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MANAGING CONFLICTS OVER LAND AND NATURAL RESOURCES THROUGH COLLECTIVE ACTION

A Case Study from Rural Communities in Zambia

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ABSTRACT

Seasonal changes and ambiguity in property rights over land and natural resources create conflicts in rural communities in eastern Zambia. This study describes how rural households have minimized such conflicts and protect the economic interests of the poor members of the community through collective agreements on how to manage access to land and natural resources. Specifically, this study describes and evaluates the formulation and implementation of bylaws governing the grazing of animals and the setting of bush fires. First, we describe the background of the social conflicts arising over land and natural resources and the collective agreements to reduce the conflicts, as well as the processes that led to the formulation of the agreements. Using a sample survey of 196 households, we conduct an ex post assessment of the perceived effectiveness of the bylaws, including planned and unplanned impacts of the bylaws. The study shows that collective agreements and dialogues provide important entry points to minimize conflicts over natural resources. Survey results reveal a remarkable increase in the perceived effectiveness of the bylaw on animal grazing over a five year period (from 16 to 46 percent of respondents describing it as "effective"), with a more modest change regarding the bylaw governing bush fires. A number of lessons and recommendations are drawn from the study: (1) collective action can be used to protect the interests of the poor members in the community (especially female-headed households) and raise their voices in matters that affect their livelihood; (2) collective action is not a panacea, especially where power structure is skewed; (3) ex post assessment of the outcomes of collective action is essential to understand planned (positive) and unplanned (negative) outcomes; (4) cultural practices are constantly changing over time and may become opportunities or constraints depending on how communities organize themselves to protect the interests of both the powerful and vulnerable groups.

Keywords: property rights, policy dialogue, impact assessment, agroforestry, conflict resolution

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MANAGING CONFLICTS OVER LAND AND NATURAL RESOURCES THROUGH COLLECTIVE ACTION

A Case Study From Rural Communities In Zambia

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1. INTRODUCTION

In most parts of Sub-Saharan Africa, debates about land tenure and property rights over land and other natural resources are central to development strategies. Tenure arrangements influence, among other things, inheritance rights and the management of natural resources including trees, water, and other natural resources (Hansen et al. 2005). Customary tenure systems that are administered by traditional institutions and local governments have worked well in many communities, but these are being challenged by changing demographics and efforts to access new opportunities to meet livelihood needs by the different segments of the community. When access to renewable natural resources is reduced, either due to increasing human population or degradation of the natural resources in quantity and quality, competition among different user groups of these resources increases. Under such scenarios, building cooperation for better management becomes increasingly important to avert conflicts, ensure communal peace, and build longer term social-ecological resilience (Ratner et al. 2010). We illustrate this drawing from a case study in rural Zambia.

2. CUSTOMARY PROPERTY RIGHTS OVER LAND IN EASTERN ZAMBIA

In most rural communities of Zambia, the economy is dominated by rainfed agricultural production, particularly of maize. During the rainy season when maize and other crops are in the field, usually between December and April, the customary practice mandates that all livestock are tethered and kept away from the fields by their owners to prevent damages to the crops. After crops are harvested, animals are left to roam and graze freely on the crop residues and other vegetation in the field. During this period, the bush is frequently set on fire by different people for various personal reasons, especially for the purpose of hunting mice for food, but without direct harm to anyone's interest as there are no crops standing in the field at that time. The status of fields oscillates between being a private property resource during agricultural production seasons and common property resource during the dry seasons. After grazing the residues in the fields, the livestock usually deposit dung in the kraals of their respective owners rather than in those fields they had grazed. In the past, this was not a problem because of the availability of cheap fertilizer to all farmers and because food insecurity was not as critical as it is

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presently. In such a situation, livestock owners benefit without imposing a direct negative cost or impact on owners of the commonly grazed fields. But as commercial fertilizer has become more costly and less available, its use by most smallholder farmers has been reduced, especially after the removal of subsidies on fertilizers in the 1990s following the structural adjustment program (Kwesiga et al. 2003). As an example, the ratio between the prices of nitrogen and the major crop (maize) increased fourfold after the elimination of price subsidies on nitrogen fertilizer and this led to a 70 percent decline in fertilizer use by smallholder farmers (Howard and Mungoma 1996). The fertilizer market is further constrained by the geographically landlocked nature of Zambia and the poor road infrastructures which hinders access to agricultural inputs at affordable costs to smallholder farmers.

In response to these challenges, farmers have searched for new options to manage the fertility of their soils and reverse a negative trend that put many rural poor at risk if left unchecked. One of these options is to plant "fertilizer trees" that have been developed through a collaboration of national and international research institutions. Based on nutrient recycling principles, the trees help farmers to replenish soil fertility by capturing atmospheric nitrogen and making it available in the soil through decomposition for crop use. The technical details of fertilizer tree systems are described elsewhere (Kwesiga et al. 2003; Mafongoya et al. 2006; Akinnifesi et al. 2010). The fertilizer trees have helped farmers to double maize yields compared with continuous maize production without fertilizer, which is what farmers customarily practice (Sileshi et al. 2008). Economic assessment of the fertilizer trees shows that they are profitable compared with farmers' traditional practices (Franzel 2004; Ajayi et al. 2009).

As more farmers plant fertilizer trees for soil fertility, the practices of setting bush fires and allowing animals to graze freely in the fields during the dry season pose an increasing problem because the fires and browsing animals destroy these trees of many resource-poor farmers who could not afford the high costs of fertilizers. The change in the price and availability of commercial fertilizer has led farmers to plant the nitrogen-fixing trees altering how they manage their land, and inadvertently upsetting the balance in customary property rights over land. With the establishment of fertilizer trees in the fields, portions of the erstwhile common property become private resources, with interests that other members of the community are expected to appreciate when making their decisions. The changes in land use adopted by different groups in the community and the inadequacy of the existing customary tenure regime (where different land users held different rights over the different periods of the year) to address these changes led to an increase in the incidence of land disputes arising from ambiguity in the definition of property rights over land by different user groups. To address the deficiencies highlighted above and protect the interests of the different resource users in the community, efforts to resolve these issues via collective action were initiated by the various economic interest groups, culminating in the development of bylaws.

In this paper, we (i) discuss the process through which community dialogues initiated by rural households led to collective agreements on bushfire and grazing to reduce these conflicts; (ii) synthesize information on implementation of the collective agreements, the level of compliance with the agreements, the effectiveness of the agreements at addressing the problems highlighted, and the factors that influence the effectiveness of the agreements; and (iii) using a

stratified sample of 200 men and women drawn from the main actors in the communities, we identify the types of effects that the bylaws have on household members and social interest groups within the communities to highlight those who have benefited from or been disadvantaged by the implementation of the agreements. The paper also draws a number of important lessons from the case study and makes recommendations about how collective action can be used as a mechanism to promote wider scaling up of natural resource management and manage social conflicts over natural resources in Zambia and other parts of Africa.

3. PROCESSES LEADING TO THE COLLECTIVE AGREEMENTS IN EASTERN ZAMBIA

In this case study, the degradation of land and the conflict over how to manage the land for multiple uses (crop production, fodder for livestock, and habitat for mice), and the absence of inexpensive mineral fertilizer, resulted in greater competition for control over land use, pitting segments of the community against each other based on how they derived livelihoods from the land. The collective agreements were initiated as a community response to seasonal social conflicts among three key groups of actors in the community over individual property rights over land and the “gift of nature” (mice), especially during the dry season. The three groups of actors are (i) livestock owners, (ii) farmers who plant fertilizer trees, and (iii) individuals—mainly youths—who hunt for mice during the dry season by setting bush fires. The discussions were de facto held between only two groups because the third group consisting of mice hunters is essentially faceless.² The three groups are generally similar in terms of ethnicity (they are almost all Chewa and Angoni) and education, but the dividing line which underlines the conflict is the sharp difference in terms of wealth (particularly the ownership of livestock). The fault lines of conflict involve the respective groups’ defense of their economic interests. Degradation of the quantity and quality of a given resource leads to scarcity of the same, creating pressure on the resource, and may inadvertently lead to conflicts or force beneficiaries to forge greater cooperation for the management of the resource (Ratner et al. 2010).

The meetings first began among the main actors to respond to the issues at the village level. These were expanded at a later period when the actors decided to include the ministry of Agriculture, and organizations working on rural development in eastern Zambia (Table 1). The expanded group, called the Consultative Forum on Agriculture (CFA) organized field tours for members to witness the threats posed by bush burning and uncontrolled grazing to the economic interests of some segments of the communities and to discuss options to reduce the threats to social peace and avert potential conflicts. Among the many options (including some militant ones) that were initially considered, there was a consensus among CFA members to settle for a more peaceful approach through engaging with traditional authorities (paramount chiefs) who command a great deal of respect and could lend legitimacy to the actions agreed upon by the communities to respond to the problems.

² Nobody in the community readily came forward to be identified as part of the group that burn down forest because of mice.

Table 1: Description of the initial key actors in the collective agreements and their interests

Actors	General characteristics	Main interest of the actors/action resource
Livestock farmers	Own cattle and are generally wealthier farmers Higher social status and wield greater social power Have more access to cheaper fertilizers subsidized by the government	Desire for free crop residues and fodder to feed their animals
Fertilizer tree farmers	Relatively poorer Cultivate smaller crop area Less privileged Most do not own cattle	Protection of trees so that they can fix sufficient atmospheric nitrogen to fertilize their soils
Mice hunters	Generally youths and young adults in the community Rely on setting bush fires to hunt mice for consumption and income Do not own cattle or plant trees on their own	To catch as much of the “free gift of nature” (mice) for personal consumption and income generation during agricultural “off-season”
Traditional chiefs	Well respected by members of the communities Traditional custodians of and can confer legitimacy to collective agreements agreed by the partners in the community	Ensure social peace among the farming communities in their domains

Source: Authors

The traditional authorities are custodians of conflict resolution in their respective domains through the traditional hierarchy of leadership. The highest level of authority is the “paramount chief” followed in rank by “senior chiefs,” each of whom is in charge of a group of chiefs. Next to the chiefs are the “headmen,” who are individually responsible for the welfare and administration of a single village. Paramount chiefs, senior chiefs, and chiefs hold and preside over court sessions related to issues concerning traditions and cultural matters for the people residing within their respective domains. They are assisted by a traditional council called the “*Indunas*.” This local administrative setup was considered to be a good entry point for policy interventions regarding collective agreements on fire and uncontrolled grazing. The paramount chiefs wield sufficient influence to make proclamations on bylaws and to back up the same with traditional sanctions that help to ensure social conformity among their subjects.³ The two paramount chiefs in the study area agreed to lend their traditional authority to the process by

³Although the absolute powers that traditional authorities in Zambia enjoyed in pre-colonial era has declined due to political interference and government policies in the pre-and post-independence era, the traditional authorities have nonetheless retained sufficient cultural powers and respect that enable them to initiate sanctions in their respective domains. All the communities in the study area owe cultural allegiance to one of the two different paramount chiefs: (i) the matrilineal system presided over by the paramount chief of the Chewa ethnic group, or (ii) the patrilineal system presided over by the paramount chief of the Angoni ethnic group. Although based in Zambia, the matrilineal paramount chief also has traditional jurisdiction over all the Chewa communities and their traditional institutions in Malawi and Mozambique.

supporting the communities' collective agreements in the form of bylaws in their respective ethnic communities. The first bylaw makes it mandatory for livestock owners to herd their animals during the dry season. The second bylaw seeks to avoid burning of fertilizer trees and maize stover in fellow farmers' fields by prohibiting deliberate igniting of bush fires.⁴

4. IMPLEMENTATION AND EFFECTIVENESS OF THE COLLECTIVE AGREEMENTS

Assessments of the collective agreements were carried out through two surveys. In the first survey, conducted in 2002, we collected information from 182 households in four agricultural districts to assess the level of implementation and effectiveness of the agreements over time. The second survey based on a sample of 196 households drawn from the same agricultural districts was conducted much later in 2005 to identify the planned and unplanned impacts that the bylaws have on different members of the household and the various social interest groups in eastern Zambia. Some basic household characteristics of the sample are presented in Table 2.

Table 2: Composition of the households who evaluated the impacts of the bylaws

Variable	Description	Number (<i>n</i> =196)	Percentage %
Tree planting	Tree planting household	103	52
	Non-tree planting household	93	48
<i>Total</i>		<i>196</i>	<i>100</i>
Gender	Female	107	55
	Male	89	45
<i>Total</i>		<i>196</i>	<i>100</i>
Ethnic group	Chewa (Matrilineal)	125	64
	Angoni (Patrilineal)	61	31
	Other ethnic groups	10	5
Total		196	100

Source: survey data

The four districts cover the patrilineal and matrilineal communities and represent 50 percent of all the districts in eastern Zambia. The assessments showed that five years after the introduction of the bylaws, there is a remarkable improvement in the implementation of the agreements leading to a reduction in the two constraints of fire and grazing mentioned above. The agreement on grazing is much more effectively implemented than that against fire outbreak. The survey data reveals that while only 16 percent of respondents considered the bylaw on grazing effective when it was introduced, this proportion increased greatly as

⁴ Historically, fire is used as a land management tool in Zambia, but there is a discord between official fire policies and actual indigenous fire practices (Eriksen 2007).

almost half (46 percent) of the respondents considered the bylaw as effective five years after it was introduced (Table 3). In the case of bylaw on fire outbreak, the improvement in the effectiveness of the bylaws was assessed by the respondents to be only marginal. Five years after the bylaws were introduced, only one fifth of the households mentioned that the bylaw on grazing was “not working,” compared with 44 percent of the same households who have a similar assessment regarding the bylaw on fire.

Table 3: Households’ assessment of the implementation and effectiveness of the collective agreements in eastern Zambia

Household assessment of the collective agreements	Agreement on grazing (%)		Agreement on fire (%)	
	Initial period	Five years after	Initial period	Five years after
“Effective”	16	46	13	14
“Average”	20	34	21	42
“Not working”	64	20	66	44
Total	100	100	100	100

Source: survey data

The differences in the effectiveness of the agreement on grazing compared with that on fire outbreak may be attributed to several reasons. First, it is relatively easy to identify animals that stray into another farmer’s field and to trace their owners and seek appropriate redress. Second, the increasing cases of theft of animals have encouraged livestock owners to closely monitor their flock by herding them. The agreement on fire, by contrast, has been less effective because the probability of identifying and apprehending individuals who flouted the collective agreement is low, as fires may move quickly from the point where they are ignited to other locations. In a few cases, fire incidents were reportedly linked to jealousy or deliberate acts of social leveling against specific target households rather than an accident (Ajayi and Kwesiga 2003).

The bylaws have made important contributions to minimizing the incidence and the extent of conflicts arising from competition among key actors who use natural resources in the communities. The effectiveness of the bylaws to minimize conflicts depends on various factors:

1. *Power structure*: The type of power structure and economic interests among the different social groups within the rural community influenced compliance with the agreements. In particular, in the implementation of the bylaw on grazing, much emphasis was placed on protecting (or not jeopardizing) the economic interests of the more powerful livestock owners than on protecting the economic interests of the more populous but less powerful and less socially influential tree farmers, who in most cases could not afford fertilizer. There were also cases where violations against the bylaw on grazing went unreported due to fears of the powerful social, religious, and political influence wielded in the communities by the wealthier livestock farmers.

2. *Interpretation of individual rights under the collective agreement:* Most of the households are aware of the existence of the bylaws, but the exact interpretations of the laws are less clearly defined because the bylaws are not formally documented. In particular, the level of compensation to a farmer whose field has been browsed by livestock is interpreted differently by the community members depending on whether one is a livestock owner or a farmer. Some individuals mentioned that an aggrieved field owner is entitled to take one of the animals as compensation while others mentioned that the compensation has to be negotiated between the two parties. In general, where a dispute about the interpretation occurs, it is usually resolved in favor of the wealthier livestock farmers.
3. *Implementation of the collective agreement:* The bylaws are based on moral persuasion and their implementation is effective only to the extent to which they appeal to the good citizenship and sense of community responsibility of individual households.
4. *Monitoring of collective action:* The enforcement of the bylaws is in principle assigned to every member of the community, but in reality it was seen as the responsibility of nobody in particular.
5. *Cultural mutual support network and social hierarchy:* Due to the established relationships of hierarchy and cultural norms that encourage mutual social support in the communities, there were fears that strict compliance with the bylaws may be interpreted as a form of "taking revenge." This is more evident where wealthier households are the ones violating the collective agreement.

5. IMPACTS OF THE COLLECTIVE AGREEMENTS ON HOUSEHOLD MEMBERS AND COMMUNITY

One of the lessons learned in the course of the implementation of the bylaws is that the two laws made important contributions to prevent or minimize conflicts arising from the use of land and other "gifts of nature" among the key actors in the communities. In addition, the laws had impacts (positive and negative) on members of households and social groups that were different from those that were initially envisaged or intended. The 2005 field survey provides insights into households' assessment and perception about the unintended impacts of the law, including the specific actors affected and how they are affected.

Planned and unplanned beneficial effects of the collective agreement

The implementation of the collective agreements led to the achievement of the beneficial changes that were intended, namely the reduction of risk of fire outbreaks, reduced damage to fertilizer trees, and reduced conflict between the different resource users. In addition, the actors also reaped some benefits that were not among the intended aims of the agreements. The unplanned benefits include a reduction in cases of theft of livestock, a reduction in the cases of burning of tobacco curing sheds and the consequential cost of rebuilding the same in the next farming season, increased availability of soil mulch and crop residues, and

improved access to grasses for making tobacco barns (these grasses would otherwise have been burnt by fire outbreaks). The agreement also contributed to social equity within the community as it seeks to protect the interests of poorer households, especially women-headed households. Although it may not be the immediate concern of farmers, the bylaw on fire also has a beneficial effect on climate change because it reduces the potential emission of carbon into the atmosphere. Overall, about half (49 percent) of all the households mentioned that the agreements are “fair to everyone.” This group of households assessed that the bylaws are fair to all because they protect the interests of both farmers and livestock owners (58 percent), there were no cases of open complaints against them (38 percent), or because the agreements inadvertently contributed to ensure the safety of animals and reduction in theft of livestock in the communities.

Unplanned negative outcomes of the collective agreement

While the bylaws produced the intended changes that benefit the entire community in terms of reduction in conflict over resources, there were cases where the implementation of the agreements inadvertently resulted in harmful outcome on specific individuals within the households and the community. The individuals most affected by these unplanned negative impacts are men and children (boys) (Table 4). The apparent reason for this gender discrepancy is that the activities primarily affected by the collective agreements, namely hunting animals (using bush fires) and shepherding livestock, are typically the responsibilities of men and boys.

Table 4: Individuals who were identified as negatively affected by the collective agreements

Individuals negatively affected by the agreement	Percentage of households who mention that the agreements negatively affected individuals		
	Tree planters (n=103)	Non-tree planters (n=93)	Overall (n=196)
Men	19	16	17
Women	6	2	4
Children (boys)	48	39	43
Mice hunters	25	26	25
Livestock owners	41	49	45
Other individuals	31	30	31

Source: survey data

The most frequently mentioned downside of the agreement on fire is that access to mice in the households is reduced (Table 5). Bush fire is a common practice in the dry season used as a method to hunt mice or “*mbewa*”, a traditional delicacy that is cherished by many people in eastern Zambia including rich and educated persons who live in towns. Usually, individuals in the rural areas set the bush on fire as a part of hunting during the dry season, to smoke *mbewa* out of their refuge. Inability to set bush fires adversely affects mice hunting and the availability of the delicacy and potential income from the sale of the same. Another unintended effect is that if the bush is not burned, land preparation for the next

farm year may take a longer time to accomplish. Some respondents mentioned that without bush burning and the attendant excitement involved in chasing and catching mice, the dry season period may become “less exciting” or “dull”.

Table 5: Unintended effects of the bylaw on fire

Description of the unintended outcome	Proportion of respondents (%) [*]
Reduced access to meat because mice hunting is affected	74
Inability to clear land on time in the next farming season	28
Inability to locate “ <i>mashanga</i> ” in the field , i.e. maize that farmers inadvertently left in the field during the first round of harvest	21
Reduced access to sprouting fresh green grasses for livestock feed	8
The season becomes “less exciting” or “dull” because of lack of entertainment during the dry season.	5

^{*} Note: total exceed 100 because some respondents provided multiple answers

Source: survey data

The most frequently cited unintended outcome of the agreement on grazing is shortage of fodder for livestock (Table 6). Some respondents mentioned that the bylaw keeps livestock owners tied to just one activity (shepherding of animals) during the dry season, so the season becomes “dull or less exciting.” Other outcomes are that the route normally taken to herd animals may become longer because of the need to avoid herding animals through certain fields that have younger trees even though such route may be shorter. In addition, school attendance for boys may be affected given that boys are culturally the ones saddled with the task of shepherding livestock in the community.

Table 6: Unintended outcome of the collective agreement on grazing

Unintended negative impacts of bylaw on grazing	Proportion of respondents (%) [*]
Access to fodder for animals become more difficult	32
Livestock farmers are restricted to just one activity during the dry season	19
More time is spent to take care of animals	9
Adversely affect boys’ attendance in schools	7
The route taken for herding livestock becomes longer to avoid damaging trees in the field	4
Reduces fun and entertainment during the dry season	3

^{*} Note: some respondents provided multiple answers

Source: survey data

6. SUMMARY AND CONCLUSION

This paper describes how households in eastern Zambia minimize conflicts and protect the economic interests of the poorer members of the community through collective agreements to manage to the use of land and natural resources. It

elaborates on the background of the social conflicts arising over land and natural resources and the *raison d'être* for the collective action culminating in bylaws on fire and grazing to reduce the conflicts. It also catalogues the processes leading to the formulation and outcomes, including intended and unintended impacts of the implementation of the bylaws. As the conflicts related to natural resource management are becoming increasingly common and serious, it is necessary for the research and development community to become more involved in the search for institutional support for decision makers at local levels to manage natural resource commons appropriately (Moore et al. 2000). Local populations need to take leadership roles in deciding appropriate land uses and ownership of resources as central governments are in most cases poorly placed to make decisions that are appropriate for local levels, especially in areas of agriculture and natural resource management. From the study, we draw some conclusions and make recommendations made regarding the use of collective agreements for preventing social conflicts over land and natural resources among rural communities in southern Africa in particular and other African countries in general.

First, collective action and agreements can be used to protect the interests of the poor and vulnerable households in the community and raise their profile and voice in matters that affect their livelihood much more than would have been otherwise possible if individual households were acting alone. In particular, the rights and interests of female-headed households can be protected through such collective agreements.

Second, while collective action can contribute greatly to minimizing the conflicts over property rights on land and natural resources, it does not offer an exclusive panacea where the power structure is skewed. In practice, the extent to which the interests of the poor are protected by collective agreements varies from one community to the other depending on the interplay of power structure and dynamics in the respective communities.

Third, in addition to examining the context and scope for collective action to minimize resource conflicts, it is important to carry out a holistic ex post assessment of the outcomes of collective action, paying careful attention to the intended (positive) and unintended (negative) outcomes. The assessment should include questions including the following: (i) which group of actors is affected by collective agreements? (ii) How are they affected? (iii) To what extent are they affected?

Fourth, due to social, economic, and demographic dynamics in a community over time, cultural practices and norms are constantly changing. These changes can provide either opportunities or constraints to the different social groups within the community depending on how communities organize themselves to protect the interests of the powerful and vulnerable groups within the community as it engages the new realities and dynamics of change. Policy research should become less prescriptive and increasingly oriented towards assessing the comparative merits of options depending on the institutional context and local conditions.

Fifth, the prevailing local policy and institutional arrangements affect the riskiness and potential adoptability of natural resource management technologies such as, in this case, fertilizer trees. The distribution of the benefits associated with a technology will vary amongst the various social groups within communities.

REFERENCES

- Ajayi, O. C., F. K. Akinnifesi, G. Sileshi, and W. Kanjipite. 2009. Labor inputs and financial profitability of conventional and agroforestry-based soil fertility management practices in Zambia. *Agrekon* 48 (3): 276–292.
- Ajayi, O. C., and F. Kwesiga. 2003. Implications of local policies and institutions on the adoption of improved fallows in eastern Zambia. *Agroforestry systems* 59 (3): 327–336.
- Akinnifesi, F. K., O. C. Ajayi, G. Sileshi, P. Chirwa, and J. Chianu. 2010. Fertilizer trees for sustainable food security in the maize-based production systems of East and Southern Africa Region: A review. *Agronomy for Sustainable Development* 30: 615–629.
- Eriksen, C. 2007. Why do they burn the 'bush'? Fire, rural livelihoods, and conservation in Zambia. *Geographical Journal* 173: 242–256.
- Franzel, S. 2004. Financial analysis of agroforestry practices. Chapter 2 in *Valuing agroforestry systems*, J. R. R. Alavalapati and D. E. Mercer, eds. Dordrecht: Kluwer Academic Publishers.
- Hansen, J. D., M. K. Luckert, S. Minae, and F. Place. 2005. Tree planting under customary tenure systems in Malawi: Impacts of marriage and inheritance patterns. *Agricultural Systems* 84: 99–118.
- Howard, J. A., and C. Mungoma. 1996. *Zambia's stop-and-go revolution: The impact of policies and organizations on the development and spread of maize technology*. Food Security International Development Working Papers No. 54689. East Lansing, Michigan: Michigan State University Department of Agricultural, Food, and Resource Economics.
- Kwesiga, F., F. K. Akinnifesi, P. L. Mafongoya, M. H. McDermott, and A. Agumya. 2003. Agroforestry research and development in southern Africa during the 1990s: Review and challenges ahead. *Agroforestry systems*, 59 (3): 173–186.
- Mafongoya, P. L., A. Bationo, J. Kihara, and B. S. Waswa. 2006. Appropriate technologies to replenish soil fertility in southern Africa. *Nutrient Cycling in Agroecosystems* 76:137–151.
- Moore, K. M., M. K. Bertelsen, L. Diarra, A. Kodio, S. Cissé, and P. Wyeth. 2000. *Natural resource management institution building in the decentralizing context of West Africa: The SANREM CRSP approach*. SANREM CRSP Working Paper No. 01-02. Blacksburg, VA: Virginia Tech.
- Ratner, B. D., R. Meinzen-Dick, C. May, and E. Haglund. 2010. Resource conflict, collective action, and resilience: An analytical framework. CAPRI Working Paper No.100. Washington, D.C.: International Food Policy Research Institute.
- Sileshi, G., F. K. Akinnifesi, O. C. Ajayi, and F. Place. 2008. Meta-analysis of maize yield response to planted fallow and green manure legumes in Sub-Saharan Africa. *Plant and Soil* 307: 1–19.

LIST OF CAPRI WORKING PAPERS

01. Property Rights, Collective Action and Technologies for Natural Resource Management: A Conceptual Framework, by Anna Knox, Ruth Meinzen-Dick, and Peter Hazell, October 1998.
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