. Introduction

In many developing countries, the majority of poor people reside in rural areas and are dependent on agriculture, especially crop agriculture, for their livelihood. These agriculturalists confront climatic and price risks, seasonality demands and surpluses of labor and capital and often live in areas that are hard to address with financial services.

The paper reviews innovative approaches and technologies so that microfinance can be better adapted to fit the conditions of crop agriculture, improve the management of agricultural risk and encourage agricultural investment thus better address food insecurity among the poor.

a. The need for action

Text Box 1. The reality

12.4 million people are in urgent need of assistance in Djibouti, Ethiopia, Kenya and Somalia. Neighbouring countries – South Sudan, Sudan, and Uganda – all require support to ensure the crisis in the Horn of Africa does not spill over their borders.

FAO Emergency, Executive Brief¹

The goal of microcredit and that of the members of the MicroCredit Summit is to serve the poor and assist them with financial and related nonfinancial services that can help them rise out of poverty. So many of them depend upon crop agriculture for their food and livelihood security; yet, for many of them their food and income is not secure. How can microcredit, and perhaps more importantly microcredit organizations best help?

Microcredit, or using the term more broadly to include all types of microfinance, is especially focused on serving the vulnerable segments of the population who have less or no access to financial services, such as women and farmers without collateral and/or stable incomes. These are often in harder-to-reach regions and rural areas. Approximately seventy percent of the poor live in rural areas, a majority of whom depend upon agriculture for their livelihoods. And, especially in the poorest countries,

a larger number of the agricultural workers are women. Hence, by its mandate and mission, institutions and organizations involved in microcredit cannot exclude agricultural finance; they cannot shy away because of its perceived and actual risks. They also cannot only finance livestock and agricultural trading activities because they are less risky.

Crop agriculture is the most important segment of agriculture for generating rural employment and income for smallholder farm families. Due primarily to their lack of resources to generate sufficient income and safety-net “cushions” to sustain them in times of difficulty, many live in poverty and are vulnerable to hunger, disease and malnutrition, especially the smallest or micro-level producers.

Although many of the poor own or have land-use rights, many others must rent land through share-cropping leasing plots of land. These land plots are often too small, resource-poor and fragmented to adequately produce for the family and to generate the necessary income to meet their food and livelihood needs. Their livelihood security depends upon having a successful harvest, or multiple harvests according to the location and nature of production. Many variables, both controllable and non-controllable, affect this outcome. Controllable factors include not only their personal capacity, skills and technologies, but also and importantly their access to land and water, seeds and fertilizers, tools and equipment, storage and transport, markets and market information and timely and adequate financial services. Non-controllable variables typically include weather, market volatility and major disasters of any type, including health.

A principle of success is to address the controllable factors and mitigate the effects of the non-controllable variables, such that they do not destroy progress made toward achieving stable and improved livelihoods.

b. Context and background of microfinance and agriculture

Microfinance institutions (MFIs) which are more socially driven could be good providers of agricultural finance and services to small producers. This is due in part to the fact that their financial services are often linked with the training and other

support services that they provide, either directly or through linkages with other organizations. However, for a majority of MFIs, the reality is that their models are not very different from traditional microfinance, which tends to be very small, short term loans and frequent repayments, whereas agricultural producers mostly need longer term loans, often with grace periods on the basis of the production cycles. In other words, traditional credit products of MFIs are not well adapted to agriculture. For example, one MFI in Honduras indicated that all its loan obligations had to be paid monthly, so they could not offer anything that did not require a monthly type of repayment as a minimum.ⁱⁱ

In order for microfinance organizations to venture into crop agriculture, it is important to understand the context of crop agriculture and their potential role in it. Agricultural microfinance is not business as usual but requires a different approach from that typically applied in many microfinance organizations. As described later, on the client side, there are generally much lower returns to capital, slower velocity of capital, higher uncontrolled risks and less understanding of finance and business.

For the institutions, operating costs are higher as clients are less concentrated, production and market risks are systemic, and the physical infrastructure for services and communication is lacking. There is a higher susceptibility to interest rates given the lower velocity of capital, and there is a higher political risk of intervention. On the positive side, rural communities have a more established social structure and stability upon which to build. Secondly, new information and communication technologies, improved market integration systems and new or adapted financial products and approaches are opening the opportunities for microfinance institutions to better serve smallholder crop producers.

i. Agriculture as a business

Agriculture must be treated as a business activity and its micro and small producers must think and act beyond agriculture as a subsistence livelihood. Credit is not appropriate, nor viable, for subsistence farming, although some financial services such as savings for income “smoothing” and insurance can be useful. Despite both the important development role of aiding smallholders in the transition of subsistence

farmers into the market economy and the social emphasis of many microfinance organizations, it is not the role of a financial services provider to lend where there is not a market-linked business case to do so.

ii. Productivity, value addition and profitability

Agriculture must be profitable and competitive with other producers in the marketplace. The foundation for successful micro loans for agriculture is that they must help generate the income to pay the interest costs and create reserves for contingencies. Both crop and animal agriculture have much less turnover of capital than trade or other micro commerce ventures, thus needing longer loan terms while also having unstable and often lower returns to capital. Consequently there is both a higher risk and a much higher sensitivity to interest rates, especially the relatively high rates often charged by microfinance institutions. For small and micro-level producers, it is also not only the level of profitability per unit of production, but moreover the economies of scale, i.e. even when they are equal or more efficient per unit of land or capital than large operators, they may be too small to be sustainable without adapting toward niche products and markets with higher value added.

While the factors noted above may be well-known, a more impactful competitive risk in the long run is the market. No longer is it sufficient or feasible for small producers to cultivate and market as did their forefathers. The share of produce marketed through local, open markets is rapidly diminishing. Consumers, with their increasing urbanization and changing lifestyles, are much more demanding. To be competitive in the future, meaning profitable and sustainable, small producers must use improved seeds and technologies to meet production requirements. They must increasingly deal with negotiating contracts and upholding commitments for buying and selling to specific market segments. Will they be able to meet the market demand of having the right products, in sufficient quantity at the right time and place? How will they meet the increasingly stringent quality and safety standards for agricultural products? For example, Good Agricultural Practices (GAP), Hazard Analysis and Critical Control Point (HACCP), traceability and other industry regulated standards and norms have already transformed the fruit and vegetable industry and many small producers can no longer compete since they are unable to meet standards.

These questions are not just applicable to small farmers or are concerns for policy makers and development agencies, but are pertinent and in the long run critical for all financial institutions dealing with agriculture. These factors must be included in their strategic plans and approach for serving the sector.

Competitive agriculture is connected agriculture – one which links those in a sector or within a value chain in which everyone involved has a vested interest.

c. Microfinance strengths and weaknesses

Microfinance is currently quite limited in its ability to service crop agriculture but it has many strengths that can be built upon to increase its impact. As segue into understanding the strategy and approach to financing smallholder crop agriculture, one can first look at the products and services currently offers by microfinance institutions. Typically, these products and are not well suited to crop agriculture. These include:

- high interest rates
- short term loans
- small loan sizes, often not sufficient for meeting the financing requirements for seeds and equipment
- largely focused toward women, sometimes exclusively
- fixed weekly instalments or monthly loan repayments
- group lending with limited flexibility to meet individual agricultural needs and/or to meet conditions whereby most members have similar needs for financing at the same time
- limited financial services, with one or few types of loans, limited savings options, if any and often no insurance, money transfer or other services, and
- restricted geographical coverage making them more susceptible to systemic risk (whereby one factor such as weather can adversely all clients at the same time).

On the other hand, formal as well as informal microfinance organizations do have several distinct advantages to serve the poor who work in crop agriculture. For example, they:

- understand the clients, their capacity and their agricultural needs
- are able to serve the hard-to-reach agricultural clients and offer services with much lower transaction costs
- often have formal and informal group structures are able to provide savings and capitalization of earnings
- often have group structures which are useful for training of the smallholder to improve their agricultural practices
- can access technical support, when requested, from NGOs and/or governmental extension programs with whom they have connections, and
- have an increasing knowledge of and use of new technologies for reducing costs of communication and have information networking which bring both benefits to the MFI and to the clients, and
- have the field experience for dealing with micro entrepreneurs who can be involved in the transformation and value addition of some products.

MFIs have become increasingly able to offer a full array of financial services and financial and non-financial services to serve their clients. More than anything, this broadening of their services opens the door for MFIs to successfully engage in financing crop agriculture.

2. Microfinance approach and business models for financing crop agriculture

Crop agriculture is changing, for both large and small producers, and opening up new challenges and opportunities for financing. Success requires that one looks beyond the client to the larger picture of the farm and its links to the consumer chain. MFIs must understand this and adapt accordingly.

a. Comprehensive approach to risk assessment and lending

In finance, it is common to talk about the *5 C's of loan analysis*, namely 1) character, 2) capacity, 3) collateral or capital, 4) conditions and 5) cash flow. Microfinance is client focused and emphasis is placed on knowing the character and capacity of the client. Traditional banking has emphasized lending based upon collateral as the most important factor. When financing crop agriculture, the emphasis changes and greater weight is now assigned to the cash flows and the conditions.ⁱⁱⁱ

i. Cash flow based lending

Cash flow analysis is the single most important analysis an agricultural lender has to do. The diversity of enterprise activity on a small farm makes it seem complicated, but it can and must be done. Some of the cash flows of the farm will be regular, while others will be irregular. For agricultural producers, most production-related cash flows are irregular, i.e. seasonal in nature.^{iv}

One major difficulty of crop financing is the seasonality of crops and production schedules. Loan requirements are often bunched together at the same time, causing labor and funding shortages in certain periods and excess in others. When rains are delayed or come early or droughts, floods or disease ruin production and require repayment rescheduling, the situation is made even worse.

One of the early features and benefits of microfinance was its simplicity. Due to both a lack of back-office capacity and simplified MIS systems, as well as for client understanding, monthly loans with equal payments became the norm. Agricultural producers found this scheme did not fit their needs given uneven cash flows from multiple crops and livestock as well as other sources of income and expenses of the family. Cash flow based loan planning is not hard (see Toolkit^v) but is tedious and time consuming, and hence also an added operational cost for some microfinance methodologies. Whereas there has been much advancement in cost-saving methodologies and technical packages, very little has been done to introduce rapid analysis templates and automated systems for cash flow based loan planning for clients and groups.

Text Box 2. Cash flow assessment tools

The huge agricultural credit system within the USA, including the production credit association and federal land bank, has applied common cash flow based templates for use for loan planning, thus reducing planning and also serving to build a database of credit and production information for the institutions. In developing countries, ProCredit Banks, FAO and numerous others have developed loan planning tools but to date, no wide-spread tools have been developed which could help to reduce the cost and improve the performance and monitoring for cash agricultural crop finance.

ii. Conditions

Successful agricultural crop lending requires an assessment of both the health and market conditions of the sub-sector, particular value chain and the “fit” of the financial conditions and cash flows to those clients within the chain. Hence, the risk assessment moves well beyond client credit risk and requires a careful assessment of market, price and production risks. These are not confined to the risks of the particular client or group of clients themselves, but extend to their relationships and “tie-ups” with whom they buy and sell. This is critical since the dependability of the cash flow depends upon the competitiveness and security of suppliers, buyers and service providers involved with the product or products of a client, often called a value chain.

Value chains can be defined as the set of actors (private, public, and including service providers) and the sequence of value-adding activities involved in bringing a product from production to the final consumer. In agriculture they can be thought of as a “farm to fork” set of processes and flows^{vi}

The value chain assessment looks at the performance of an industry and the relationships among those in the value chain in order to understand the risks and how they can be overcome. The assessment also considers their strengths and looks at ways of increasing the efficiency, productivity and overall competitiveness of the value chain and industry. For this, a new approach to lending, called value chain finance, has emerged. Although this is not new in its elements, nor is it new to those who have practiced a comprehensive approach to agricultural lending, value chain finance is nonetheless quite new for many as an approach to understanding risks and structuring financing (i.e. fitting the conditions) to fill the needs of those within a

value chain in order to reduce the costs and risks of lending.

b. Value chains, value addition and value chain finance

Value chain finance in agriculture is an approach to financing that uses an understanding of the production, value added and marketing processes to best determine financial needs and provide financing to those involved. Many diverse and innovative financial instruments may be applied or adapted to fit the specific financial needs and the commodities and cash flow projections can be used as to secure financing and reduce risk.

The term value chain is being applied widely across the business, enterprise development and agricultural fields. It refers to the sequence of processes and linkages through which raw materials and resources are converted into final products for the consumer. The use and adaptation of principles of value chains in finance has been growing in interest. This adaptation, now known as *value chain finance*, is defined broadly as “all financing that not only flows through the value chain and its multiple linkages and also finance which is made available to borrowers because they are linked into a chain.”^{vii}

Value chain finance is not a financial product; it is an approach and through which numerous financial instruments can be applied depending on the nature of the value chain and point of entry. It also is more than the financing of the actors within a chain or even financing supported by being in a chain. Instead it is a comprehensive approach of assessing a value chain, adapting finance to most efficiently fit the chain and its actors. Furthermore, its strength lies in helping to understand the risks of the business through understanding the risks and the competitiveness in the value chain and then using that information for investment decisions and how to best adapt or tailor fit that information to provide finance to those current and potential clients within the value chain. It is “demand-driven” rather than the more traditional “supply-led” lending approaches which offer a set of relatively inflexible loan products and whereby their loan appraisal officers do not fully comprehend the industry risks of weather, diseases, changing food safety standards or even the changing marketplace.

Reducing risk is one of the most critical considerations in agricultural finance. Value chain finance helps to reduce three types of risk – production, price, and credit (client) risk. Production risk is reduced through access to improved seeds, farming practices and technologies and often technical assistance. Price risk can be reduced through secured markets and direct sales and a better understanding of the market. Client risk is reduced through a better understanding of the client and his/her risks and often through having loan repayments discounted at the point of sale.

c. Comprehensive services for financing

The value chain approach to agricultural finance needs to be supplemented with a view of farms as a business enterprise. In order to enable access to finance at the level of individual producers and producers organizations we need a much better understanding of not only the potential of the sector and the value chain, but also the finances at farm level. Because this is seen as difficult and time consuming, it is often overlooked or given insufficient emphasis.

No discussion of agricultural crop lending can be complete without highlighting the need for comprehensive financial services. Agricultural crop loans are risky and seasonal and hence the need for savings services is more important than ever. A savings cushion is required to help carry one through times of need. A place to save is important for evening out the cash received at time of sale of produce.

Text Box 3: Village Savings and Loans

CARE developed the Village Savings and Loan (VSL) approach to savings and savings-led village group borrowing built upon the traditional accumulated savings and credit association (ASCA) systems in Africa. One notes the heavy draw-down of savings according to the season and the ability to borrow against the savings when in need.

Crop agriculture is most sustainable when combined with other activities which mitigate cropping risks, labour seasonality and income risks. Crop and livestock systems (from livestock to fish) provide many benefits when feasible.

Text Box 4 . Indigenous Foundation for Agricultural Development (FIDA)

In the harsh climate of the Chaco of Paraguay approximately 2 of 7 years are said to be really good for crops, 3 years are fair and 2 are disasters. Over time, livestock raising was developed to compliment the agriculture and provide the needed mitigation against hunger in the years of drought or disaster and loan payments universally improved from bad to excellent among the various indigenous populations who conform FIDA. Furthermore, finance is linked with access to inputs, storage, markets and if needed technical assistance to improve productivity, management and prices.

d. Financial models for success

i. Linkage banking

In order to adequately meet the needs for financing crop agriculture, many different types of financial services are required. These include a whole range of credit, banking and non banking services, including multiple loan products, savings, insurance, payments, money transfers and where possible point of sale access for accessing or depositing funds. Since a majority of microfinance organizations do not have the capacity, funding structure or the economies of scale to offer all of these, the best option is to partner with those who can offer the complementary services needed. (Even when an MFI can directly offer some of these services, specialization and partnering can often result in more efficient delivery of services.)

In a major study and conference on financial linkages for addressing agricultural finance, many innovative models were noted. Among the most popular services provided to MFIs through partners were those of insurance and payment systems. However, successful models such as agricultural and commercial bank-MFI partnering arrangements are also found in a number of countries. Banks often do not have the physical presence, experience or the agility to reach many small producers nor to assess them efficiently whereas the MFIs generally do not have the longer term, lower cost sources of funds available in the banks. For banks, it is often much better to on-lend to an MFI or to pay them a service fee or part of the interest earnings, plus, and most importantly, the repayment by the small farmers often improves significantly, due to the effectiveness of the MFIs who know how to monitor financial services for poor rural farm households. The partnership can also reduce the undue

political influence that hampers many agricultural banks. For MFIs, an effective partnership can expand its services for their clients, leverage the capital of the MFI and increase its income.

Text Box 5: MFI – Agricultural Bank Partnerships

The National Agriculture and Rural Development Bank of India (NABARD), the Agricultural Finance Corporation of Kenya (AFC) and the National Agriculture and Cooperative Bank of Nigeria (NACB) all found that they were able to accomplish their development roles of lending for small farmers and improve their outreach and repayments by working with partner MFIs, Self-Help Groups or their Federations. Over time, the partnering model became the primary conduit for reaching this target population.

ii. Business service-microfinance partnership models

Partnership can also be established with business services and/or marketing organizations. For example, Grameen Foundation has formed a global partnership with The Fair Trade Organization in order to build on the synergy between microfinance and international markets and support to smallholders. TechnoServe, an international business development NGO, uses a business partnership model which provides technical guidance and support to agricultural producer organizations to enhance small holder incomes through linkages to MFI and banking finance as well as to better markets.

iii. Buyer-driven value chain models

For smallholders and their organizations, *Contract farming* is becoming one the most common value chain finance business models for linking finance to the value chain and securing inputs, technical assistance and markets. As the name suggests, it involves farm-level or farmer association-level contracts usually originating from various levels higher up in the value chain. The contracts can be formalized in the legal system or can be informal, but binding agreements. Less binding forms of contract farming include outsourced production, often called *outgrower schemes*, typically by a company, processor, exporter or other chain agent, to a pool of producers. The contract (formal or informal farming agreement) may involve

advancing inputs, funds and/or technical support, or it might be limited to product sales conditions, such as prices, quantities and delivery dates. Whereas in the past contract farming was used primarily with specific crops, such as sugar cane, to ensure the a reliable supply to the sugar mills, increasingly the model has been adapted to many other crops.

Text Box 6: Finance-Production-Marketing Triangulation

Triangulation is an agreement of sale between producer and buyer, and often an input supplier, in which the contracts serve as risk mitigation for the financing agent. A cooperation agreement is developed between the buyer and the financial organization to remit payment to the latter upon product delivery. In Honduras, ACDI-VOCA, which is an agribusiness and finance focused international NGO, offers two options of triangulation in its approach to help small farmers:

- *Triangulation with a payment arrangement*
- *Triangulation with payment arrangement and guarantee. This model enhances the attractiveness of financing by integrating a guarantee agreement between the buyer and the technical assistance provider using a commercial agreement. These are often used in combination with inventory credit systems involving warehouse receipts. Key elements of the triangulation model include:*
 - *The input supplier who provides in-kind input financing with a partial guarantee from the buyer and retention of payment through the buyer.*
 - *Cooperation agreement between bank and buyer specifying the timing and mechanisms of transfer of payments.*
 - *Producer's sales contract, specifying price, amounts and quality which is signed over to the bank. For non-perishable goods, producers' warehouse receipts (WHR) serve as a guarantee. The requirements for lending against these receipts are:*
 - *Secure storage with sufficient insurance coverage and management.*
 - *Product standards and market intelligence.*
 - *Depositor's ability to increase earnings over time, while covering storage and finance costs.*
 - *Reliable receipt that can be easily used for collateral.*
 - *Adequate regulation.*
 - *Bank or MFI's willingness to lend.*^{viii}

3. Microfinance products for agriculture

a. Bill discounting and factoring for micro and small agro-enterprises

Bill discounting or purchase order financing basically covers payments to suppliers and other costs associated with production, such as transportation, needed to fill a purchase order placed by a buyer, either within the country or abroad.

Text Box 7: Bill Discounting

In Bolivia, the MFI FIE employs financial product innovation to better reach some of its agricultural clients. In the overall operation of what they call Purchase Order Financing, a buyer places a purchase order with a seller, i.e. a broker or a processor, who issues a purchase order to small producers. The small producer requests a loan but makes an accounts receivable assignment agreement, transferring the account receivable to FIE, which receives the payment directly from the buyers. Thus, once the assignment of receivables occurs, FIE proceeds to disburse the loan.^{ix}

This FIE system is innovative in the sense that an unconventional guarantee is used, and it allows for a self-liquidating operation. This product is also very flexible and can be used for multiple types of crops.

Factoring is a financial transaction whereby a business sells its accounts receivables (i.e., invoices) at a discount to a specialized agency, called a factor, who pays the business minus a factor discount and collects the receivables when due. Factoring speeds working capital turnover, credit risk protection, accounts receivable bookkeeping and bill collection services.

Factoring differs from bank loans in three main ways. Firstly, the emphasis is on the value of the receivables, not the firm's creditworthiness. Secondly, factoring is not a loan – it is the purchase of an asset, the receivables. While not directly financing producers, it allows their input suppliers and/or their buyers to have access to more funds which can benefit them. Plus, in factoring, the Factor agency provides the collection service which can make them more willing and able to extend inputs on credit or provide advances for harvest.

Text Box 8: Factoring to Support Agriculture

In Kenya, De Derby Green Ventures Capital (DGV Capital) is a limited company, whose focus is value chain financing through factoring, both in the agricultural sector and in manufacturing. The mission is to facilitate better business linkages by eliminating the financial stress experienced by businesses during transactions. DGV Capital is giving priority to the agricultural sector, which currently takes up 80 per cent of its portfolio, deliberately because of the need to address poverty challenges within the Kenyan society, which affect farmers more directly.

The DGV factoring company allows agricultural suppliers to convert approved invoices and delivery documents into instant cash by discounting them by with the DGV Capital factoring at an agreed fee. DGV then collects the face amount of the invoices from the buyers. On the due date, these buyers pay DGV the full amount of the invoice and then DGV discounts its fees and pays the remainder to the supplier as per the agreement entered between the parties.^x

Is DGV Capital a MFI? Does it finance agricultural producers? The direct answer to both is no; yet indirectly it is supporting finance to both small producers and agro-entrepreneurs. Does it matter how microfinance is delivered – the goal is efficient and effective delivery, a trait that has driven innovation in the Microcredit movement.

In Guatemala, the MFI Summa provides not only factoring services to small and medium enterprises, but also has a factoring product specifically designed for producer organizations. This factoring not only provides the producer organization and their members the needed short term bridge financing for the time they wait for supermarkets and buyers to pay them, but even more important it provides the collection service of the accounts receivable, which can be very difficult and costly for producer organizations to directly follow up, especially when they are not close to the cities.

b. Forward contracting and futures

Futures markets provide important price information which can assist in choosing not only when to sell but also on providing information to help determine the crops one will plant the next season. Even though small farmers generally do not have the know-how to use commodity markets nor to access information on futures, the traders and millers who buy their produce are aware of this information which influences the

prices they pay to the producers, thus benefitting them by reducing the price risk of their buyers.

Forward contracts, which do not need commodity exchanges, can be used directly by small farmers. Although they are more often done by trading and marketing companies, there is a growing use of forward contracting by small farmers. In India, for some crops, it is possible for these farmers to even use local internet kiosks to make forward contracts. This is an important risk management tools since both farmers and traders can secure prices, thus hedging their future delivery of produce and protect themselves against a fall in prices during harvest. Commodity buyers and warehouse managers who offer the forward contracts to the farmers can hedge their risk of doing so by selling on the futures market and/or by making forward contract to major end users of the commodities such as agro-industries.

In many parts of the world local and regional “spot markets” are pre-dominant, especially for the small crop producers. Their continuing to sell through local traders and markets offer them no protection against price drops or access to improved markets. *MFI's who simply provide small farmers agricultural crop loans for “business as usual” are risking both the health of their portfolios, especially in the longer terms as spot market sales of crops become less attractive over time, but even more important, they are failing in their social mandate to serve the needs of their clients.*

c. Micro-leasing

Leasing is a contract between two parties, where the party that owns an asset (the lessor) lets the other party (the lessee) use the asset for a predetermined time in exchange for periodic payments. Leasing separates use of an asset from ownership of that asset. There are two main categories of leasing, namely operating leases and financial leases, (sometimes called hire-purchase). Operating leases simply are “pay to use” arrangements which can facilitate the use of needed equipment, often for short periods, without having to purchase it.

In a financial lease, lease payments amortize the price of the asset. At the end of the lease period, the lessee can purchase the asset for a token price. The lessee is responsible for maintenance and risk of obsolescence of the asset. The lease cost includes cost of insurance, operating cost, loss provision, and profit for the one providing the lease. The terms of a financial lease generally range from two to five years. Because of the option to purchase the asset and that the risks are transferred to the lessee, a financial lease is a close substitute for a medium term loan. Many rural leases are financial leases.^{xi}

Leasing, and micro-leasing, a term coined when done by MFIs, does not directly finance crop agriculture. Yet it provides an important service in two ways. First, it can finance tractors and equipment needed to produce crops more efficiently. Secondly, since it uses the leased equipment as collateral (or at least the primary collateral), it does not compromise the use of any other collateral that may be needed to finance crop production or processing.

d. Warehouse receipts and micro-warrant finance

The application of inventory finance and warehouse receipts is “positive-sum.” This means that available working (collateralizable) assets remain inside the chain, while additional funds flow in from the outside, thanks to the existence of contracts. Contracts become an intangible security which replaces traditional forms of collateral.^{xii} With warehouse receipts lenders have minimal risk because a collateralized commodity can be liquidated in the event of loan default, especially when the commodities are stored in secure warehouses managed by accredited managers that issue receipts certifying the amount and quality stored. Secure inventory also ensures the ability to repay which can allow banks, Savings and Credit Organizations (SACCOS) and other financiers to offer lower interest rates than otherwise would be possible. While many warehouse receipts programs are formally structured, informal credit systems involving village granaries or regional storage centers are commonly found in many parts of Africa. In Latin America, one can also find large governmental programs which have been successfully developed as well as micro-warrant systems developed by MFIs, as shown below.

Text Box 9: Crop Receivables

One successful programme, using domestic agricultural receivables, has been developed in Brazil. The Rural Finance Note, called “Cedula Produto Rural (CPR),” was created by the government for loans to agribusinesses and producers. Basically, CPR is a financial asset applied to the value chain to facilitate access to finance. Its mechanism is very simple since the farmer issues a CPR, promising to deliver a given quantity and quality of product at a given future date and local. In exchange, the buyer pays, in advance, a given amount of money corresponding to the quantity of product specified. The unsubsidized loans are backed by the CPR note which commits them to the future product delivery (or to make an equivalent payment).^{xiii}

Microcredit programs for crops can be backed with certificates of deposit and pledge bonds (warrants).

Text Box 10: Micro-warrant Finance

In Bolivia, FONDECO, a rural MF institution uses micro-warrant financing for rice and corn small producers. Traditionally financing of such producers is high risk and high cost. With micro-warrants, the three parties all benefit:

- *The small-scale grain farmers have faster and lower cost access to seasonal loans for marketing, backed by the stored rice or maize, including those with no loan traditional collateral and benefit from improved marketing and prices for their products.*
- *FONDECO, the financial institution benefits from less risk before of the guarantees from the mills based on stored grain, and lower credit management costs because the system is simple, paperwork is minimal, and collection is direct.*
- *The rice mills also receive benefits since the credit incentives provide them a competitive advantage allowing them higher use of existing facilities – up to 100 percent capacity, thus providing them more income from their increased services.^{xiv}*

e. Micro-insurance

An increasingly common form of risk mitigation within the value chain is that of insurance. This includes insurance of all types, since health and life insurance, for example, is important for agriculture as well as crop insurance. In fact, the incidence of death of the “breadwinner” or serious health problems, have been shown to be more important causes of economic crises for smallholders than crop losses.

Insurance companies are busy developing innovative products tailored to local markets, yet insurance for agriculture crops is lagging. Part of this is a lack of demand from producers and their reluctance to pay for it. Private insurance is most comfortable with insuring risks that it can predict, are easy to quantify and have little systemic risk, such as insurance products specific for hail or fire risks. Multiple peril insurance for named risks is also well-known but general crop insurance has tended to be used only when there has been a governmental subsidy involved. Even then the uptake by many small farmers is low unless they are required to do so or the subsidization is high.

Crop insurance suffers not only from systemic risk, but also moral risks and high costs of administration. To address systemic risk, insurers and governments are working closer with re-insurance companies to provide support in times of major calamities and are working to spread their risks through geographic and multi-sectoral diversification. New insurance products try to address costs and moral risks (of unwarranted claims) under various approaches through the use of indexed insurance to reduce the need for claim verification and assessment. These include:

- i. *Area-based yield indexes*: the insurance contract does not pay individual farmers based on their individual losses, but rather pays out according to the average loss throughout the entire region.
- ii. *Revenue-based insurance*: this product combines production and price risk. While widespread in North America, for example, it is beginning to spread more broadly in the developing world.
- iii. *Weather-based indexed insurance*: the insurance contract is based upon parameters such as droughts, with too little rain, or floods, with too much rain, which cause partial or total losses. Payment is automatically made according to the agreed level up to which the crop has been insured. The indexes have to be adjusted for the particular crop and cropping season and the timing of the rain during the crop cycle. This has proved difficult for small-scale

production, causing a high *basis risk* whereby payments made and payments that should have been made are not matched.^{xv xvi}

Although index insurance can potentially overcome many of the problems of cost and hazards associated with traditional insurance, it requires improving the availability of high-quality weather data, creating awareness among farmers, achieving quick payouts, and dealing with basis risk due to conditions that might affect farmers but are not incorporated in the index (such as soil composition or uneven terrain).

Much more work is needed to continue to improve crop insurance products and their acceptance. In the short run government subsidies will continue to be given to support its growth in usage for small farmers. Yet for MFIs and financial institutions, bundling insurance with loans and savings is emerging as a logical step to reduce costs and speed adoption as well as to provide loan repayment protection.

f. **Guarantees**

Guarantees reduce the risk for lending to agriculture. They do provide incentives for MFIs and banks to expand lending operations. For the borrowers, the guarantees allow them access to borrow and/or borrow larger amounts than without the guarantee. However, seldom do guarantees reduce their interest rates with the exception of partner agreements in advance whereby the bank lowers the interest in return for a shared risk. Since they incur an additional cost to pay for the guarantee, there is often reluctance to use them when they are not subsidized. At the larger scale, they can be implemented without subsidy but not with small producers.

Guarantees are not new instruments but there is renewed interest in using them to increase investment into agriculture. Guarantee subsidies are being used to accelerate learning so lenders will improve credit analysis and lend their liquid funds rather than invest in government securities or loans only to highly collateralized borrowers^{xvii} While most guarantees have shared risks between the lender and the guarantor, new piloting is being done with “first-loss” guarantees from the guarantors, although the subsidy costs of this more aggressive approach are not yet known.

g. Islamic finance

The most sophisticated financial instruments contain incentives or shared risks, etc. Islamic banking in some of its various forms similarly involves borrower-lender shared risks and returns which is found in value chain finance. The underlying concept is ancient but relevant. It is noted that the higher the level of mutually shared risks and returns, the stronger the relationship. In this way, for example, contracts with clear benchmark formulas for price determination based upon the market conditions result in more lasting relationships than those with inflexible fixed prices whereby “side-selling” or reneging on purchases often result when market prices change.

Since historic times farmers have often received seeds and others inputs in exchanges for an in-kind payment of a portion of the final produce. For example in the Mudarabah form of Islamic banking, a financier provides financing to a producer who provides the labor and expertise under an agreement whereby profits according to predetermined ratio.

In summary, there are many innovations being practiced to address lending constraints to financing crops as shown below.

Table 1. Lending constraints addressed by innovative financing

Agricultural Crop Financing Instruments	Mitigating Risks	Reduction of transactions costs and loan supervision costs
<i>Value chain financing</i>		
• Warehouse receipts lending	X	X
• Lead firm contract farming or outgrower financing	X	X
• Trade finance (suppliers, traders, processors and marketing company finance)		X
• Receivable finance (export and domestic receivable finance, factoring, repurchase agreements)	X	X

• Joint ventures	X	X
<i>Risk reducing instruments</i>		
• Forward contracts and futures	X	
• Insurance	X	
• Guarantee schemes	X	
<i>Credit delivery structures</i>		
• Linkage banking		X
• Wholesale lending to MFIs by large banks		X
• Use of information and communication technologies	X	X

Note: X = mitigates risk or reduces transaction costs.

Value chain finance principles improve and increase the options for financing crop agriculture and understanding the markets and those involved in the value chain. Even so, the basic fundamentals of lending to agriculture still apply. Proper analysis is critical for success. For agricultural crop lending the following are recommended.^{xviii}

Table 2. Annual Crop Loan Analysis Requirements

Annual Crop Loan Analysis Requirements	
Analysis	Analysis Tool
Profitability	Return on investment (and comparison with sector norms)
Liquidity	Cash Flow
Repayment	Cash Flow
Solvency	Debt/Equity
Risk	Breakeven Points – both for price and production equilibrium levels (including sensitivity assessment)

The best guarantee for success in agricultural lending is good repayment capacity and loan seriousness. Loan seriousness includes loan and borrower assessment, opportune follow-up, adequate guarantees and insurance or risk mitigation.

4. Innovations in agricultural finance

a. Use of mobile phones in microfinance and marketing

Direct product distribution channels—including mobile-phone banking, ATMs, and electronic point-of-sale devices—are becoming increasingly important for rural finance delivery. A modern and up-to-date IT system is crucial to these services.^{xix}

Innovation has opened the door for growth in connecting inputs, finance, markets and extension services and this has spurred the use of value chain financing. Easier communication via cell phones and the internet facilitate buying, selling, price information and money transfers, as well as better MIS systems. These systems allow for even small financial institutions to easily offer the flexible disbursements and payments needed in value chain finance. However, this availability and access to innovation is very sporadic and uneven. Some examples of innovation in this area include:

- Chalmers, ACIDI-VOCA, notes that ICT tools provide first, information and transparency, second, provide access to product markets and access to sources of financing but third is the issue of costs and one needs to be cautious. In India, a basic program consists of ICT applications through mobile telephones, with two interfaces: one for sending technical information, and the other offering modules for managing the production chain.^{xx}
- M-PESA is now giving cell-phone users access to formal banking services. In May 2010 Safaricom and Equity Bank, a leading bank in Kenya, launched an initiative to offer every M-PESA user the opportunity to open a savings account. Customers use M-PESA to both deposit money into and withdraw money from their savings accounts. Called M-KESHO, this service effectively gives millions of rural Kenyans access to banking services for the first time. For small farmers, this can be significant since they can easily save their money after harvest and easily draw them when the rains start for planting.
- DrumNet provides an example of an innovative, multi-stakeholder facilitated value chain which links farmers, input suppliers, buyers and banks together through a fee-based facilitator hub that is coordinated through cell phone text messages. As facilitator, DrumNet provides the organization and capacity building of the farmers associations as well as the relationship and internet linkages between the various parties involved.

- In BASIX, internet kiosks can be used for forward contracting, and these contracts can be used as collateral for loans.

b. Enhancing agricultural competitiveness for the poor

Agriculture is the livelihood of the majority of the world's poor and is an important development concern. Both private and public sector interventions need to be addressed. These include:

- Pre-harvest: a) quality agricultural inputs, b) updated knowledge, c) contract farming, d) future price options, and e) crop risk mitigation
- Post-harvest: a) warehouse receipts linked to loans, b) local value addition, c) linkages to markets, d) aggregation, and e) farm-to-end-user, i.e. value chain linkages (Ramana, 2007).

An important aspect of responding to the needs of rural clients is to move beyond thinking about access to financial services to understanding what services are used or needed by whom, who is excluded, and how services and support businesses can be adapted or developed to meet the needs of target clients. This is especially true for crop agriculture where MFIs need to think and act beyond the delivery of financial services to meet those needs, either directly or in partnership, with others who can address those needs.

Text Box 11: Meeting the farm enterprise needs beyond microfinance

In Bangladesh, BRAC saw the need to become directly engaged in developing or supporting businesses which needed to strengthen rural micro-enterprises and farm households engaged in commercial agriculture production, input supply, marketing, processing and transportation. As an example, BRAC businesses include: 6 poultry farms for supplying day-old chicks, 3 feed mills, 2 seed production centres, 2 seed processing centres, 15 nurseries and 12 fish or prawn hatcheries also with the purpose of strengthening the respective value chains. Together, its business model works to ensure an integrated set of services for its clients.

In Bangladesh, BRAC offers an important example in that it is a microfinance institution, but when it sees that financing of its clients requires a direct strategic investment in the chain, it does so. For example, BRAC set up chicken hatcheries

when needed for the poultry production of its clients. It also offers the required technical assistance and can facilitate marketing channels as needed. In the artisanal craft sector, it has done similarly, including wholesale and retail of the crafts. Through its financial services and strategic investments directly into the value chain, it generates employment in rural and peri-urban areas and raises the level of value added for the produce of its clients.

c. Innovations in farmer organization

Small producers are generally just competitive as their organizations are strong. Well-functioning producer organizations are critical to achieve economies of scale in production and in marketing. They are also important to attract the support of agricultural extension services and capacity building from governments, NGOs and value chain partners.

One of the most critical innovations is that of management. The role of producer organizations is no longer one of advocating and serving as conduits for training and often subsidies. Rather today their role is more focused on building relationships and forming strategic partnerships with suppliers and buyers, specialized support services for training and extension and assisting to arrange financing. This business partnership requires higher organizational skills and demands higher levels of commitment of all members in order to fulfil its agreements.

5. Lessons and recommendations

MFIs and MF development practitioners have much more work to do. In a short amount of time, the MF industry has grown significantly, and today the industry reaches 150 million clients worldwide. This is impressive, but there is much more work to do to reach the estimated 2 billion working poor who could benefit from financial services, many of whom depend upon crop agriculture for their livelihoods. Toward this end, the following recommendations are made:

a. For MFIs and Financial Organizations

- i. MFIs of nearly all types and sizes need to expand beyond offering a single product or two of credit. Comprehensive finance for agricultural households is required; if we are to build a truly financial inclusive world, we need to expand our product offerings to include savings, insurance, payments, and more. For some smaller, community type of MFIs, such expansion of services can only be done by linking or partnering with other financial agencies and/or support organizations.
- ii. Linkages and partnerships with non-financial organizations are important for financing agriculture to smallholders. By including finance into the “package” of inputs and/or other services, there can be an improvement in efficiency and often in repayment. The lack of transparency of the cost of funds can lead to abuses, but in general the interest of the “client” is the overall package of inputs and services and the output returns.
- iii. For MFIs and other financial institutions to reach small farmers and agro-entrepreneurs in an efficient and sustainable manner, they need to reduce the operational costs of servicing their clients.
- iv. Value chain finance has an important place in agricultural finance; *most important is its comprehensive, structured and market-competitiveness approach to complement and enhance traditional finance* to increase access to capital and reduce cost and risk for both clients and financiers.
- v. MFIs need to change their management of data to capture and be able to use production and marketing data of the primary sectors and that of their clients.
- vi. Agricultural crop production is important for national food security, involving a major population segment in many developing countries, both of which make financing to it vulnerable to political interference which must be adequately anticipated and mitigated.
- vii. Crop agriculture is dependent upon the unpredictable weather, which is becoming accentuated with climate change. This can affect all clients’ production in a region. MFIs must mitigate these systemic risks through portfolio and sector diversification and where possible, regional diversity and use of insurance.

- viii. Financial institutions that want to provide crop and other rural financial services need to be committed to this segment and need to have specialized knowledge-based departments, including agriculture and small and medium agro-enterprises (SMEs), in order to be effective in providing products and services to these target groups.
- ix. The fundamental basics of finance are as important as ever – the 3 R's of *risk of client and business, returns* to borrower and *repayment capacity*. There is no substitution or short-cut to client and business assessment.

b. For development agencies and policy makers

- i. Building capacity, productivity and profitability of smallholder agriculture is critical. Finance is not the driver of improved livelihoods for smallholder families. It is a catalyst that works well when there is viable and profitable agriculture, implying a need to address such fundamentals as: a) improved productivity, b) improved efficiency and economies of scale, c) strengthened farmer organizations, d) stronger and better market linkages and e) improved capacity to access and to apply new technologies.
- ii. Both small and large MFIs, institutions and banks working in crop agriculture need the technology and skills to integrate agricultural and value chain data into a consolidated data warehouse, from which they can have meaningful benchmarks and a solid understanding of profitability and risk of clients and sectors. Finally, they will likely need assistance in their development.
- iii. In addition to assistance and direction in building an agricultural information database, assistance in modelling, benchmarking and forecasting is needed to address cash flow and portfolio planning and management.
- iv. Agricultural finance would benefit greatly from reinsurance pools through which insurers could diversify and limit losses on insurance products covering catastrophic risks. More research and support is needed from the development community in partnership with the private sector to guide in working together on developing new insurance products geared to crop agriculture.

- v. Improvement and clarification of land tenure remains a bottleneck for increasing lending to agriculture and efforts to address it remain important. However, careful consideration is needed for the use of land for small holder families including safeguards for reducing the risk of their losing this important resource due to loans. Hence, the increased use of non-traditional collateral holds more future for improving lending for agricultural crops.
- vi. More research, learning and support are needed to improve insurance and guarantee approaches and products. Data collection systems must be improved and the private financial sector must be engaged in order to have products that are cost-effective and adapted.
- vii. Development agencies and governments need to assist in developing and adapting new technologies to help drive down costs of providing financial services to agricultural families in remote and higher risk communities. This should not focus undue attention on the latest technological ideas but rather on all types of innovations that reduce costs and risks, and improve services. Also, development agencies must take care to not drive the innovations, but rather to foster their development by building upon local and national initiatives.

Agricultural financing for crops to smallholders is characterized as risky and expensive. Yet, many organizations have been doing it successfully for decades and new approaches, technologies and lessons are available that enable it to be done even better today. However, there remain many underserved agricultural finance markets where it is still too difficult, or too expensive, to reach needy clients. We need to keep pushing harder and further.

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