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# Understanding smallholder engagement with anchor enterprises in Malawi

## Evidence from Three Selected Anchor Enterprises

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# EXECUTIVE SUMMARY

Drawing on a household survey conducted in 2025 and focus group discussions held in 2026, this paper examines how smallholder farmers engage with three anchor enterprises in Malawi. The schemes differ both in the crop at their center and in how the partnership is structured. Tropha Estates sources chili in Mzimba under two-year contracts but provides neither inputs on credit nor formal extension services. Pyxus Agriculture Malawi (PAM) contracts groundnut in Kasungu on a seasonal basis, supplying an input package on credit that is recovered from delivered output and operates an extensive extension network. Malawi Mangoes sources fruit in Salima without formal contracts from farmers whose indigenous trees it has grafted with improved varieties.

Although the pattern is not uniform across the schemes, participation is selective. All three schemes draw disproportionately from larger households with older heads, while households with less than half a hectare— roughly the national median — are notably underrepresented. PAM's outgrowers are substantially better resourced than their neighbors and are by far the largest and wealthiest group. In contrast, Tropha, which imposes no minimum land requirement, collateral, or loan obligation, works with households that are no wealthier than their neighbors, farm similar areas, and its outgrowers are predominantly female. Malawi Mangoes sits in between. It appears to attract somewhat better-off households with larger farms, although less markedly than PAM. Female-headed households are slightly overrepresented, and women make up the majority of outgrowers.

While Tropha introduced a new crop, PAM and Malawi Mangoes delivered on technology adoption, through improved seed and inoculant use and grafting respectively. All three enterprises also serve as an important source of agricultural advice for their outgrowers. However, none appears to have delivered on productivity in the 2024/25 season. Yields remain relatively low, and neither groundnut nor mango outgrowers outperform neighboring farmers. Adverse growing conditions, including erratic rainfall, likely contributed to these outcomes. PAM's more input-intensive model, however, entails higher costs, and nearly one-third of its outgrowers failed to cover their groundnut production expenses.

The most tangible benefit these arrangements provide is access to a reliable market, and marketing is the dimension on which outgrowers differ most consistently from their neighbors. They are more likely to sell part of their harvest and to sell a larger share of it. Side-selling is less common than might be expected, despite the presence of active vendors offering competitive prices. Loyalty to the enterprise, distrust of vendors, and, in PAM's case, the obligation to repay input loans all appear to contribute.

Communication and grievance handling appear weak across all three schemes. Concerns typically pass through intermediaries, are perceived to receive little response, and speaking up is sometimes considered risky. How the transaction is organized also matters. Late collection, long waits at buying points, and disputes over weighing and grading are frequent sources of frustration among Tropha and Malawi Mangoes outgrowers.

The crop at the center shapes who participates, and which model can be sustained. Groundnut's thinner margins require scale, and scale requires land; mango demands little land but an asset that takes years to establish; chili generates meaningful returns at small scale and soon after planting. Mango's perishability and thinner local market then again create incentives to maintain a partnership even without contracts or credit, reflected in the highest continuity of the three schemes. Widely grown, non-perishable crops provide fewer such incentives, requiring the relationship to be sustained in other ways.

PAM's input-credit model appears to contribute to retention, but disappointing yields leave farmers unable to cover their costs and exposes the enterprise to default. At the other end of the spectrum, Tropha's model creates few ties between seasons and engagement fluctuates accordingly.

Finally, these arrangements form only one part of diversified livelihood strategies and contribute modestly to household income. In all three cases, the crop at the center of the arrangement accounts for around a tenth of household income and is not the main source of farming income. Even among outgrowers, 29 to 48 percent of income comes from activities off their own farms. While the partnerships can contribute to household livelihoods, their potential to move households out of poverty is constrained by the same land scarcity that limits the role of farming more broadly.

### **Box 1:** Key actionable takeaways

- **Design partnerships around the economics of the crop.** There is no one-size-fits-all outgrower model. Support intensity, input credit, and contract terms should match the crop's value, risk profile and marketing characteristics.
- **Prioritize reliable markets not just technology transfer.** Enterprises should focus on providing reliable market access. While some schemes deliver on technology transfer, the clearest value of the model lies in strengthening smallholders' market participation.
- **Facilitate effective communication.** Regular meetings, confidential reporting channels, and effective farmer organizations can build trust and sustain participation.
- **Improve transparency at the point of sale.** Weighing and grading in farmers' presence, applying transparent grades consistently, and independent verification help reduce disputes and strengthen commercial relationships.
- **Use input credit cautiously for lower-value crops.** Input-loan models can reduce side-selling but may expose farmers and firms to financial risk where margins are thin or yields uncertain.
- **Recognize that the smallest farmers may be difficult to reach through commercial partnerships alone.** Governments and development partners should not assume that anchor-enterprise models are inherently inclusive. Complementary measures may be needed if the objective is to reach households with limited land.
- **Use partnerships as catalysts for broader rural development.** Gains from farming alone will not lift most households out of poverty but can raise local demand that supports wider livelihood opportunities. Governments and development partners should combine support for these partnerships with investments in the rural off-farm economy.
- **Generate stronger evidence on how commercial agriculture fits into rural development pathways** Comparing partnership models across crops and contexts would show what works, who benefits, and who is left out and how commercial agriculture can be combined with other interventions to support rural livelihoods and poverty reduction.

# INTRODUCTION

While smallholder farming has been and remains at the center of agricultural transformation efforts in Malawi, the limited success of smallholder-centered approaches has prompted policymakers to explore alternative models of agricultural and rural development. One emerging approach involves larger farms or agri-business firms partnering with smallholder farming households, in what we refer to as an anchor enterprise model. Under this model, farming households typically contribute land and labor to produce crops or livestock products that are used as inputs by, or are marketed through, the anchor enterprise. In return, the anchor enterprise may provide support such as technical assistance, inputs, transport, or storage.

Such partnerships are intended to benefit both the enterprise and participating smallholders by reducing transaction costs and helping them overcome constraints arising from weaknesses in Malawi's factor, input, and output markets. For anchor enterprises, working with smallholders can provide a more reliable supply of agricultural products without requiring them to establish or expand their own production. For smallholders, partnerships can provide access to productive assets such as storage and machinery, and stronger linkages to input and output markets.

Whether and how these expected gains materialize, and for whom, depends on the specific arrangement and context. Reviews of contract farming and outgrower schemes accordingly find substantial variation in both who participates and what participation delivers (Barrett et al. 2012; Bellemare 2012; Bellemare and Bloem 2018; Meemken and Bellemare 2020). Evidence from Malawi is somewhat limited and concentrated in two value chains: sugarcane and tobacco. Herrmann and Grote (2015), for example, find higher incomes and lower poverty among sugarcane growers working with Illovo in Dwangwa, while Shaba et al. (2017) find that participation in tobacco contract farming is associated with higher net tobacco incomes. Both studies also find that outgrowers hold more land than the households they are compared with. Much less is known about anchor enterprise models centered on other crops. This leaves important questions about how different arrangements operate, who participates in them, and what they contribute to household livelihoods.

Drawing on data from a household survey conducted in 2025, this paper examines three anchor enterprise arrangements in Malawi, each centered on a different crop. Tropha Estates sources bird's eye chili, Pyxus Agriculture Malawi contracts groundnut production, and Malawi Mangoes sources mangoes. Although the three schemes share a broadly similar structure, they differ in how they engage with farmers and in the requirements for participation. At each site, we interviewed outgrowers as well as households in the same villages with no direct link to the enterprise. These households serve as a comparison group, providing insight into who participates in each scheme, given that participation is not random. We examine not only who participates, but also how each enterprise engages with its outgrowers in practice, what outgrowers produce and to whom they sell, and how much the arrangement contributes to household incomes relative to their other activities. Focus group discussions held with outgrowers in May 2026 help interpret the survey findings and capture farmers' own views on the partnerships.

While we frequently contrast outgrowers and their neighbors, the differences between them should not be taken to reflect the impact of participating in the anchor enterprise scheme. They reflect both who joins and what joining may have brought them, and these cannot be separated.

# THE SELECTED ANCHOR ENTERPRISE MODELS

This study focuses on three large agribusinesses that combine agricultural production on their own farms with sourcing agricultural products from smallholder farmers through outgrower arrangements, offering some combination of improved planting material, technical or agronomic advice, and, most importantly, a guaranteed market. The three enterprises examined here share a common architecture but differ in how their partnerships with smallholders are structured. They also center on markedly different agricultural products, which can shape how anchor enterprise models operate (Benson, Cockx, and De Weerdt 2026). The three cases span a broad spectrum of production cycles, from seasonal groundnut, to perennial bird's eye chili, to mango trees. The crops also differ markedly in the extent to which they are already established within Malawi's agricultural economy, ranging from widely grown groundnuts with established marketing channels, to the relatively new and niche chili, to mangoes, which are ubiquitous but have historically been only weakly commercialized.

## Tropha Estates Limited

Tropha Estates Limited is a Malawian agribusiness specializing in macadamia production and the aggregation and processing of bird's eye chili and paprika. Since 2017, the company has combined production on two large estates with an outgrower model involving smallholder farmers in Mzimba and Rumphi districts. Through this model, Tropha purchases chili and paprika from contracted farmers while providing access to improved seeds and some extension support through a network of lead farmers. Although Tropha also purchases produce from farmers without formal contractual arrangements, contracted outgrowers account for the majority of its suppliers.

While Tropha previously sourced chili from more than 1,700 farmers within TA Mtwalo, the number of suppliers declined to 494 in 2025. Understanding the characteristics and experiences of the outgrowers and the drivers of fluctuations in their engagement with Tropha is therefore important for assessing both the sustainability of the model and its potential contribution to local economic development.

## Pyxus Agriculture Malawi Limited

Pyxus Agriculture Malawi Limited (PAM) is a subsidiary of Pyxus International Incorporated, a global agribusiness with a long presence in Malawi through its tobacco subsidiary, Alliance One Tobacco Malawi (AOTM). PAM is replicating AOTM's Integrated Production System (IPS) model to build traceable, certified groundnut value chains, drawing on many of the operational components and field staff of the tobacco IPS. Since 2019, it has sourced groundnuts from a large network of smallholder farmers across the northern and central regions of Malawi — most of whom are also contracted to AOTM for tobacco — providing them with improved seed and inoculant on credit, regular agronomic support through field technicians, and a guaranteed market.

## Malawi Mangoes Limited

Malawi Mangoes Limited is an agribusiness based in Salima that processes and exports mangoes. Since 2011, Malawi Mangoes has combined production on its two estate farms with an outgrower program reaching around two thousand farmers in the surrounding area. Participating farmers were offered the grafting of improved mango varieties onto their indigenous mango trees. Where grafting is successful, the trees begin producing improved varieties, for which Malawi Mangoes offers a premium price,

approximately one and a half years later. In addition to planting material, the company provides some agronomic training and technical support through field technicians, and a guaranteed market for mangoes, including local varieties, produced by participating farmers.

## SURVEY DESIGN

The analysis in this paper is based on data from a household survey conducted in June and July 2025 in the vicinity of the three anchor enterprise locations: Tropha's Kaweche Estate in Mzimba District,[1] PAM's Chilanga Farm in Kasungu District,[2] and Malawi Mangoes in Salima District.[3] At each site, the survey targeted the two groups of interest for this paper: outgrowers currently or recently supplying the anchor enterprise, and other households residing in the same villages without any direct link to the anchor enterprise.[4]

Outgrowers were randomly sampled from company records. Where these records proved inaccurate or sampled farmers could not be located — a recurring difficulty — replacement farmers were listed and randomly selected with the assistance of lead farmers or anchor enterprise field staff. The comparison group was drawn from a randomly selected subset of villages in which the sampled outgrowers reside. In each sampled village, a household listing was conducted to identify households with no link to the anchor enterprise, which were then randomly selected for interview.

The final samples comprise 246 outgrower and 181 comparison households in the vicinity of Tropha's Kaweche Estate, 250 outgrowers and 171 comparison households around PAM's Chilanga farm, and 250 outgrowers and 249 comparison households around Malawi Mangoes.

The questionnaire collected detailed information on agricultural practices, production, and sales, together with a dedicated module on each household's engagement with the anchor enterprise. It also recorded the household's other income sources, including livestock, household non-farm enterprises, and wage and casual (ganyu) labor, and a range of socioeconomic characteristics. The survey was complemented by focus group discussions with outgrowers at each site in May 2026, drawn on throughout to help interpret the quantitative findings.

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[1] Farmers organized in six zones within Traditional Authority (TA) Mtwalo who supplied chili to Tropha during the previous three years were sampled by zone from company records. During implementation, substantial inconsistencies were identified in the sampling frame, including inaccurate information on the location of farmers and zones. The lead farmers were also unable to identify approximately one quarter of the sampled outgrowers. The final sample was therefore constructed through a combination of verified company records and randomly selected replacement farmers identified with the assistance of lead farmers. One of the six zones listed in the company records was found to lie outside TA Mtwalo and was dropped. Because the reported number of outgrowers per zone also proved to be inaccurate, the original plan to sample proportionally to zone size was abandoned in favor of a fixed sample of 50 outgrowers in each of the five zones.

[2] Groundnut IPS outgrowers from the seven schemes for which the median distance from the outgrower farm locations to Chilanga Farm was 20 km or less were sampled by scheme from company records. The number of farmers sampled per zone was proportional to the size of the zone in terms of the number of outgrowers.

[3] Farmers with at least one grafted mango tree, organized into seven zones across four TAs in Salima, were sampled from company records. While Malawi Mangoes works with 11 zones in total, these seven zones have a large concentration of outgrowers and accounted for 74 percent of the total number of outgrowers listed in company records. As outgrower records contain information on the TA and Group Village Head (GVH), a two-stage sampling strategy was employed to improve the efficiency of the fieldwork. First, GVHs holding at least 11 outgrowers were randomly selected. Ten outgrowers were then randomly sampled in each selected GVH.

[4] At the Tropha and PAM sites, workers, households residing in nearby trading centers, and local businesses were also interviewed. These groups fall outside the scope of the present paper.

# WHO PARTICIPATES

Participation in anchor enterprise partnerships is far from random. To minimize the risk of default, enterprises are, and arguably should be, selective about whom they partner with. PAM, for example, requires prospective groundnut outgrowers to allocate at least 0.5 hectares to the crop and provide a deposit as collateral for input loans. In addition to such explicit selection criteria, enterprises are likely to look for more motivated, knowledgeable, and productive farmers. Moreover, a partnership with a large enterprise will often carry risks that larger or richer farmers are better able to manage. For example, in the case of Malawi Mangoes, participation involved allowing the grafting of improved varieties onto existing mango trees — a procedure that poses a risk to tree survival and delays production for at least 18 months. Farmers who agreed to graft are therefore likely those best able to forgo output during the establishment period and to absorb the loss if the intervention failed.

Table 1 summarizes key landholding, demographic, and asset characteristics of outgrower households and contrasts them with those of households in the same villages that have no link to the anchor enterprise. Outgrowers differ systematically from their neighbors. Because these anchor enterprise arrangements require farmers to commit land and labor to producing the crop at the center of the arrangement, it is unsurprising that these are the two dimensions on which outgrowers stand apart most consistently. The pattern is, however, not uniform across the three enterprises.

### Table 1. Characteristics of outgrower households and their neighbors

| | Tropha | | PAM | | Malawi Mangoes | |
|---|---|---|---|---|---|---|
| | Outgrower (246) | Other (181) | Outgrower (250) | Other (171) | Outgrower (250) | Other (249) |
| **Own any farmland** | 100.0 | 96.1*** | 96.8 | 92.4** | 99.2 | 89.6*** |
| **Area owned (ha)** | 1.27 | 1.20 | 2.73 | 1.07*** | 1.61 | 0.88*** |
| **Area owned < 0.5ha** | 6.5 | 23.2*** | 4.4 | 25.7*** | 12.8 | 34.1*** |
| **Area owned 0.5 – 1 ha** | 32.1 | 25.4 | 7.6 | 24.0*** | 26.8 | 28.1 |
| **Area owned > 1 ha** | 61.4 | 51.4** | 88.0 | 50.3*** | 60.4 | 37.8*** |
| **Nr. of HH members** | 6.2 | 5.7** | 6.3 | 4.9*** | 5.7 | 5.0*** |
| **Nr. of HH members aged 15–65** | 3.5 | 3.2* | 3.8 | 2.8*** | 3.2 | 2.6*** |
| **HH head age** | 56.4 | 47.0*** | 49.0 | 43.3*** | 57.7 | 42.6*** |
| **HH head female (%)** | 29.7 | 26.5 | 11.2 | 22.2*** | 38.0 | 30.9* |
| **HH head literate (%)** | 84.6 | 91.7** | 91.2 | 81.9*** | 69.6 | 79.9*** |
| **Non-earth floor (%)** | 36.2 | 42.5 | 43.2 | 17.5*** | 32.4 | 14.1*** |
| **Own means of transport (%)** | 22.8 | 30.4* | 72.4 | 35.1*** | 49.2 | 35.7*** |
| **Tropical Livestock Units** | 0.80 | 0.93 | 1.39 | 0.45*** | 1.19 | 0.61*** |

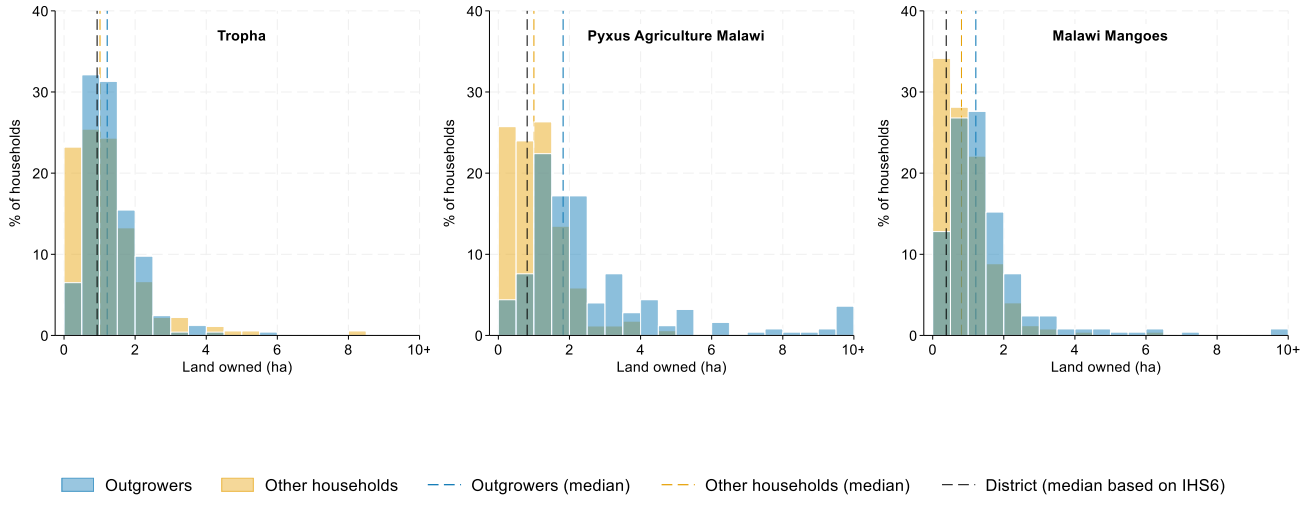
Note: Asterisks on the statistics for "Other" present the statistical significance of the difference between outgrower households and other households residing in the same villages by anchor enterprise. * = $p < 0.10$, ** = $p < 0.05$, ***= $p < 0.01$.

Across all three sites, outgrower households are more likely to own farmland, and for PAM and Malawi Mangoes they own significantly more of it. PAM outgrowers on average own 2.7 hectares compared to

1.1 hectares among their neighbors. The corresponding figures for Malawi Mangoes are 1.6 and 0.9 hectares. Tropha appears to be the exception to this land gradient. On average, its chili outgrowers own no more land than their neighbors. Yet there is a significant difference at the lower end of the distribution (see Figure 1). While less than 7 percent of chili outgrowers own less than half a hectare, the corresponding rate among their neighbors is over 23 percent. This holds for the other two sites as well, with outgrowers drawn disproportionately from households with more than half a hectare of land, roughly the median landholding for Malawi as a whole.

Especially in the case of PAM in Kasungu and Malawi Mangoes in Salima, all interviewed households appear to have above-average landholdings. Figure 1 shows the distribution of landholdings among outgrower households and their neighbors as well as their medians. It also shows the notably smaller median area owned by crop-farming households in the same districts, as recorded in the 2024/25 Integrated Household Survey, which is representative at district level. The data hence suggest that outgrowers tend to be drawn disproportionately from villages where more land is available and that, within those villages, they tend to own more land than their neighbors.

## Figure 1. Distribution of landholdings




At all three sites, outgrower households are also larger and have more working-age members. The difference is again most pronounced for PAM where outgrower households, on average, contain one more working-age member than other households. Outgrower household heads are also considerably older than those of their neighbors in all three schemes, and strikingly so for Malawi Mangoes and Tropha. This suggests that older, more established, farmers are more willing to participate in this kind of arrangement. Especially in the case of Malawi Mangoes, which began its smallholder engagement in 2011, this could also reflect front-loaded recruitment efforts. Over half of Malawi Mangoes outgrowers report having worked with the enterprise since 2014 or earlier.

Given a strong cohort gradient in schooling attainment in Malawi, the lower literacy rates among Tropha and Malawi Mangoes outgrowers compared to their neighbors likely primarily reflect this age difference. Although still significantly older than their neighbors, PAM's outgrower household heads are younger relative to the other schemes (49 compared to 56 and 58) and more likely to be able to read and write than their neighbors (91 compared with 82 percent).

While the literature highlights that female-headed households are often excluded from contracting arrangements (e.g., Prowse 2022), the representation of these households among outgrowers differs across enterprises. Female-headed households are markedly underrepresented among PAM outgrowers (11 against 22 percent), which seems consistent with a scheme requiring collateral and minimum land allocation. Among Malawi Mangoes outgrowers they are, however, somewhat overrepresented (38 against 31 percent). Among Tropha outgrowers, they are equally represented (30 against 27 percent).

In addition to owning more land, PAM and Malawi Mangoes outgrowers are wealthier than their neighbors. They are much more likely to live in a dwelling with a non-earth floor, own means of transport, and own significantly more livestock. These differences do not necessarily only reflect selection into the scheme. More than 60 percent of the interviewed Malawi Mangoes outgrowers partnered with the enterprise over a decade ago. Additional income generated through the partnership may have been converted into housing improvements or accumulated into assets. A similar argument applies to PAM, where groundnut contracting is layered onto a much longer history of tobacco production under contract with AOTM, from which participating households may have been accumulating assets long before the current scheme with PAM began. Cross-sectional data do not allow us to separate what these households brought to the partnership from what the partnership has allowed them to accumulate. This distinction matters somewhat less for characteristics that are more likely to be pre-determined and unaffected by the partnership such as the age of the household head, household size, or the broad availability of land in the villages where enterprises operate. For wealth indicators in particular however, the differences in Table 1 should be understood as jointly reflecting who was selected to participate in the anchor enterprise scheme and what participation has since made possible.

Tropha is the clear exception to the wealth gradient. Its outgrowers are no more likely to live in a dwelling with a non-earth floor, own no more livestock, and are even less likely to own any means of transport. To some extent, this suggests that less wealthy households are more likely to self-select into this scheme, as chili can be grown profitably on a small plot and requires less investment in inputs compared to other cash crops. During the focus group discussions, outgrowers frequently contrasted chili to tobacco and identified chili as a more accessible commercial crop. Tropha also does not impose a minimum area or require any collateral for input loans. Because of the high labor requirements for harvesting chili, the enterprise even discourages farmers from allocating large areas to chili.

Table 2 shows that the outgrowers differ significantly in terms of their individual characteristics across the three schemes.[5] PAM IPS groundnut outgrowers stand out in several respects. They are, on average, younger and substantially less likely to be female. They also have the highest literacy rates and the greatest exposure to formal schooling. Tropha outgrowers generally occupy an intermediate position in terms of age and schooling but have the highest share of women, while Malawi Mangoes suppliers are the oldest group and have the lowest levels of literacy and formal schooling.

While the chili and mango outgrower schemes appear to be more inclusive of women who account for nearly 64 and 57 percent of outgrowers, Table 3 reveals that the gender and intra-household dynamics of participation in these schemes are complex. The person listed as outgrower is not necessarily the household member carrying out most of the contract-related work or the member in charge of the revenues from its sales. Overall, named female outgrowers are less likely to manage the plots with the an-

[5] The questionnaire did not ask directly which household member is the outgrower. Households were sampled from the enterprise's outgrower lists, with enumerators instructed to interview the listed individual and to comment where they did not. We take the respondent to be the outgrower unless an enumerator comment names another household member, in which case that member is used.

chor crop and less likely to keep its revenues than their male counterparts. This is especially pronounced for PAM, where women are already a minority. More specifically, whereas virtually all men listed as outgrowers who sold groundnut appear to manage the revenues from this sale, this is not the case for 36 percent of women listed as outgrowers.

### Table 2. Outgrower characteristics

| | Tropha (246) | PAM (250) | Malawi Mangoes (250) | | | |
|---|---|---|---|---|---|---|
| **Age** | 53.6 | 47.4 | 55.8 | *** | * | *** |
| **Female (%)** | 63.8 | 36.8 | 57.2 | *** | | *** |
| **Married (%)** | 75.6 | 89.6 | 61.2 | *** | *** | *** |
| **Literate (%)** | 80.9 | 88.4 | 65.2 | ** | *** | *** |
| **Never attended school (%)** | 10.2 | 6.8 | 24.4 | | *** | *** |
| **Attended primary school (%)** | 74.4 | 60.4 | 60.0 | *** | *** | |
| **Attended secondary school or higher (%)** | 15.0 | 32.4 | 15.6 | *** | | *** |

Note: The first, second, and third sets of asterisks indicate the statistical significance of differences between Tropha and PAM, Tropha and Malawi Mangoes, and PAM and Malawi Mangoes outgrowers, respectively. * p < 0.10, ** p < 0.05, *** p < 0.01.

### Table 3. Outgrower management of the anchor crop and its revenues by gender

| | Tropha | | PAM | | Malawi Mangoes | |
|---|---|---|---|---|---|---|
| | Male (89) | Female (157) | Male (158) | Female (92) | Male (107) | Female (143) |
| **Manages plot(s) with anchor crop** | 71.9 | 70.1 | 96.2 | 68.5*** | 93.5 | 89.5 |
| **Manages anchor crop revenues** | 91.0 | 84.3 | 97.5 | 63.5*** | 93.0 | 90.1 |

Note: Asterisks on the statistics for “Female” present the statistical significance of the difference between male and female outgrowers by anchor enterprise. Management of the anchor crop revenues is reported only among outgrowers who sold the anchor crop. * = p < 0.10, ** = p < 0.05, ***= p < 0.01.

Whether commercial partnerships reach poorer or more vulnerable smallholders remains an unsettled question. The evidence is mixed. In some settings, enterprises recruit disproportionately from larger and better-endowed farms, while in others participants are no different from, or even poorer than, non-participants (Barrett et al. 2012; Bellemare 2012; Bellemare and Bloem 2018; Meemken and Bellemare 2020). Our three cases show that such differences can arise even within similar settings in the same country. A key distinction is the crop at the center of the arrangement and, in particular, what participation requires of households before returns begin to materialize.

For lower-value crops with thinner margins, meaningful income requires producing at scale. Where doing so is land-intensive, as with groundnuts, land-constrained households are less likely to participate — a pattern that PAM's explicit screening likely reflects and reinforces. Mango places much less demand on land, but participation requires an asset that takes years to establish. Grafting also requires farmers to forgo output for at least eighteen months and to bear the risk of the graft failing, making par-

ticipation less accessible to poorer or more risk-constrained households. Chili, by contrast, can generate returns at relatively small scale and soon after planting. Participation therefore imposes a different — and considerably lower — entry threshold: little is required beyond a willingness to allocate some land to an unfamiliar crop. Consistent with this, Tropha's outgrowers appear to be drawn from a broader cross-section of households, while the other two schemes primarily engage a more select, better-resourced group of farmers.

## ENGAGEMENT WITH THE ANCHOR ENTERPRISES

Table 4 summarizes key features of the outgrowers' engagement and relationship with the three anchor enterprises. Reflecting the different stages of development of the schemes, Malawi Mangoes outgrowers have worked with the enterprise for almost ten years on average, compared with four years for Tropha's chili outgrowers and three years for PAM's groundnut outgrowers. The latter, however, indicates only the duration of the contracting arrangement for groundnuts. During the focus group discussions, the outgrowers mentioned that many were drawn in through field staff already visiting their farms under their AOTM contracts. With three quarters of the PAM groundnut outgrowers also growing tobacco, their relationship with Pyxus International and AOTM likely goes back much further.

As mentioned above, the three enterprises differ in how they structure their relationships with outgrowers. Tropha uses two-year contracts that commit farmers to selling their entire chili harvest to the company. While the company undertakes to buy the harvest and collects the harvested chili at designated collection points where deliveries are weighed, graded, and purchased, Tropha does not provide inputs on credit within the surveyed areas and extension services are organized through lead farmers rather than dedicated field staff. [6] The lead farmers provide farmers within their zone with technical guidance and serve as contact points for chili production-related questions. Demonstrations of recommended production practices are also organized through them. In the study area, each lead farmer is responsible for over 200 outgrowers on average.

PAM contracts groundnut production on a seasonal basis and the arrangement revolves around an input package provided on credit against collateral and recovered from delivered output. Outgrowers are responsible for transporting their produce to designated buying points, where deliveries are weighed and purchased. Contracted volumes of groundnut are determined based on the area planted and a target yield, with the value of the required deliveries exceeding that of the input package. While farmers are free to sell any surplus elsewhere, PAM also offers to purchase excess production. PAM operates an extensive network of field technicians and has the lowest ratio of farmers to field staff of the three schemes. On average, around 87 tobacco and groundnut outgrowers are organized into a scheme supervised by a field technician who regularly visits farmers, with a minimum of four extension visits required for groundnut production. Farmers also keep a record book containing a copy of the contract, extension materials, and records of input receipt, extension visits, and groundnut sales.

Malawi Mangoes does not have formal contracts with its outgrowers. Farmers are, however, organized into zones, each supported by a dedicated extension worker. During the harvest season, farmers deliver their harvested mangoes to collection points on designated buying days, after which they are transported by the company to its processing facility.

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[6] While Tropha previously provided chili seed on credit, (individual) outgrowers currently purchase seed from the company on a cash basis.

To some extent, these institutional differences are reflected in accounts of the outgrowers themselves. PAM outgrowers were most likely to report they have an agreement with the enterprise. Of those, the majority indicated that the terms of the agreement were clear and that they had a written contract (86 and 87 percent, respectively). It is possible that the share of outgrowers reporting no agreement or contract reflects that some defaulted on their loans and expected not to have an agreement for the next season. Among the outgrowers who indicated having an agreement, 98 percent intend to continue working with the enterprise. Nine out of ten outgrowers also report having continuously produced groundnuts for the anchor enterprise since first engaging with them. The data also confirm the relatively frequent interactions between the outgrowers and field staff. Half of the outgrowers report having interacted more than four times during the 2024/25 season.

The high rates of continuous engagement recorded among PAM's groundnut outgrowers should not, however, be equated with unqualified satisfaction with the scheme. After successive poor harvests — attributed mainly to erratic rainfall and disease — the partnership is under pressure. The focus group discussions revealed considerable dissatisfaction, particularly regarding prices and the price-setting process. As prices were revised upwards multiple times during the 2024/25 season, outgrowers who delivered early received a lower price, and this was perceived as penalizing prompt repayment. Farmers also mentioned that extension services appear primarily geared towards tobacco and expressed some concerns about the quality of groundnut seed and timeliness of its delivery. PAM is perceived to enforce loan repayment strictly, and farmers generally continue to deliver groundnuts to meet their repayment obligations. Importantly, some outgrowers believe that defaulting on their groundnut loans could jeopardize their access to tobacco loans and contracts with AOTM. While the two arrangements are in fact contractually entirely separate, the perceived linkage may nonetheless contribute to the high rates of continued participation and loan repayment.

Tropha stands out with the lowest rate of continuous engagement (73 percent). Seventeen percent of the outgrowers — from whom Tropha had previously sourced chili — were no longer growing chili in 2024/25. Among those still cultivating chili, close to 10 percent indicated that their engagement with Tropha had not been continuous. During the focus group discussions, some participants expressed dissatisfaction with the arrangement, citing what they perceived as low prices, inconsistent grading, and long waits at buying points. Farmers also frequently contrasted their position with tobacco growers, who receive input packages on credit and, in their view, greater institutional support and recognition. Some participants indicated they reverted to growing tobacco because they perceived the returns to chili as lower.

The same features that lower the barrier to entry into the chili outgrower scheme, discussed above, may also lower the cost of exit. Because participation does not require loans or deposits, little binds a farmer to the scheme between seasons, and the discussions show engagement responding closely to changes in price, with a recent increase drawing some farmers back in. This may be compounded by the fact that interaction with lead farmers is limited. Half of the active outgrowers cultivating chili during the 2024/25 season report having interacted with the lead farmer at most two times.

Malawi Mangoes combines the longest tenure with the highest continuity (91 percent). About 72 percent of outgrowers report having an agreement with the enterprise, and 85 percent consider its terms clear. Surprisingly, given that the enterprise reports having no formal contracts, 73 percent of those who consider that they have an agreement report having a written contract. Similar to Tropha, half of the outgrowers report having interacted with the field staff at most twice. The average number of interactions, however, stands somewhat higher at 3.6. It seems likely that this continuity is driven largely by

the nature of mangoes as a highly perishable tree crop with fewer alternative commercial outlets. As with PAM, however, the high continuity rates mask growing dissatisfaction voiced in the focus groups. The most common grievances concerned logistics, with farmers reporting late collection trucks that forced them to guard harvested fruit while some spoiled, and long payment delays.

## Table 4. Outgrower engagement

| | Tropha (246) | PAM (250) | Malawi Mangoes (250) |
|---|---|---|---|
| **Nr. of years** | 4.4 | 2.9 | 9.9 |
| **Continuous engagement (%)** | 73.2 | 89.3 | 91.2 |
| **Nr. of interactions with lead farmer/field staff** | 2.9 | 5.0 | 3.6 |
| **Agreement (%)** | 72.0 | 89.2 | 72.0 |
| **Terms of the agreement are clear (%)** | 82.3 | 86.4 | 84.9 |
| **Written contract (%)** | 78.0 | 87.3 | 73.2 |
| **Intend to continue next season (%)** | 96.6 | 97.7 | 97.8 |

Note: Clarity of the terms, having a written contract, and the intention to continue next season are reported among outgrowers who report having an agreement with the anchor enterprise.

It is worth noting that, despite the differences between the schemes, outgrowers at all three sites are far more likely than their neighbors to report having received agricultural advice or training during the 12 months preceding the survey. The difference ranges from 21.5 to 51.6 percentage points, the largest being for PAM. Anchor enterprises hence serve as a key agricultural extension provider for their outgrowers, filling the gap left by relatively weak public extension: fewer than a quarter of farmers report having received any advice or training from government extension workers. PAM and Malawi Mangoes outgrowers, however, stand out with the largest gaps relative to their neighbors. The advice outgrowers received through the anchor enterprise is valued and almost universally acted on. On average, outgrowers rate anchor extension advice 3.6 out of 4 (between "useful" and "very useful").

## Table 5. Agricultural advice and training

| | Tropha | | PAM | | Malawi Mangoes | |
|---|---|---|---|---|---|---|
| | Outgrower (246) | Other (181) | Outgrower (250) | Other (171) | Outgrower (250) | Other (249) |
| **Any advice (%)** | 64.6 | 43.1*** | 80.8 | 29.2*** | 50.0 | 22.9*** |
| **Anchor advice (%)** | 42.3 | | 69.6 | | 33.6 | |
| **Anchor advice usefulness (1-4)** | 3.6 | | 3.6 | | 3.6 | |
| **Any anchor advice adopted (%)** | 95.2 | | 97.7 | | 96.4 | |
| **Gov. ext. serv. advice (%)** | 31.7 | 30.9 | 27.6 | 15.8*** | 22.8 | 14.1** |
| **gov. ext. serv. advice usefulness (1-4)** | 3.4 | 3.4 | 3.5 | 3.6 | 3.5 | 3.6 |
| **Any gov. ext. serv. advice adopted (%)** | 91.0 | 89.3 | 95.7 | 88.9 | 96.5 | 88.6 |

Note: Asterisks on the statistics for “Other” present the statistical significance of the difference between outgrower households and other households residing in the same villages by anchor enterprise. * = $p < 0.10$, ** = $p < 0.05$, ***= $p < 0.01$.

Communication and grievance handling are a common weakness across all three schemes. While at the outset of the partnership, Malawi Mangoes appears to have organized meetings at the company offices and consulted with farmers frequently, farmers report that these meetings were stopped and communication has since deteriorated. Both Malawi Mangoes and Tropha outgrowers lamented poor communication around buying times, with long waiting times at collection points. Across the three sites, outgrowers raise concerns through intermediaries — lead farmers, zone chairs, or extension workers — and doubt that their concerns are escalated or will receive any feedback. Responsiveness, where it exists, is somewhat ad hoc. When PAM farmers signaled germination failures, they were — in some cases — provided with replacement seed. Some Tropha outgrowers also read the recent price rise as an indirect answer to their earlier complaints. Some PAM and Malawi Mangoes outgrowers also perceive raising concerns as risky, since it may jeopardize their participation in the scheme or cause friction with other outgrowers.

Weighing and grading appear to be a frequent source of miscommunication and distrust. Tropha outgrowers perceive grading as inconsistent across various buying points, while Malawi Mangoes farmers report that collection-point weights were sometimes revised downward at the factory weighbridge without communication about the reasons for the change, and that they had no opportunity to recover the rejected fruit. In contrast, PAM's weighing of groundnuts was widely regarded as honest. This may reflect how the transaction is structured. Farmers deliver their groundnuts to a buying center themselves, and the produce is weighed and purchased in a single step, so farmers witness the weight on which payment is based. Tropha's transaction is structured similarly — chili is graded, weighed and paid for in cash at the buying point — and outgrowers received training on grading, but grading nonetheless remains contentious, as some farmers perceive it as inconsistent.

# AGRICULTURAL PRODUCTION

Households were asked for detailed information about their crop production during the 2024 dry or dimba season, the 2024/25 rainy season, and any other crops harvested outside the standard seasonal calendar, including cassava and perennial or tree crops. For those other crops, respondents reported production over the last 12 months. Growing conditions in 2024/25 were relatively poor at all three sites, with widespread pre-harvest losses most commonly attributed to drought and erratic rainfall. The production and productivity figures below should be read in that light.

Table 6 summarizes information on households' crop farming activities in the year prior to the survey. Farming systems differ substantially across sites and between outgrower households and their neighbors. PAM outgrowers farm at a markedly larger scale. They cultivate 3.2 ha during the rainy season, compared with 1.2 ha among other households in these villages. Interestingly, while owning significantly more land than their neighbors (2.7 compared with 1.1 hectares; see Table 1), they are also twice as likely to rent in additional farmland, and when they do, they rent much more of it. This coincides with greater reliance on hired labor and on mechanized equipment, albeit still very limited. Sixty-two percent of PAM outgrowers hired laborers to work on their plots, against 25 percent of other households. Outgrowers also tend to employ workers for more days. Averaged across all households, PAM outgrowers used nearly 49 person-days of hired labor against 7 days among other households — the largest contrast in the table. PAM is also the only site where mechanized equipment use differs significantly between groups. Seven percent of outgrowers used mechanized equipment, compared with none of the other households. While in absolute terms they also use significantly more household labor

— 270 person-days a year against 200 among their neighbors — relative to the area cultivated they use much less.

## Table 6. Household crop farming

| | Tropha | | PAM | | Malawi Mangoes | |
|---|---|---|---|---|---|---|
| | Outgrower (246) | Other (181) | Outgrower (250) | Other (171) | Outgrower (250) | Other (249) |
| **Rent any farmland (%)** | 7.3 | 6.1 | 28.4 | 14.0*** | 9.6 | 16.5** |
| **Area rented (ha)** | 0.65 | 0.85 | 1.50 | 0.84** | 0.49 | 0.65 |
| **Cultivate rainy season crops (%)** | 100.0 | 99.4 | 100.0 | 99.4 | 99.6 | 98.4 |
| **Area cultivated during rainy season (ha)** | 1.10 | 1.21 | 3.18 | 1.18*** | 1.5 | 0.99*** |
| **Cultivate dry season crops (%)** | 11.4 | 7.7 | 5.6 | 9.4 | 8.8 | 3.6** |
| **Area cultivated during dry season (ha)** | 0.18 | 0.32 | 0.52 | 0.36 | 1.17 | 0.39 |
| **Cultivate other crops (%)** | 85.0 | 9.9*** | 8.0 | 5.3 | 96.4 | 18.1*** |
| **Area cultivated excl. with other crops (ha)** | 0.20 | 0.18 | 0.16 | 0.23 | 0.12 | 0.13 |
| **Nr. of different crops cultivated during past 12m** | 3.4 | 2.5*** | 3.6 | 2.7*** | 3.4 | 2.2*** |
| **Nr. of HH members working on HH plots** | 3.8 | 3.3*** | 3.3 | 2.9** | 3.6 | 2.9*** |
| **Days worked on planting** | 132.5 | 114.2 | 130.6 | 98.9** | 138.0 | 100.4*** |
| **Days worked on weeding/non-harv. activ.** | 76.5 | 63.2 | 77.8 | 68.6 | 77.9 | 65.8 |
| **Days worked on harvesting** | 79.1 | 42.8*** | 78.7 | 38.9*** | 48.1 | 27.5*** |
| **Total days worked by HH members** | 284.6 | 211.7*** | 269.8 | 200.4*** | 252.4 | 187.5*** |
| **Any hired labor (%)** | 28.5 | 34.3 | 62.0 | 25.1*** | 43.2 | 25.3*** |
| **Hired days for planting** | 10.8 | 16.9 | 32.1 | 10.5** | 18.0 | 17.6 |
| **Hired days for weeding/non-harv. activ.** | 7.1 | 10.7 | 21.7 | 6.7* | 10.5 | 16.2 |
| **Hired days for harvesting** | 12.8 | 9.6 | 25.1 | 10.8 | 7.7 | 3.8 |
| **Total days worked by hired labor** | 8.7 | 12.7 | 48.9 | 7.0*** | 15.7 | 9.5 |
| **Used any mechanized equipment (%)** | 2.0 | 3.3 | 7.2 | 0.0*** | 3.2 | 2.4 |

Note: Indented rows report conditional means, computed over the subsample determined by the row above (e.g., area rented is averaged over households who rented land only, and person-days per activity over households that supplied any own-farm labor or hired any labor, respectively). Asterisks on the statistics for "Other" present the statistical significance of the difference between outgrower households and other households residing in the same villages by anchor enterprise. * = $p < 0.10$, ** = $p < 0.05$, ***= $p < 0.01$.

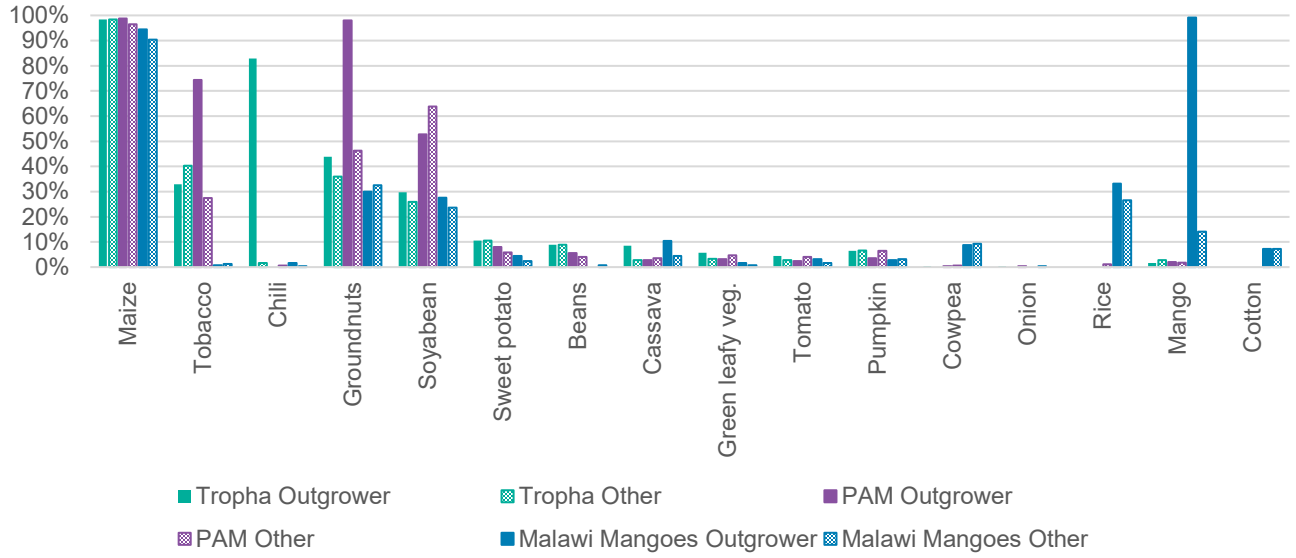
Tropha presents a different picture, with outgrowers operating on a very similar scale to their neighbors and primarily relying on family labor. On the same cultivated area, they supply 285 person-days of household labor a year against 212 among their neighbors, and they hire less rather than more. The latter is at first sight surprising, given that chili is widely regarded as a labor-intensive crop, particularly at harvest. Yet, the areas cultivated with chili are small (see Figure 3). The composition of hired labor is

skewed towards harvesting, which accounts for 42 percent of person-days among outgrowers compared to 26 percent among their neighbors. Chili appears to account for approximately half of that.[7]

Malawi Mangoes occupies an intermediate position, with outgrowers differing significantly from neighboring households, but to a much lesser extent than at PAM. More specifically, mango outgrowers cultivate more land (1.5 compared to 1 hectare during the rainy season) while renting less frequently (10 versus 17 percent) and are more likely to hire any labor (43 versus 25 percent). Their households also supply more own-farm labor, 252 against 188 person-days, although this reflects more household members working rather than any member working more.

Figure 2 displays the share of households cultivating different crops and Figure 3 shows the unconditional mean area planted by crop. The prominence of tobacco among PAM's groundnut outgrowers is notable. Nearly three quarters of the outgrowers in this sample cultivate tobacco, and those farmers on average dedicate 1.4 hectares to the crop. The differences in hired labor documented above should be interpreted with this in mind, as tobacco cultivation is labor-intensive. Similarly, mechanized equipment was also most frequently used on tobacco plots. Tobacco cultivation is also relatively common among Tropha's outgrowers and their neighbors, with one in three outgrowers cultivating tobacco on close to 0.7 hectares. During focus group discussions, outgrowers frequently contrasted chili with tobacco, describing chili as less labor-intensive and less costly to grow, but also noting the lower support for chili production compared to tobacco. In the study area, chili is grown almost exclusively by households linked to Tropha. Among the 246 households identified as outgrowers because they previously supplied chili to Tropha, only 204 (83 percent) grew chili in the year preceding the survey, consistent with the sharp recent decline in chili supply to Tropha noted earlier.

### Figure 2. Share of households cultivating selected crops

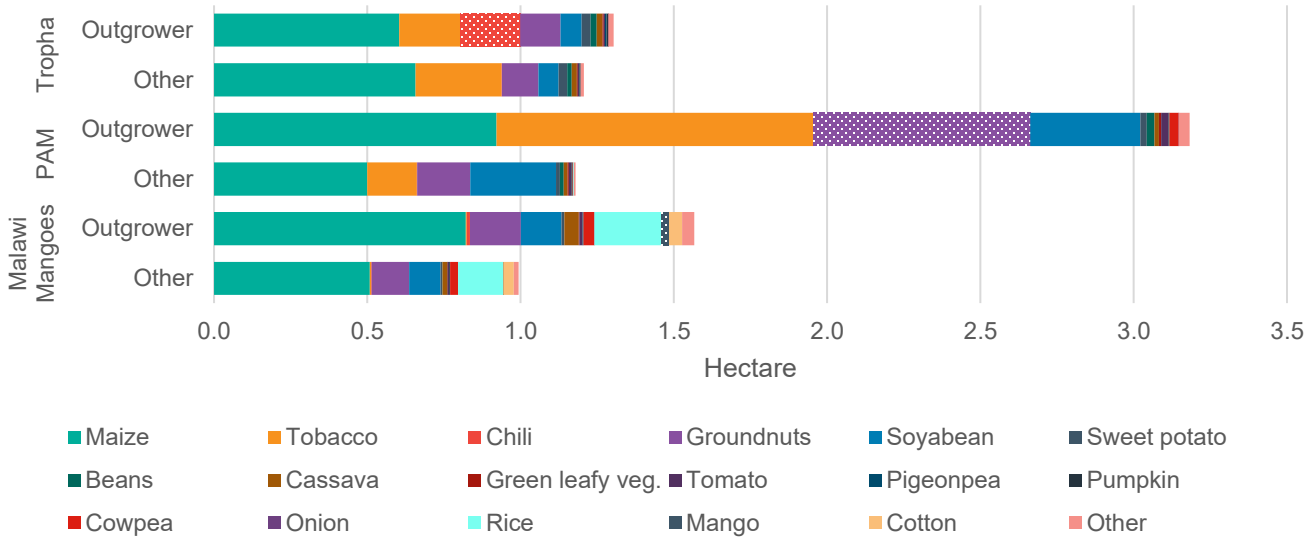



Maize dominates everywhere and the area outgrowers allocated to the main staple crop is at least as large as among their neighbors at all three sites. The production of the cash crop at the center of the

[7] Households were not asked to recall the number of days worked per plot. Instead, they were asked about how many days workers were hired to work on all household plots cultivated with seasonal crops during the dry season, the rainy season, and plots cultivated with other crops including perennial and tree crops. Given that active chili outgrowers rarely cultivated any other perennial or tree crops, we assume that the hired labor days used on plots with these crops were dedicated to chili.

anchor enterprise arrangement therefore appears to be accommodated alongside staple food production. Consistent with this, outgrower households across all three schemes cultivate approximately one more crop than their neighboring households and these differences are statistically significant (see Table 6). This pattern suggests that the contracted crops are being added to existing farming systems rather than displacing them, and that more diversified households may be more likely to enter these schemes in the first place. This runs counter to common concerns that contract farming arrangements induce specialization and reduce on-farm crop diversity.

### Figure 3. Cultivated area by crop




Finally, Table 7 summarizes information on the marketing of crop harvests among households that harvested any crop. Across all three schemes, outgrower households are significantly more likely to have sold some of their harvest, and they market a significantly higher share of their harvest overall. In the case of PAM and Malawi Mangoes, this also holds when comparing only households that sold (66.7 compared to 51.3 percent and 50.1 compared to 43.4 percent, respectively). At Tropha, by contrast, the difference lies entirely in whether households sell at all. Neighbors who do sell market a similar share of their harvest as outgrowers do. PAM and Malawi Mangoes outgrowers also obtain significantly higher total revenues from crop sales than their neighbors, whereas at Tropha the difference is not significant.

### Table 7. Household crop sales

| | Tropha | | PAM | | Malawi Mangoes | |
|---|---|---|---|---|---|---|
| | Outgrower (246) | Other (180) | Outgrower (250) | Other (170) | Outgrower (249) | Other (238) |
| **Any crop sales (%)** | 91.5 | 60.6*** | 98.8 | 85.3*** | 97.6 | 61.3*** |
| **Share of harvest sold (%)** | 39.0 | 27.0*** | 65.9 | 43.8*** | 48.9 | 26.6*** |
| **Crop sales revenues (MWK)** | 938,795 | 1,200,491 | 6,672,485 | 890,213*** | 1,022,528 | 261,666*** |

Note: Asterisks on the statistics for "Other" present the statistical significance of the difference between outgrower households and other households residing in the same villages by anchor enterprise. * = p < 0.10, ** = p < 0.05, ***= p < 0.01.

## Chili, groundnut, and mango

We now turn to the production and commercialization of the crops at the center of the arrangements with the anchor enterprises. Where possible, information for outgrowers is contrasted to their neighbors cultivating the same crop who do not have any direct link to the anchor enterprise. It is worth noting, however, that this comparison is not feasible in the case of chili, as it is grown virtually exclusively by outgrowers. For mangoes, statistics for non-outgrowers are reported, but they rest on only 35 households and should be read with corresponding caution.

Table 8 summarizes information on Tropha outgrower households' production and commercialization of chili. On average, households growing chili dedicate about 0.2 hectare to the crop, which typically accounts for around 22 percent of their total cultivated land. Input use is limited. More than a quarter of households applied no inputs at all, and among those who did, application rates are modest. Crop protection is almost entirely absent.

### Table 8. Chili production and sales

| | Outgrower (204) |
|---|---|
| **Area cultivated (ha)** | 0.23 |
| **Share of area cultivated in total (%)** | 22.4 |
| **No inputs (%)** | 27.0 |
| **Any organic fertilizer (%)** | 39.2 |
| **Organic fertilizer (kg/ha)** | 445.5 |
| **Any chemical fertilizer (%)** | 52.0 |
| **Chemical fertilizer (kg/ha)** | 81.2 |
| **Any insecticides (%)** | 2.9 |
| **Any herbicides (%)** | 0.0 |
| **Complete loss or no harvest (%)** | 2.0 |
| **Yield (kg/ha)** | 209.3 |
| **Gross value (MWK/ha)** | 1,183,964 |
| **Net revenue (MWK/ha)** | 1,118,185 |
| **Any sales (%)** | 95.1 |
| **Chili sold (kg)** | 54.6 |
| **Share of harvest sold (%)** | 95.7 |
| **Sold to Tropha (%)** | 92.8 |
| **Sold to other buyer (%)** | 13.4 |
| **Any chili left intended for sale (%)** | 9.3 |
| **Chili intended for sale (kg)** | 33.8 |

Note: Indented rows report conditional means, computed over the subsample determined by the row above. Input application rates (kg/ha) are averaged over households that used the input; the marketing breakdown (share of harvest sold, sold to Tropha, and sold to other buyer) over households that sold.

While farmers report achieving at least two flushes on 71 percent of the chili plots, yields average only 209 kilograms of dried chili per hectare over the year preceding the survey. The potential yield for chili reported in the Ministry of Agriculture's 2012 Guide to Agricultural Production is ten times higher. Combined with the small areas planted, this translates into modest absolute production volumes, with the average outgrower harvesting just 56 kg of dried chili. The gross value of chili production is, however, relatively high, at close to MWK 1.2 million per hectare.[8] Given the limited use of purchased inputs and hired labor, net revenue is only slightly lower, averaging MWK 1.1 million per hectare.[9] By the time of the survey, 95 percent of farmers had sold at least some chili, and on average they marketed 96 percent of their harvest. Among those who had not sold any chili, most either had not yet harvested a crop or still held harvested chili intended for future sale.

Based on farmers' reports on crop marketing, side-selling appears to occur but remains limited. Only 13 percent of farmers who sold chili reported selling to buyers other than Tropha, and just under half of these farmers (46 percent) also sold part of their harvest to Tropha. This is somewhat surprising, given that vendors were reportedly offering substantially higher prices for ungraded chili of mixed quality at the time of the survey. Selling to vendors is also more convenient, as they purchase directly from farmers' homes, whereas Tropha buys only on scheduled buying days at designated collection points. Several focus group discussion participants, however, cited distrust of vendors' weighing practices as a reason for preferring to sell to Tropha. Others viewed their production agreements as creating a clear obligation to market their chili through Tropha or expressed loyalty to the company that had first introduced the crop in their area. This sense of obligation, however, also suggests that the reported incidence of side-selling may represent a lower bound, as some respondents may have been reluctant to disclose sales to vendors. In 2026, Tropha increased its purchase price, a change that many outgrowers attributed, at least in part, to competition from vendors. Participants also indicated that vendor activity had declined somewhat since then.

Table 9 turns to groundnuts, comparing PAM IPS groundnut outgrowers with neighboring households that also cultivate the crop. Outgrowers devote significantly more land to groundnut production than other farmers, although this mainly reflects the larger scale of their farming operations rather than greater specialization in the crop. Both groups allocate a very similar share of their cultivated land to groundnuts.

Outgrowers follow a more input-intensive production strategy. Nearly nine in ten outgrowers planted improved seed at first planting, compared with fewer than one in five neighboring farmers. The difference persists among those who replanted following a dry spell after the onset of the rains. Although inoculant use remains surprisingly low, given that it is included in the input package provided by PAM, outgrowers are more than five times as likely as their neighbors to apply it. Beyond the contents of the package provided by PAM, however, the two groups differ little. There are no significant differences in the use of chemical fertilizer, insecticides, or herbicides, nor in the share of farmers cultivating groundnuts without any inputs at all, which remains a majority in both groups. In fact, outgrowers are even significantly less

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[8] Gross value of production is calculated as the total quantity harvested, valued at the household's reported sale price per kilogram or, where this price is unavailable or implausible, the median price. Because the entire harvest is valued, gross production includes output destined for home consumption and other uses, as well as sales.

[9] Net revenue is derived by subtracting the costs of rented-in land, seed, fertilizer, pesticides and herbicides, hired labor, and equipment rental from gross value. For plots on which more than one crop is grown, input costs are allocated in proportion to each crop's share of plot area. Since expenditures on hired labor and equipment rental were recorded only at the household level per season, these costs are first apportioned across plots according to plot area and then allocated to individual crops. In the case of equipment rental this is done only for plots and crops for which it was indicated that mechanized equipment was used.

likely to apply organic fertilizer. While they are no more likely than neighboring farmers to use chemical fertilizer, those who do apply it do so with substantially higher application rates.

### Table 9. Groundnut production and sales

| | Outgrower (245) | Other (79) |
|---|---|---|
| **Area cultivated (ha)** | 0.72 | 0.38*** |
| **Share of area cultivated in total (%)** | 27.4 | 27.7 |
| **(First) planted improved seed (%)** | 86.9 | 19.0*** |
| **Replanted (%)** | 24.5 | 17.7 |
| **Replanted improved seed (%)** | 76.7 | 28.6*** |
| **No inputs (%)** | 53.1 | 55.7 |
| **Any inoculant (%)** | 13.9 | 2.5*** |
| **Inoculant (kg/ha)** | 0.2 | 0.1 |
| **Any organic fertilizer (%)** | 10.2 | 22.8*** |
| **Organic fertilizer (kg/ha)** | 476.2 | 367.1 |
| **Any chemical fertilizer (%)** | 35.9 | 39.2 |
| **Chemical fertilizer (kg/ha)** | 175.3 | 110.2** |
| **Any insecticides (%)** | 8.6 | 3.8 |
| **Any herbicides (%)** | 4.9 | 2.5 |
| **Complete loss or no harvest (%)** | 4.9 | 3.8 |
| **Yield (kg/ha)** | 517.0 | 571.2 |
| **Gross value (MWK/ha)** | 1,024,910 | 943,574 |
| **Net revenue (MWK/ha)** | 586,211 | 810,960 |
| **Net loss (%)** | 32.7 | 7.6*** |
| **Any sales (%)** | 79.5 | 64.6*** |
| **Groundnuts sold (kg)** | 300.0 | 154.2*** |
| **Share of harvest sold (%)** | 84.2 | 69.5*** |
| **Sold to PAM (%)** | 93.8 | 2.0*** |
| **Sold to other buyer (%)** | 13.8 | 98.0*** |
| **Any groundnut left intended for sale (%)** | 13.5 | 16.5 |
| **Groundnuts intended for sale (kg)** | 154.1 | 221.6 |

Note: Indented rows report conditional means, computed over the subsample determined by the row above. Replanted with improved seed is calculated only for households who replanted. Input application rates (kg/ha) are averaged over households that used the input; the marketing breakdown (share of harvest sold, sold to PAM, sold to other buyer) over households that sold.

Despite their greater use of improved seed and inoculant, outgrowers achieve low groundnut yields that are statistically indistinguishable from those of other growers in the area, averaging 517 and 571 kilograms of unshelled groundnuts per hectare, respectively. This is well below potential and expected

farmer yields (MoAFS 2012), likely reflecting poor growing conditions during the 2024/25 season, with more than 60 percent of groundnut-growing households reporting pre-harvest losses due to drought, irregular rainfall, and crop disease, and no significant difference in the incidence of such losses between outgrowers and their neighbors. Gross value of production per hectare is likewise comparable across the two groups. Because of their more input-intensive approach, outgrowers' costs are, however, significantly higher, resulting in lower net revenues per hectare. Nearly a third of outgrowers even failed to cover their production costs in the 2024/25 season, against only 8 percent of other growers. The losses they incurred were also considerably deeper — a median of MWK 191,000 against MWK 22,000.

PAM outgrowers distinguish themselves most clearly from their neighbors in how they market their groundnuts. They are considerably more likely to have sold groundnuts (80 against 65 percent), and those who sold marketed a substantially larger share of their harvest (84 against 70 percent). While it may seem surprising that one in five farmers contracted to supply groundnuts to PAM reported no sales, this is largely explained by poor harvests. A quarter of the farmers who reported no sales suffered a complete crop loss and therefore had no harvest to market. Among those who harvested groundnuts but did not sell any, half produced less than 50 kilograms. For such small harvests, the costs of marketing may outweigh the benefits, and production was instead primarily retained for household consumption. Side-selling again appears to be limited. Only 14 percent of outgrowers who sold groundnuts reported selling to buyers other than PAM, and just 6 percent reported sales exclusively to other buyers. Moreover, yields among farmers who sold through both channels were well above average, suggesting they may have delivered sufficient quantities to PAM to repay their input loan and sold any surplus elsewhere.[10]

Finally, Table 10 details mango production for Malawi Mangoes outgrowers and their neighboring households with mango trees. Very few outgrowers (8 percent) have mango orchards. Instead, they typically have nine scattered mango trees, compared to fewer than five trees among their neighbors. Nearly all mango trees owned by outgrowers are reported to have been grafted. Company records indicate, however, that grafting was not always successful. Consequently, a sizeable share of trees may either not be bearing fruit or may be bearing fruit of local rather than improved varieties. The reported per-tree production figures therefore likely reflect averages across a heterogeneous stock of trees. This may help explain why outgrowers do not achieve higher yields per tree than neighboring households despite having grafted trees.

The price premiums that the scheme is expected to generate are not evident in the survey data. Both the gross value of the harvested mangoes and net revenues per tree are statistically indistinguishable between outgrowers and neighboring households. This stands in marked contrast to the focus group discussions, where participants estimated that a grafted mango tree generates three to four times as much revenue as a local one.

Outgrowers are, however, significantly more likely to sell mangoes than neighboring households (93 compared with 69 percent) and, when they sell, outgrowers also market a larger share of their harvest (97 percent versus 85 percent). Those who did not sell any mangoes either had no harvest to market (4 percent) or produced such small quantities that the entire harvest was consumed by the household, presumably because marketing small volumes is not worthwhile. The differences in marketing between

[10] Farmers were asked to indicate the different buyers they sold their crops to. However, we did not obtain information about the quantity sold to each separate buyer.

outgrowers and their neighbors are nevertheless more modest than the focus group discussions would suggest. Participants consistently described mangoes as having been primarily consumed before engagement with Malawi Mangoes, with sales occurring only occasionally. This characterization does not apply to neighboring households today. More than two-thirds of them sell mangoes and, among those who do, an average of 85 percent of production is marketed, entirely through buyers other than Malawi Mangoes.

### Table 10. Mango production and sales

| | Outgrower (248) | Other (35) |
|---|---|---|
| **Nr. of trees** | 8.7 | 4.5*** |
| **Complete loss or no harvest (%)** | 4.0 | 2.9 |
| **Yield (kg/tree)** | 82.9 | 76.5 |
| **Gross value (MWK/tree)** | 28,575 | 27,642 |
| **Net revenue (MWK/tree)** | 27,872 | 27,112 |
| **Any sales (%)** | 93.1 | 68.6*** |
| **Mango sold (kg)** | 686.6 | 250.4** |
| **Share of harvest sold (%)** | 96.8 | 85.3*** |
| **Sold to Malawi Mangoes (%)** | 97.8 | 0.0*** |
| **Sold to other buyer (%)** | 6.9 | 100.0*** |

Note: Per-tree statistics are reported only for farmers not growing mangoes in orchards, for which only the area in hectare was reported rather than the number of trees. Indented rows report conditional means, computed over the subsample determined by the row above. The marketing breakdown (share of harvest sold, sold to Malawi Mangoes, sold to other buyer) over households that sold.

Focus group participants also reported substantial vendor activity, with both local and non-local traders purchasing mangoes door to door and paying cash on the spot. It is possible that Malawi Mangoes' operations attracted additional traders to these communities and helped establish mango as a commercial crop. Despite this, the reported incidence of side-selling among outgrowers is particularly low. Only 7 percent of outgrowers who sold mangoes reported selling to buyers other than Malawi Mangoes. This is roughly half the rate observed among Tropha's chili outgrowers and PAM's groundnut outgrowers.

## Other crops

As noted above, crop production among outgrowers extends well beyond the crop at the center of the arrangement with the anchor enterprise. In fact, that crop consistently accounts for only a relatively small share of total cultivated area. Table 11 therefore summarizes information on some of the other important crops[11] grown by outgrowers and their neighbors. The figures reveal substantial differences in productivity across the three study sites, likely reflecting differences in agroecological conditions, weather patterns, or other contextual factors rather than the schemes themselves. Comparisons should therefore be made within panels rather than across them. Moreover, none of the observed differences

[11] Values are only reported when we observe at least 30 producers for each group of interest.

can be interpreted causally or attributed to participation in the anchor enterprise arrangements as outgrowers differ from their neighbors in a range of characteristics that may affect production outcomes.

It is notable that the crops at the center of the anchor enterprise arrangements with Tropha and PAM are neither the most important nor the most remunerative crop these farmers grow. For Tropha's outgrowers, chili returns more than groundnut and maize but is nonetheless outperformed by tobacco, grown by one third of outgrowers, which returns MWK 2.54 million per hectare against MWK 1.12 million for chili. For PAM's outgrowers the picture is even starker. Groundnut, at MWK 586,000 per hectare, is the least remunerative of all the crops they cultivate — roughly half the return of maize or soybean and just over a seventh that of tobacco, at MWK 3.84 million per hectare.

### Table 11. Yields and net revenue per hectare for key crops

| | | Tropha | | PAM | | Malawi Mangoes | |
|---|---|---|---|---|---|---|---|
| | | Outgrower | Other | Outgrower | Other | Outgrower | Other |
| Maize | Yield (kg/ha) | 1,117 | 1,211 | 1,865 | 1,201*** | 885 | 768 |
| | Net revenue (MWK/ha) | 735,577 | 796,868 | 1,211,770 | 908,233** | 550,417 | 507,056 |
| | Obs. | 241 | 178 | 247 | 165 | 236 | 225 |
| Groundnut | Yield (kg/ha) | 475 | 503 | 517 | 571 | 257 | 234 |
| | Net revenue (MWK/ha) | 648,615 | 671,323 | 586,211 | 810,960 | 291,467 | 273,954 |
| | Obs. | 108 | 65 | 245 | 79 | 75 | 81 |
| Soybean | Yield (kg/ha) | 403 | 398 | 729 | 750 | 567 | 407** |
| | Net revenue (MWK/ha) | 443,742 | 368,096 | 1,078,445 | 1,002,852 | 949,924 | 529,048*** |
| | Obs. | 73 | 47 | 132 | 109 | 69 | 59 |
| Tobacco | Yield (kg/ha) | 1,221 | 1,327 | 1,595 | 1,160*** | | |
| | Net revenue (MWK/ha) | 2,544,870 | 3,279,775 | 3,838,982 | 2,432,047*** | | |
| | Obs. | 81 | 73 | 186 | 47 | | |
| Rice | Yield (kg/ha) | | | | | 903 | 580** |
| | Net revenue (MWK/ha) | | | | | 928,484 | 626,146** |
| | Obs. | | | | | 83 | 66 |

Note: Values are only reported when we observe at least 30 producers for both groups of interest per site. Asterisks on the statistics for "Other" present the statistical significance of the difference between outgrower households and other households residing in the same villages by anchor enterprise. * = p < 0.10, ** = p < 0.05, ***= p < 0.01.

The results further reveal that although PAM outgrowers do not achieve higher productivity or profitability in groundnut production, they obtain significantly higher maize and tobacco yields and net revenues per hectare than their neighbors. In the case of tobacco, contracted growers receive production support from AOTM in the form of inputs on credit and extension services. The maize yield advantage is also concentrated among tobacco growers and may derive from a more input-intensive production strategy — with much greater use of improved seed and fertilizer application rates that are nearly twice as high as those of their neighbors. This likely reflects that a subset of contracted tobacco growers can also access maize seed and fertilizer on credit through AOTM.

The contrast between groundnut and tobacco within PAM’s outgrower base is instructive. Both crops are produced under a very similar albeit separate arrangement, with inputs provided on credit and recovered from delivered output and supported by many of the same field staff. While tobacco's costs of production are more than twice as high, at close to MWK 987,000 per hectare against MWK 439,000 for groundnut, this is more than offset by the crop's higher value. Tobacco generates a gross value of around MWK 4.8 million per hectare, nearly five times that of groundnut, so production costs absorb only around 20 percent of it, and only one in twenty tobacco growers failed to cover their production costs in the 2024/25 season. For groundnut, however, costs absorb 43 percent of gross value, and a third of outgrowers failed to cover them.

Tropha’s chili outgrowers differ little from their neighbors on any crop reported. This is consistent with the finding that, unlike the outgrowers of the other two enterprises, Tropha’s outgrower scheme does not appear to draw on a better-resourced group of farmers. Malawi Mangoes' outgrowers occupy an intermediate position, showing no advantage on maize or groundnut but significantly higher yields and net revenues for soybean and rice.

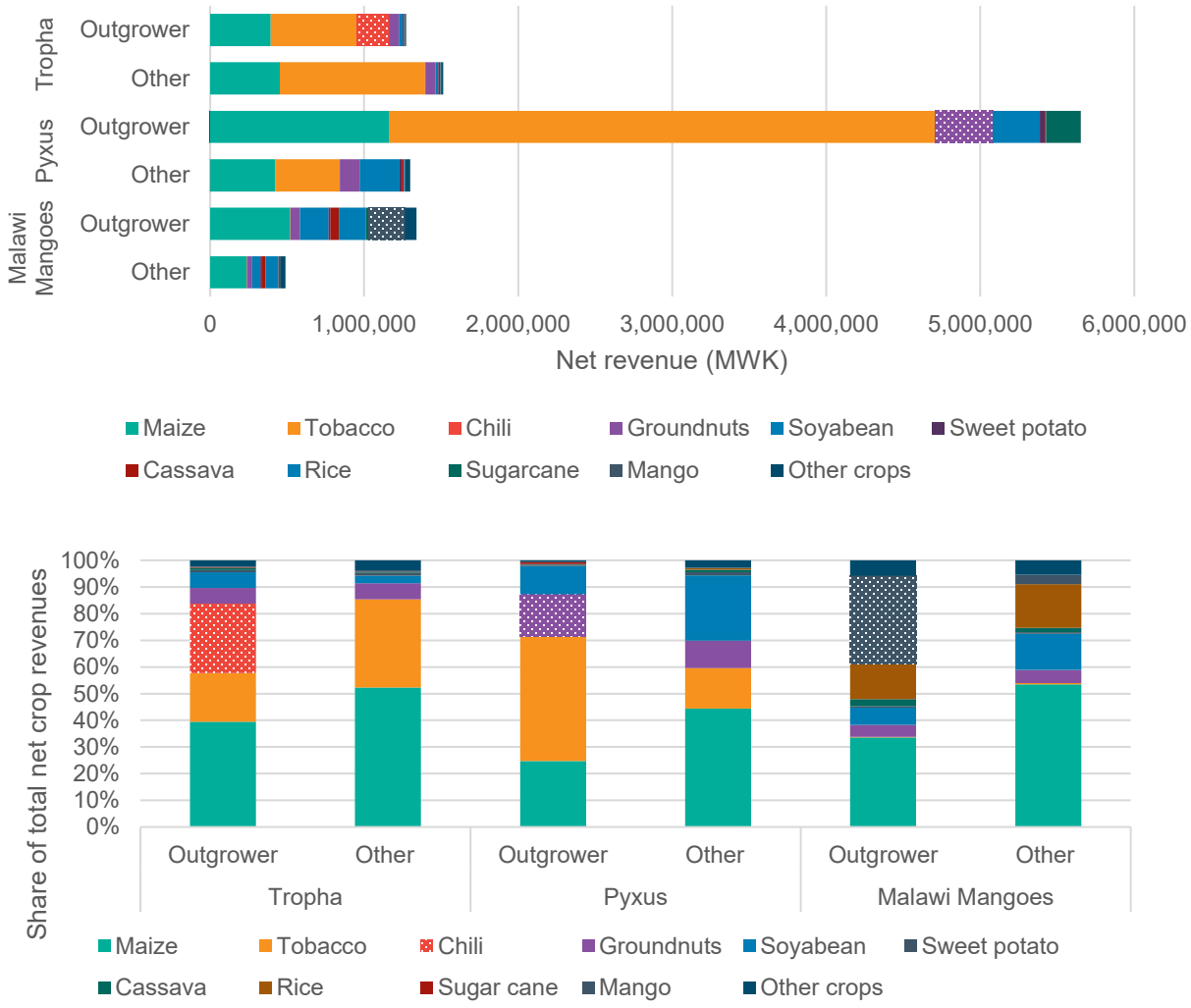
Figure 4 presents the mean total net revenue obtained from each crop (top panel) and its share in total income from crop farming (bottom panel) derived by averaging over all households per group. Across all three sites, the net revenues from producing the crop at the center of the anchor enterprise arrangements do not constitute the primary source of crop farming income. At the same time, PAM’s outgrowers do derive most of their crop farming income from tobacco, which is grown under contracts with AOTM — an arrangement resting on the same integrated production system.

Consistent with its primacy in land allocation, maize accounts for the largest share of net revenues from crop farming for households with no direct link to the anchor enterprises, as well as among Tropha's and Malawi Mangoes' outgrowers — albeit by a very small margin in the latter case. Malawi Mangoes outgrowers derive nearly equal shares of their total net crop income of around MWK 1.37 million from mango and maize (38 and 39 percent). Although mango takes up the least land and the fewest resources, mango outgrowers derive a greater share of their crop income from the anchor crop than chili (29 percent) or groundnut outgrowers do from theirs. In absolute terms, however, mango yields the lowest net revenue among producing outgrowers — MWK 235,000, compared with MWK 252,000 from chili and MWK 380,000 from groundnuts.

Groundnuts, on average, constitute only 17 percent of groundnut-growing outgrowers' total net crop revenues, the lowest anchor-crop share among the three schemes. In absolute terms, however, groundnut outgrowers generate the highest net revenue from their anchor crop. As mentioned above, tobacco dominates PAM outgrowers' incomes. Across all groundnut outgrowers, tobacco returns an average of MWK 3.55 million and accounts for 52 percent of net crop income. Among the three quarters of groundnut outgrowers who cultivate tobacco, the crop even accounts for 70 percent of crop income — MWK 4.77 million out of a total of MWK 6.99 million. The remaining quarter of outgrowers who do not grow tobacco have markedly lower crop farming incomes of around MWK 1.76 million and derive around 40 percent from groundnuts.

For roughly one third of Tropha's chili outgrowers who grow tobacco, the crop similarly accounts for 62 percent of their total crop revenues, and those households earn MWK 2.52 million from crop farming against MWK 671,000 for the two thirds who do not. As 17 percent of Tropha's outgrowers no longer cultivate chili, the unconditional figure underestimates net revenues from the crop. Active chili growers on average derive MWK 252,000, or just over one third of their crop income (34 percent), from it.

### Figure 4. Average net income per crop




Note: The top panel represents the unconditional average net revenue obtained from each crop. The bottom panel represents the unconditional average share in total crop revenues for each crop among the 1,270 households with a positive total income from crop farming. In both panels, statistics are derived by averaging over all households including those who do not produce the crop.

# LIVELIHOODS AND INCOMES

As illustrated in Table 12, which shows the share of households earning an income from, or engaging in, different income-earning activities, these partnerships and crop farming more generally are one component of a diversified livelihood strategy rather than a household's sole economic activity.

Across all three schemes, outgrower households are significantly more likely to engage in livestock husbandry. This is the only source on which outgrowers lead consistently at all three sites, and it is consistent with the greater asset ownership documented in Table 1. More generally, the data summarized in Table 12 mirror the selection patterns established earlier. PAM and Malawi Mangoes outgrowers own more land and more assets than their neighbors, while Tropha's chili outgrowers do not, and their livelihood portfolios are correspondingly harder to distinguish from those of the households around them.

## Table 12. Household income sources

| Share (%) of households engaged in/receiving income from : | Tropha | | PAM | | Malawi Mangoes | |
|---|---|---|---|---|---|---|
| | Outgrower (246) | Other (181) | Outgrower (250) | Other (171) | Outgrower (250) | Other (249) |
| Crop farming | 100.0 | 99.4 | 100.0 | 99.4 | 99.6 | 95.6*** |
| Livestock husbandry | 84.1 | 76.2** | 92.8 | 71.9*** | 78.4 | 64.7*** |
| Casual temp. empl. (*ganyu*) | 73.2 | 72.4 | 40.8 | 73.7*** | 58.8 | 71.5*** |
| Wage employment | 16.7 | 13.3 | 11.2 | 9.4 | 10.4 | 11.6 |
| Household (non-farm) enterprise | 27.6 | 30.4 | 38.8 | 30.4* | 33.6 | 37.3 |
| Fishing and aquaculture | 1.6 | 0.6 | 0.4 | 3.5** | 10.0 | 9.6 |
| Forest-based collection | 74.0 | 82.3** | 64.4 | 71.3 | 63.6 | 71.5* |
| Remittances or gifts | 51.6 | 55.8 | 40.4 | 37.4 | 52.0 | 41.0** |
| Agricultural input subsidies | 19.1 | 20.4 | 13.6 | 9.4 | 12.4 | 9.6 |
| Other | 52.4 | 54.1 | 53.6 | 39.8*** | 42.0 | 36.5 |

Note: Asterisks on the statistics for “Other” present the statistical significance of the difference between outgrower households and other households residing in the same villages by anchor enterprise. * = p < 0.10, ** = p < 0.05, ***= p < 0.01.

In the case of PAM, outgrowers’ economic position also appears to be reflected in a significantly higher rate of non-farm enterprise operation. Likely reflecting their stronger economic position and reduced need for additional off-farm income, PAM and Malawi Mangoes outgrowers are also significantly less likely than their neighbors to have any members engaging in casual temporary employment (ganyu). Only 41 percent of PAM outgrowers report any ganyu, against 74 percent of their neighbors — the largest difference in the table. This appears unrelated to competing demand for household labor on their own farms. While these households do supply more person-days to own-farm work, that reflects their larger number of working-age members rather than more intensive use of each member's time. At both sites, days worked per working-age member are statistically indistinguishable from those of their neighbors. Finally, forest-based collection — primarily of firewood for own use — is less common among outgrowers across all three sites, and the difference is significant for Tropha and Malawi Mangoes.

Table 13 shows the mean annual per capita income households derive from each of these sources, from all own-farm and off-own-farm sources, and in total. Table 14 summarizes the share of the different sources in total annual household income. These data largely reproduce the pattern evident in the previous sections. While Tropha’s chili outgrowers are largely indistinguishable from their neighbors, PAM outgrowers stand apart, with a total per capita income roughly 2.5 times that of every other group in the sample, nearly three times that of their own neighbors, and a markedly different composition. Malawi Mangoes’ outgrowers sit in between.

The importance of own-farm income among these households stands out. PAM outgrowers derive 71 percent of their income from their own farms, compared with 55 percent among their neighbors. Tropha outgrowers and their neighbors derive 56 and 60 percent, respectively, from farming, while Malawi Mangoes’ outgrowers rely less on their farms, with 52 percent of income from own-farm activities, compared with 37 percent among their neighbors. These shares are high relative to the districts in which these households live. Data from the 2024/25 Integrated Household Survey indicate that own-farm activities account for 46 percent of total income among crop-farming households in Mzimba, 40 percent in Kasungu and 32 percent in Salima, compared with 35 percent for crop-farming households in Malawi as a whole. Mirroring the pattern observed for landholdings, these data hence suggest that outgrowers tend to be drawn disproportionately from areas where households are better able to derive a livelihood from their own farms, and that within those areas they tend to rely on farming more than their neighbors. Tropha outgrowers are again the exception as their reliance on own-farm income is indistinguishable from that of their neighbors.

## Table 13. Household income per capita

| | Tropha | | PAM | | Malawi Mangoes | |
|---|---|---|---|---|---|---|
| Total net income per capita (MWK) | Outgrower (246) | Other (181) | Outgrower (250) | Other (171) | Outgrower (250) | Other (249) |
| All own-farm sources | 270,753 | 321,277 | 1,104,591 | 325,182*** | 336,698 | 134,290*** |
| Crop farming | 227,401 | 283,103 | 986,554 | 307,642*** | 259,442 | 93,485*** |
| Anchor crop | 39,417 | 827*** | 70,680 | 31,221*** | 64,877 | 4,593*** |
| Other crops | 187,984 | 282,276** | 915,874 | 276,421*** | 194,565 | 88,892*** |
| Livestock husbandry | 43,352 | 38,174 | 118,038 | 17,540*** | 77,256 | 40,806** |
| All off-own-farm sources | 210,067 | 242,071 | 536,939 | 245,056*** | 320,772 | 259,988 |
| Casual temp. empl. (*ganyu*) | 69,971 | 78,211 | 37,985 | 102,796*** | 75,532 | 100,626* |
| Wage employment | 28,851 | 30,087 | 35,415 | 22,552 | 30,685 | 27,142 |
| Household (non-farm) enterprise | 14,463 | 30,338** | 75,112 | 29,942** | 70,090 | 55,372 |
| Fishing or aquaculture | 548 | 120 | 37 | 393** | 30,450 | 22,614 |
| Forest-based collection | 18,369 | 23,449* | 24,852 | 22,293 | 30,246 | 23,046 |
| Remittances or gifts | 20,572 | 21,684 | 11,105 | 13,796 | 18,599 | 15,044 |
| Agricultural input subsidies | 6,587 | 9,796 | 4,327 | 2,897 | 4,439 | 3,131 |
| Other | 57,292 | 58,182 | 352,433 | 53,285*** | 65,171 | 16,143*** |
| Total | 487,407 | 573,144 | 1,645,857 | 573,135*** | 661,909 | 397,409*** |

Note: Asterisks on the statistics for "Other" present the statistical significance of the difference between outgrower households and other households residing in the same villages by anchor enterprise. * = p < 0.10, ** = p < 0.05, ***= p < 0.01.

For all three schemes, however, the anchor crop contributes only a modest share of household income, ranging between 9 and 11 percent. For Tropha, the unconditional figure somewhat understates the crop's contribution among households that continue to grow chili, for whom it accounts for nearly 13 percent of income. While for Malawi Mangoes outgrowers the anchor crop appears to carry a meaningful share of the difference in own-farm and total household income, the much larger gap between PAM outgrowers and their neighbors appears unrelated to their revenues from groundnut production.

The clearest livelihood difference between outgrowers and their neighbors lies in the importance of temporary casual labor. Ganyu accounts for just 6 percent of PAM outgrowers' income, compared with 22 percent among their neighbors. Malawi Mangoes shows a similar though less stark contrast. Ganyu accounts for 18 percent of outgrower households' income, compared with 30 percent among their neighbors. This largely reflects a difference in participation in ganyu, with outgrower household members much less likely to take up any casual employment. Among those who report ganyu income, outgrowers earn as much from it as their neighbors. Tropha's outgrowers are the exception as they derive a larger share of their income from ganyu than their neighbors, 17 versus 12 percent, although the difference is not statistically significant.

## Table 14. Household income shares

| Share (%) of total net household income from: | Tropha | | PAM | | Malawi Mangoes | |
|---|---|---|---|---|---|---|
| | Outgrower (246) | Other (181) | Outgrower (250) | Other (171) | Outgrower (250) | Other (249) |
| All own-farm sources | 55.6 | 60.0 | 71.3 | 55.0*** | 51.8 | 36.5*** |
| Crop farming | 46.0 | 52.3 | 64.2 | 51.5*** | 38.4 | 27.4*** |
| Anchor crop | 10.6 | 0.1*** | 8.7 | 6.1 | 9.5 | 0.9*** |
| Other crops | 35.4 | 52.2* | 55.5 | 45.4*** | 28.9 | 26.5 |
| Livestock husbandry | 9.6 | 7.7 | 7.1 | 3.5*** | 13.4 | 9.1 |
| All off-own-farm sources | 42.9 | 37.2 | 28.2 | 44.2*** | 47.3 | 62.5*** |
| Casual temp. empl. (*ganyu*) | 17.4 | 11.5 | 5.8 | 21.9*** | 18.1 | 29.6*** |
| Wage employment | 4.4 | 4.0 | 2.5 | 2.3 | 2.8 | 4.1 |
| Household (non-farm) enterprise | 3.3 | 3.5 | 5.0 | 5.4 | 7.3 | 8.5 |
| Fishing or aquaculture | 0.2 | 0.0 | 0.0 | 0.1** | 3.5 | 3.7 |
| Forest-based collection | 6.0 | 6.6 | 2.9 | 5.2** | 5.2 | 7.1 |
| Remittances or gifts | 4.5 | 5.1 | 1.4 | 2.1 | 4.8 | 4.8 |
| Agricultural input subsidies | 1.6 | 2.8* | 0.6 | 0.8 | 1.0 | 1.0 |
| Other | 7.1 | 6.4 | 10.5 | 7.2* | 5.6 | 4.6 |

Note: Asterisks on the statistics for “Other” present the statistical significance of the difference between outgrower households and other households residing in the same villages by anchor enterprise. * = p < 0.10, ** = p < 0.05, ***= p < 0.01.

The income differences documented above are broadly reflected in households' own assessments of their circumstances and their food security. Table 15 summarizes information on households’ food consumption in the week preceding the interview, their food insecurity experiences over the past 12 months[12], and their perceptions about the adequacy of their food consumption and income, and their relative wealth.

PAM's outgrowers stand apart on every measure. Their diets are more diverse, with a dietary diversity score of 8.4[13] against 7.3 among their neighbors, and they are more likely to have consumed all five recommended food groups[14] over the last 7 days (39 against 24 percent). Fewer of them experience moderate or severe food insecurity (45 against 70 percent), and fewer describe their food consumption over the past month as inadequate (28 against 54 percent). Only 11 percent place themselves on the very lowest step of the 6-step poverty ladder, against 35 percent of their neighbors, and they are the most likely of any group to report that their circumstances improved over the past year (44 against 33 percent). Malawi Mangoes' outgrowers occupy an intermediate position: they report markedly less food insecurity than their neighbors — 65 against 80 percent moderately or severely food insecure, and 35 against 47 percent severely so — but their diets are no more diverse, and they are no more likely to consider their income sufficient or to place themselves higher on the ladder. Tropha's chili outgrowers

[12] The prevalence of moderate or severe food insecurity in the last 12 months is measured by the FAO Food Insecurity Experience Scale. This is an experience-based metric of food insecurity severity used to estimate the percentage of a population that faces difficulties in accessing enough safe and nutritious food for normal growth and development and an active and healthy life. It relies on people’s direct responses to eight questions about their experiences facing constrained access to food. The resulting prevalence of food insecurity was calculated using the dedicated application at https://fies.shinyapps.io/ExtendedApp/.

[13] The Dietary Diversity Score is a count of food groups consumed in the last 7 days. The food groups considered are cereals; roots and tubers; legumes, nuts, and seeds; vegetables; fruits; meat; fish and seafood; milk and dairy products; eggs; oils and fats; sugar and sweets; spices, condiments, and beverages. An equivalent measure based on consumption of the same 12 food groups in the last 24 hours is used as a reference indicator in the IPC acute food insecurity classification (IPC 2021).

[14] The five food groups recommended for daily consumption are fruit, vegetables, pulses or nuts, animal-source foods, and starchy staples. An equivalent measure based on consumption of the same food groups in the last 24 hours is commonly used as a measure of diet quality (Herforth 2023).

again differ little from the households around them, although they are more likely to have consumed all five recommended food groups (43 against 33 percent).

### Table 15. Household food security and subjective wellbeing

| | Tropha | | PAM | | Malawi Mangoes | |
|---|---|---|---|---|---|---|
| | Outgrower (246) | Other (181) | Outgrower (250) | Other (171) | Outgrower (250) | Other (249) |
| Dietary Diversity Score (0–12) | 7.7 | 7.7 | 8.4 | 7.3*** | 7.6 | 7.5 |
| All-five (%) | 42.7 | 33.1** | 38.8 | 24.0*** | 27.6 | 29.7 |
| Moderate/severe food insecurity (%) | 59.3 | 57.8 | 45.4 | 70.1*** | 65.2 | 79.5*** |
| Severe food insecurity (%) | 27.6 | 24.1 | 19.4 | 38.1*** | 35.4 | 47.0*** |
| Food cons. in past month = inadequate (%) | 51.6 | 43.6 | 28.0 | 54.4*** | 55.2 | 67.1*** |
| Current income = inadequate (%) | 28.9 | 34.8 | 25.2 | 41.5*** | 39.2 | 40.6 |
| Subj. poverty ranking = poorest (%) | 25.8 | 28.2 | 11.2 | 35.1*** | 28.0 | 32.5 |
| Circumstances deteriorated (%) | 30.5 | 26.5 | 13.6 | 16.4 | 14.8 | 14.5 |
| Circumstances improved (%) | 28.5 | 30.9 | 44.4 | 32.7** | 36.8 | 30.5 |

Note: Asterisks on the statistics for “Other” present the statistical significance of the difference between outgrower households and other households residing in the same villages by anchor enterprise. * = p < 0.10, ** = p < 0.05, ***= p < 0.01.

# CONCLUSIONS

Using data from a household survey conducted in 2025 and focus group discussions held in 2026, this paper examines how smallholder farmers engage with three anchor enterprises in Malawi, and how the households supplying them differ from their neighbors. The three schemes differ both in the crops at their center and in how the partnerships are structured. Tropha Estates sources bird's eye chili from smallholders in Mzimba under two-year contracts but provides neither inputs on credit nor formal extension services; PAM contracts groundnut production in Kasungu on a seasonal basis, with an input package provided on credit and recovered from delivered output, and operates an extensive extension network; and Malawi Mangoes sources fruit, without formal contracts, from farmers whose indigenous trees it grafted with improved varieties, and provides access to dedicated extension workers.

Although the pattern is not uniform across the schemes, participation is selective. All three arrangements draw disproportionately from larger households with older heads, and households with less than half a hectare — roughly the national median — are notably underrepresented. While Tropha’s chili outgrowers differ from their neighbors in some respects, they appear to be drawn from a broad range of households. In contrast, PAM’s outgrowers are by far the largest and wealthiest farmers. Malawi Mangoes also appears to attract better-off households, though less markedly. Who participates appears to reflect both how the arrangement is structured and the crop at its center.

While Tropha introduced a new crop, PAM and Malawi Mangoes delivered on technology adoption, mainly through the provision of improved seed and inoculant and grafting of indigenous trees with improved varieties. All three enterprises also serve as an important source of agricultural advice for their outgrowers and PAM stands out for its extension support. Yet none of the schemes seems to have delivered on productivity during the 2024/25 season. Yields are relatively low across all three crops, and in the case of groundnut and mango, outgrowers do not appear to perform better than their neighbors growing the same crops. Adverse growing conditions, including erratic rainfall, however, contributed to these outcomes .

What the arrangements do provide is a reliable market. It is in marketing that outgrowers differ most consistently from their neighbors. At all three sites, they are much more likely to sell part of their harvest, and they sell a larger share of it. Side-selling is less common than might be expected, despite the presence of active vendors offering competitive prices in all three areas. While low side-selling is unsurprising for a highly perishable crop with fewer alternative buyers such as mango, it is more notable for groundnut and chili. Groundnut has alternative uses and is easy to market, while chili, although more rarely consumed locally, is equally easy to sell once dried. In both cases, loyalty to the enterprise and distrust of vendors and their weighing practices appear to play a role. For PAM's outgrowers, however, the contractual obligation to repay input loans, as well as the value of maintaining access to inputs and extension services in subsequent seasons, likely provides a strong reason to sell to the enterprise. The data may also understate the practice, as outgrowers know that selling elsewhere can breach their agreement and jeopardize their continued participation.

Communication and grievance handling appear to be weak across all three schemes. Concerns pass through intermediaries, are perceived rarely to receive a response, and speaking up is sometimes considered risky. Such problems frustrate farmers and can undermine an arrangement even where its underlying economics are sound (e.g., Ruml and Qaim 2021). Providing a forum for grievances through regular meetings or creating a channel through which concerns can be raised anonymously and reach management directly could help sustain the relationship. Effective farmer organizations or other trusted intermediaries could potentially provide an additional channel for grievances and contribute to improved trust and coordination between the enterprises and farmers.

The way the transaction itself is organized also matters. Late collection, long waits at buying points, and disputes over weighing and grading are frequent sources of frustration among Tropha and Malawi Mangoes outgrowers. These are areas where enterprises could make relatively low-cost improvements. Weighing and grading produce in farmers' presence, and applying grading standards that are simple, transparent, and consistent across buying points, could reduce disputes and build trust. Independent verification of weights and grades can further strengthen trust between buyers and farmers (Saenger, Torero, and Qaim 2014).

While structuring partnerships around input loans appears to reduce side-selling, the study also illustrates the risks of such an approach for both farmers and enterprises. PAM's model is by far the most intensive of the three, combining a relatively expensive input package provided on credit with extensive technical support. This model appears to work well for tobacco, a crop valuable enough to carry the cost of the package even when harvests disappoint. For groundnut, a lower-value crop with thinner margins, our results suggest that such an approach is more difficult to sustain as it leaves many farmers unable to cover their costs when yields disappoint, while exposing the enterprise to default. The arrangement appears to create incentives for both parties to commit resources to a crop, potentially leading to levels of investment that its returns may not support. Some outgrowers participating in the focus group discussions appear to have reached a similar conclusion, suggesting that PAM withdraw from input lending altogether and instead concentrate on providing a reliable market and stronger extension services for groundnut.

At the other end of the spectrum, Tropha's lighter-touch approach is likely to keep costs and barriers to entry low but makes it harder to retain outgrowers. The enterprise provides no inputs on credit and does not employ field staff, relying instead on lead farmers who each serve a large number of outgrowers. With little contact and few incentives to remain in the scheme between seasons, participation appears to rise and fall with the price offered. Tropha records the lowest rate of continuous engagement

of the three schemes and its supplier base has fluctuated in recent years. For an enterprise that needs a reliable, steady supply, the cost savings of such an approach may come at the expense of a stable supplier base.

The data further reveal that the anchor enterprise arrangements studied here are one part of a diversified livelihood strategy, and their contribution to household incomes is relatively modest. In all three cases, the crop at the center of the arrangement accounts for around a tenth of household income and is not the main source of farming income. Moreover, even the outgrowers studied here, who have larger-than-average landholdings, farm in commercial partnership with an enterprise, and derive considerably more of their income from their own farms than crop-farming households in Malawi generally, still rely on activities off their own farms for between 29 and 48 percent of their income. This is not to say that agricultural production in partnership with an anchor enterprise cannot constitute a household's main source of income. Among the three quarters of PAM's outgrowers who also grow tobacco under a separate contract with AOTM, tobacco accounts for more than two thirds of crop income and is the single largest source of household income. But this appears to require both a high-value crop and farming on a scale far beyond that of most smallholders in Malawi.

Taken together, these findings suggest that while anchor enterprise arrangements can contribute to household livelihoods, including for households with little land that do take part, their potential to lift households out of poverty is constrained by the same land scarcity that limits the role of farming more broadly. The arrangements tend to reach households with larger landholdings, and it is primarily for these households that they may form part of a viable pathway out of poverty through farming. For the majority of farming households in Malawi with smaller landholdings, better access to input and output markets and technical support through the anchor enterprise may raise the returns to farming, but the gain is unlikely to be large enough to overcome the more fundamental constraint of having too little land to make farming a reliable route out of poverty. For these households, such arrangements are therefore best seen as one piece of a broader livelihood strategy rather than a solution in themselves, underscoring the need for development strategies that look beyond farming to address the realities of increasingly land-constrained rural livelihoods.

The three cases confirm that anchor enterprise partnerships are shaped by the crop at their center. The crop's characteristics determine who participates and which model can be sustained. For lower-value crops with thinner margins, such as groundnut, meaningful income requires producing at scale, and scale requires land — a pattern that PAM's minimum-area and collateral requirements likely reflect and reinforce. Mango and other tree crops place little demand on land but require years to establish, which also makes participation less accessible to poorer or more risk-averse households, and to those that cannot afford to wait for returns. Chili, by contrast, can generate returns at relatively small scale and soon after planting, creating a considerably lower entry threshold. Mango's perishability and thinner local market also provide strong incentives for maintaining a longer-term commercial relationship, even without formal contracts or input loans. This is less true for widely grown, non-perishable crops such as groundnut, which farmers can easily sell elsewhere, or for chili, which, although not grown and consumed widely, is similarly easy to sell once dried. Where the crop itself does not provide sufficient reason to maintain the partnership, the relationship has to be held together in other ways. A model in which continued access to valuable services and inputs creates incentives for smallholders to uphold their agreements, as in PAM's case, is one such approach. This will, however, be economically viable and sustainable only where the crop can carry its cost. At the same time, a lighter-touch model that creates fewer ties between seasons may leave an enterprise more exposed to fluctuations in its outgrower base, as Tropha's recent experience illustrates.

Finally, these findings should be read in light of the environment in which these anchor enterprises were operating at the time of data collection. Anchor enterprise models depend on an enabling environment, including macroeconomic stability and a trade and exchange rate regime that allows formal exporters to offer competitive farm-gate prices (Benson, Cockx, and De Weerdt 2026). All three arrangements were operating amid high inflation and an unfavorable export and exchange rate regime, while growing conditions were also largely unfavorable. The evidence presented in this paper therefore provides a picture of how these partnerships operate under strain, in an environment where many of the conditions needed to support their functioning were absent.

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