SMALLHOLDER MOBILE CARD TRIAL, BIALLA OIL PALM PROJECT, WEST NEW BRITAIN PROVINCE, PAPUA NEW GUINEA

OPIC Mobile Card extension officers, Gerard Niu and Henry Turuo, with OPRA Researcher, Winston Eremu in the centre.

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1. INTRODUCTION

This report presents the results of a trial of a new payment initiative to improve the income and production levels of smallholders by mobilising labour for oil palm production in the Bialla Oil Palm Scheme in West New Britain Province. The payment initiative known as the 'Mobile Card' was trialled for 20 months on 71 smallholder blocks across three smallholder divisions. The Card was used on smallholder blocks alongside the two existing payment mechanisms: the 'Papa' and 'Mama' payments. Each smallholder block sells their oil palm fruit to Hargy Oil Palms Ltd. (HOPL) and presently has access to two payments per month. One payment is made to the registered blockholder (the Papa payment) and the other payment (the Mama payment) is specifically for women for the collection of the oil palm fruitlets (*lus frut*) that scatter on the ground during the harvesting of fresh fruit bunches (FFB). Both payments are linked to a specific block. Unlike the two existing payment mechanisms, the Mobile Card is not tied to work on the block where the worker resides; it can be used as a payment mechanism on any block requiring labour where a 'labour contract' has been signed by the blockholder and Mobile Card worker. This payment initiative is designed to facilitate labour mobility both between and within blocks.

Unlike existing payment arrangements, the Mobile Card labourer is paid a proportion of the oil palm fruit he harvests which is weighed on a separate docket from the Papa and Mama dockets. Thus, rather than being paid in cash by the blockholder, the company pays the labourer directly according to the percentage split agreed to by the blockholder and Mobile Card worker. The payment of labour in fruit (a share of the fruit harvested by the worker) overcomes the reluctance or inability of blockholders to fulfil their part of the labour contract, i.e., the full and timely payment of labour. By guaranteeing payment for work undertaken by hired or family labour there is an incentive for young men to contribute labour to oil palm production whether on their family block or as hired labour on other blocks.

A percentage split of the harvested crop for payment for work done by the Mobile Card worker was the preferred and most effective method of payment for harvesting and block maintenance labour, with the fruit weighed and recorded on a single docket. If there were two separate weighings for each share of the crop there would be potential for conflict

over the amount of fruit allocated to each weighing. Further, a proportional payment mechanism was preferred rather than a specified amount of fruit for work done (e.g. 2 nets) because the latter may reduce the Mobile Card labourer's incentive to fully harvest a block. A ratio method maintains an incentive to fully harvest a phase/block.

Before a labourer is employed on another's block as a Mobile Card worker a contract agreement (Appendix 1) is signed by the blockholder and the Mobile Card worker and this is witnessed and approved by an OPIC extension officer. Designed by OPIC, the contract specifies:

- the agreed percentage split of FFB weighed on the Mobile Card docket.
- The work to be done by the Mobile Card worker (e.g., harvesting, net stacking, pruning, fertiliser application, etc).
- Where the work will be carried out (Phase 1, 2, or 3).
- The period of the contract.

Once the contract has been signed and the details entered into the HOPL smallholder payment computer program, the labourer can begin work and be paid directly by the company. Contracts are renewable and the terms of the contract (e.g., percentage split of harvested fruit) can be renegotiated at the end of each contract period. Contracts can be cancelled if either party to the contract does not fulfil the terms of the contract.

Why the need for a Mobile Card?

Low harvesting rates

Research among Bialla oil palm smallholders revealed that a major determinant of low smallholder productivity is the considerable level of under-harvesting (Koczberski & Curry 2003). Under-harvesting leads to substantial production losses amongst smallholders and is a major cause of low productivity among growers. Analysis of five years of production data from the Hoskins scheme reveals growers on the land settlement schemes (LSSs) achieved 60% of plantation levels of production (tonnes/ha) while Village Oil Palm (VOP) growers achieved 38% of plantation levels. While some of the smallholder-plantation deficit is explained by lower farm inputs in the smallholder sector (e.g., less fertiliser inputs, delayed replanting and low levels of block maintenance), a substantial proportion of the difference is attributable to high rates of under-harvesting, particularly amongst VOP producers and towards the rear of the 6 ha LSS block furthest from harvest roads. At the time of the 2003 Bialla smallholder study, the extent of under-harvesting was gauged by using two sets of data: an OPIC 'late pickup' survey; and, a post-harvest survey of 57 blocks in the four LSS subdivisions: of Wilelo, Barema, Soi and Kabaiya.

The late pickup survey gathered data on the numbers of extra nets of fruit stacked for collection when the fruit collection truck was delayed for 24 hours or more. In 2002, HOPL was concerned that the tonnage of fruit harvested by smallholders for collection by company or contractor trucks was frequently underestimated by OPIC. This meant that extra trucks had to be redirected by HOPL to collect the additional fruit thus disrupting transport schedules. OPIC attributed the disparity between predicted and actual tonnages to the delayed pickups allowing smallholders more time to harvest fruit. In November 2002, OPIC counted the nets in those sections of Wilelo (one of the oldest LSS subdivisions) and Soi (a recent LSS subdivision) and Pakisi VOP where the truck was one or more days later than the scheduled pickup day. The results are shown in Table 1.1.

Table 1.1. Expected and actual numbers of nets of fruit collected in a harvest pickup round in November 2002 when the harvest truck was more than 24 hours late for the scheduled pickup.

Bialla subdivision	Expected number of nets	Actual number of nets	Increase (%)
Wilelo (older LSS)	231	362	57
Soi (recent LSS)	362	456	26
Pakisi (VOP)	133	169	27
Totals	726	987	36

Source: data supplied by OPIC-Bialla.

Across the three subdivisions, late pickups resulted in an increase in production of 36%. Soi LSS subdivision and Pakisi VOP had similar increases of 26% and 27% respectively, but the most significant increase was in the older subdivision of Wilelo where production increased by 57%. Wilelo subdivision has many elderly growers and at the time of the survey in 2002 many had delayed replanting, resulting in extensive areas of tall palms which are more difficult and time consuming to harvest. Delayed pickups thus allowed more time for harvesting, suggesting labour shortages are a factor explaining low harvesting rates.

Data on under-harvesting were also collected from post-harvest surveys. Surveys were conducted within two days following a harvest pickup and recorded harvesting rates from Phase 1 at the roadside edge of the block through to Phase 3 at the rear of the block. The surveys were conducted with OPIC officers in June 2002 in the older LSS subdivisions of Wilelo and Barema (33 blocks) and the more recent LSS subdivisions of Soi and Kabaiya (24 blocks). The results presented in Figure 1.1 demonstrate a considerable level of under-harvesting and also a very marked edge-effect in which harvesting rates decline from Phase 1

through to Phase 3 plantings at the rear of the block. The results are compared with post-harvest survey data collected among smallholders in the Hoskins scheme in May-June 2002.

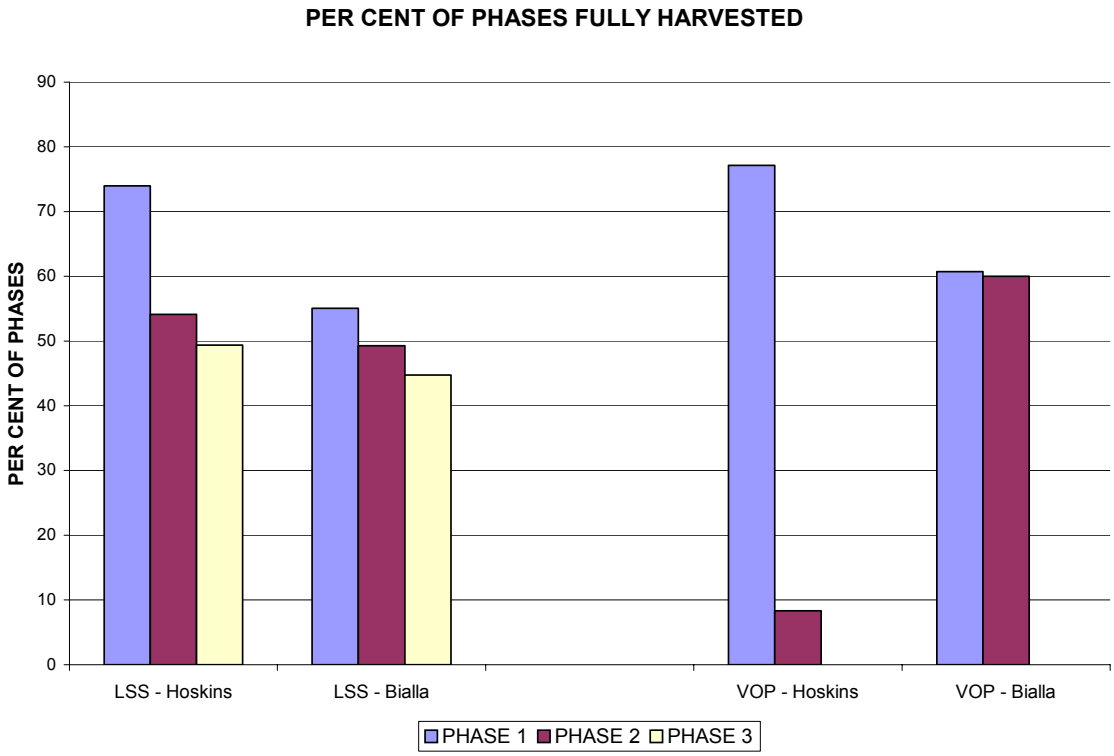

Figure 1.1. Per cent of phases fully harvested for Bialla and Hoskins LSSs and VOPs.

Harvesting rates tend to be higher at Hoskins for all three planting phases on the LSS and Phase 1 of VOP blocks. The lower harvesting rates recorded in 2002 at Bialla LSS may reflect the greater average age of plantings on the older subdivisions, thus lowering labour efficiency in harvesting. Because of the small number of VOP blocks in the survey with a Phase 2 planting, it is not possible to draw any conclusions about differences in the harvesting propensities of VOP smallholders on the two schemes. The harvesting surveys were undertaken when smallholders were receiving between K120 and K130 per tonne.

The harvesting edge-effect across the two LSSs reveals the impact of distance from the road on harvesting practices. On the LSSs at both Bialla and Hoskins less than half of Phase 3 plantings were fully harvested, compared with 55% and 74% of Phase 1 plantings at Bialla and Hoskins respectively. The greater distance which fruit must be carted by wheelbarrow from the rear of the block may serve as a disincentive to harvesting. However, a combination of factors is also likely to compound the effect of distance. This may include insufficient

labour or time to evacuate fruit from Phase 3 plantings, age of blockowner, difficult terrain (e.g., slopes, gullies, swampy ground), and minimal maintenance of oil palm stands at the rear of the block.

The Bialla survey was not large enough to estimate the annual losses of smallholder fruit, although some indication of potential losses can be gained by examining data from the nearby Hoskins scheme where a larger post-harvest survey was undertaken in May-June 2002. At Hoskins, total annual losses of smallholder fruit were conservatively estimated at over 60,000 tonnes per year, or around 25% of production for 2001. If we assume that smallholder under-harvesting rates at Bialla are similar to those at Hoskins (a likely assumption), then in 2002, over 33,000 tonnes of smallholder fruit were not processed by the HOPL mill. *In 2007 prices (average price K254.68/tonne), the cash losses to Bialla smallholders were K8.4 million or K2,429 per smallholder block.* Whilst it is likely that harvesting rates in 2007 have improved with the record high oil palm prices since April 2007, there remains considerable potential to increase smallholder productivity and incomes through raising harvesting rates.

Labour constraints

The Bialla smallholder study concluded that the primary determinants of under-harvesting and low productivity were household labour shortages and the under-utilisation of labour (Koczberski & Curry 2003) (Figure 1.2). Addressing household labour supply is therefore one approach for lifting harvesting rates.

As illustrated in Figure 1.2, the main factors constraining labour supply relate to household labour shortages, the under-utilisation of available labour, and the minimal use of hired labour — all of which are outcomes of various structural barriers and individual household circumstances that prevent labour from being deployed and adequately remunerated. Such labour constraints can result in incomplete harvesting, skip harvesting, abandonment of blocks or the semi-abandonment of a portion of an oil palm block (usually at the rear of the block, or an old stand of oil palm awaiting replanting).

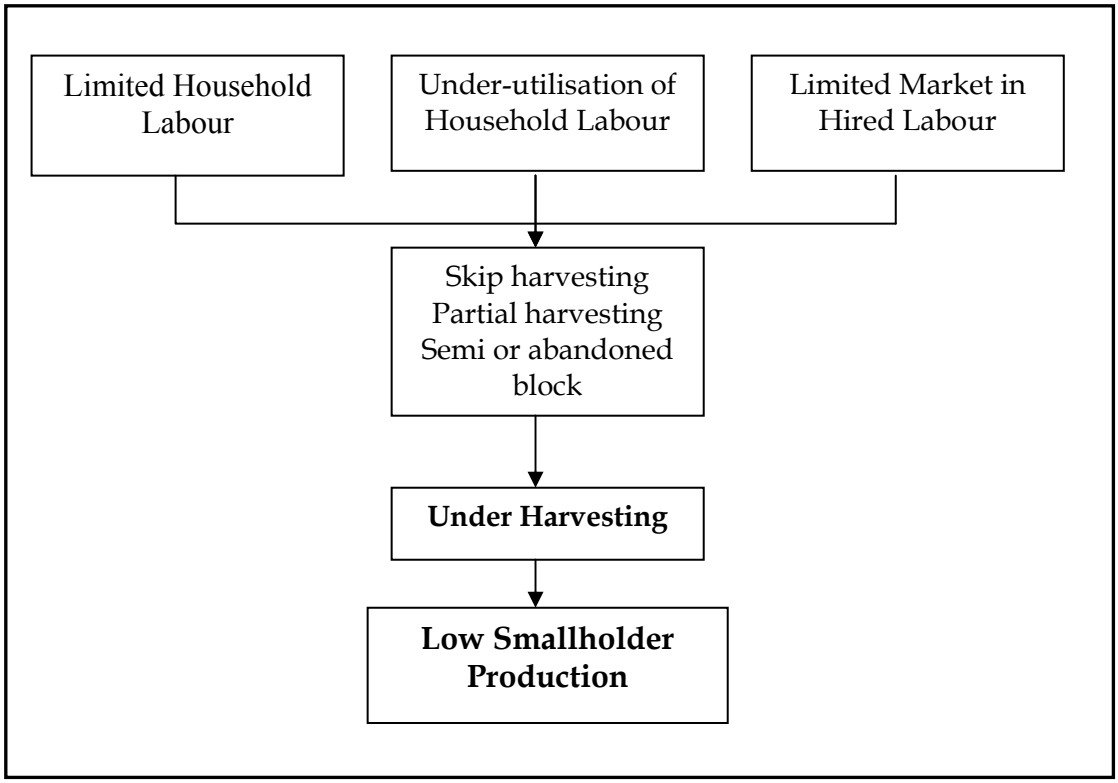

Figure 1.2. Flow chart of factors contributing to low smallholder productivity.

Limited household labour

Household labour shortages can be either long-term or short-term and tend to be experienced by the following types of households:

Long-term

- Elderly blockholders or widow households with one or no adult sons residing on the block. Elderly blockholders experiencing labour shortages tend to be concentrated in the older subdivisions of Wilelo, Barema and Tiaru.

- Young married couples with young dependants. Younger families are typically found in the newer subdivisions of Kabaiya and Soi.

- Female-headed households without adult sons.

Temporary

- Households with members incapacitated by illness.
- Customary or religious obligations that draw significantly on household members' time.
- Short-term absences from the block (e.g., visiting relatives in another province or temporary employment).

- Households where labour is temporarily diverted to other livelihood activities. This is more common on VOP blocks where some family members may shift their labour from oil palm to other more profitable or physically less demanding economic activities, such as cocoa production during seasonal flush periods or fishing when fish are abundant.

For various reasons labour-short blocks have limited access to off-block labour due for example to their restricted kinship ties or social networks (more of a factor on the LSS) and because they are often unable or reluctant to overcome labour shortages by hiring labour. They may not address labour deficits by hiring labour because of their low incomes and a perception that hired labourers are not reliable and may make claims on the block through their labour input (see Section 3). Another important reason is that blockholders are reluctant to pay cash for labour. Labour shortages can lead to consistently low productivity and incomes. Typically, there is also a reduced capacity to invest in block maintenance and replanting, hence the impact of labour shortages on productivity is cumulative through time.

Under-utilisation of available labour

Labour is under-utilised in oil palm production on the LSSs and VOPs for different reasons. On the LSS blocks under-utilised labour is commonly associated with highly populated blocks practicing the *markim mun* production strategy, where harvesting work and oil palm income are rotated on a monthly basis among co-resident households. As described in earlier studies among Bialla and Hoskins oil palm smallholders (see Koczberski *et al*. 2001; Koczberski & Curry 2003), the growing numbers of people and households per block often lead to social stresses that can result in disputes over labour allocations and income distribution. Conflicts commonly arise between fathers and sons over payments for oil palm work. When disputes are on-going, these densely populated blocks tend to switch from the co-operative *wok bung* production strategy where all block residents work together in oil palm production to the *markim mun* production strategy.

To some extent these disputes reflect inter-generational conflicts over the control and management of block where young men challenge the leadership of their father by disputing levels and types of remuneration. Young men, particularly on the LSSs, want to be paid well for their work (many are married with dependent children), rather than let their father manage the block finances on their behalf (e.g., pay the school fees of children residing on the block). Many sons are therefore challenging their father's authority and the traditional cultural norms surrounding labour and in-kind payment of labour by refusing to work on the block unless they are paid in cash and receive what they consider to be a fair

return on their labour. Such disputes serve to undermine the labour cooperation among co-resident households and can lead to a situation whereby a complete harvest of a block is not possible due to a 'shortage' of labour during the fortnightly three-day harvest period.

The shift to the *markim mun* production strategy also involves an erosion of the father's (the leaseholder) authority to organise, manage and remunerate labour because production decisions become the responsibility of the household head allocated that month's production (usually one of the married sons). This has implications for the ability of the leaseholder to mobilise labour, make block management decisions and repay farm debts. Also, as observed on several *markim mun* blocks there is a reduced incentive to undertake block maintenance as no single household is willing to take responsibility for block maintenance when the benefits of such work accrue to other households.

The under-utilisation of labour sometimes reflects a low commitment level to oil palm. For many customary landowners with VOP or leasehold blocks, oil palm may not be their primary income source or interest, and therefore they may harvest their blocks irregularly (once a month or less) and only when additional cash is required. Also, many customary landowners do not reside on their oil palm blocks preferring instead to live in the village. Such growers could be described as 'hobby' or part-time growers/semi-retirees who tend to produce to a target income, above which their motivation to produce oil palm declines rapidly.

A further reason for the under-utilisation of labour is the reluctance of people to provide labour because of payment uncertainty. Because of incomplete, deferred or non-payment of family labour (e.g., to brothers, wives, children), caretaker labour or hired labour (e.g., youth groups), the supply of labour for oil palm harvesting and block maintenance is constrained. This results in a great deal of under-utilised labour. In the case of family labour, women prior to the introduction of the *Lus Frut Mama* scheme (see below) contributed minimally to household oil palm production because returns to labour were greater in the production and sale of food at local markets where they had more control over the income earned from their labour.

Another important group whose labour is often under-utilised is caretakers. Long-term caretakers are often confronted with uncertain and under-payment of their labour by blockholders who are residing elsewhere. Because oil palm payments are made directly to the blockholder, the caretaker is wholly dependent on the blockholder for his or her income. If the blockholder lives at a distance from the block, then opportunities for remuneration may be limited and very irregular.

Poor and irregular remuneration creates few incentives for caretakers to maintain high production levels or to undertake block maintenance, resulting in very low production for months or years. There may also be some shifting of crop to other blocks which can exacerbate debt levels on the block. Importantly, major investments like replanting and fertiliser inputs can be neglected. Thus, the payment arrangements between blockholders and caretakers have a considerable bearing on block productivity.

Minimal use of hired labour

Labour shortages are rarely overcome through the use of hired labour. Only two of 103 smallholder blocks surveyed in 2002 at Bialla reported the regular use of hired labour (Koczberski & Curry 2003). There are several reasons why a market in labour has not developed in the smallholder sector, despite the large numbers of under-employed youth. Like the case of caretakers described above (and women before the *Lus Frut Mama* Scheme), young men are reluctant to provide hired labour because of concerns over payment uncertainty for their labour. Often when blockholders receive their oil palm payment, they have not budgeted for the payment of hired labour resulting in partial, deferred or non-payment for work done by labourers. The employment of youth and youth groups for contract harvesting and block maintenance has been very limited and many groups have failed as a result of the 'labour contract' not being fulfilled by the blockholder.

2. MOBILE CARD TRIAL

Mobilising labour

Taking into consideration the factors described in Section 1 that explain the constraints on labour in oil palm production, a strategy for mobilising labour within and across smallholder blocks must incorporate a mechanism that guarantees timely and 'fair' payment of family, caretaker and hired labour. Payment mechanisms that guarantee timely payment of labour should instil confidence that the labour contract will be fulfilled, thereby increasing the incentives and motivations to commit labour to oil palm production.

In developing an appropriate initiative to mobilise labour we first examined the principles underlying the success of the *Lus Frut Mama* Scheme. The evaluation of the *Lus Frut Mama* Scheme revealed that low rates of loose fruit collection by smallholder women prior to the scheme were the result of limited and/or uncertain remuneration of their labour by their husbands (Lewis 2000; Koczberski *et al.* 2001). Before the *Lus Frut Mama* Scheme, the company paid only the household head for oil palm harvested on the block. This was a cause of frequent domestic disputes and led many women to redirect their labour to income activities where they had greater control over the income earned (e.g., production and sale of food at local markets). By paying women directly for loose fruit collection the scheme removed much of the payment uncertainty when women relied on their husbands to remunerate them for this work. Thus the under-utilisation of women's labour was the result of an ineffective (uncertain) payment mechanism for their labour.

Another important finding explaining the success of the *Mama Lus Frut* Scheme was that cashless transactions proved to be a suitable form of payment for labour (Koczberski *et al.* 2001). Prior to the introduction of the *Lus Frut Mama* Scheme many men were unwilling or unable to hand over a share of the oil palm income to their wives because of the many demands on the income and the weak bargaining position of women in the distribution of the household oil palm income. Since the introduction of the *Mama Lus Frut* Scheme, most men are willing to place a few fruit bunches in the Mama net as their financial contribution to the

household budget. Also, block maintenance tasks performed by women, such as maintaining paths and palm circles, are now often 'paid' for at harvest time by placing some fruit bunches in the Mama net. *It is much easier for men to give fruit bunches than cash to their wives because a cashless transaction circumvents the competing claims on cash, thereby effectively guaranteeing a contribution by the male household head to the household budget.* Thus, by opening up a channel whereby men could 'pay' their wives in fruit rather than cash, it was much easier for husbands to fulfil their economic obligations to their wives and families. It was considered that a similar payment system for caretakers and hired labourers which used 'fruit' rather than cash would overcome the labour constraints associated with uncertain and incomplete remuneration of labour.

The trial

The Mobile Card trial began in 2006 following interest from OPIC, the Growers Association and HOPL. The trial incorporated the key principles underpinning the success of the *Lus Frut Mama* Scheme, in particular the guaranteed, timely and direct payment of the labourer by the company. The design principles and concept of the Mobile Card also built on the successful OPRA trial of the Mobile Card payment initiative amongst Hoskins oil palm growers in 2002-2003 which aimed at mobilising labour on conflict-ridden and labour-short blocks (Curry & Koczberski 2004). The Bialla trial made some minor operational changes to improve the running of the new payment system, and the final design was based on numerous meetings and discussions with senior OPIC managers and extension officers, and with key personnel from HOPL. The overall aim of the Mobile Card was to enable greater labour and payment flexibility as a way to enhance incentives for increasing smallholder production and incomes.

Two OPIC Mobile Card extension officers were employed full-time (funded by ACIAR) during the trial period from February 2006 to December 2007. One Mobile Card officer was responsible for Divisions 1 and 2, and the other was responsible for Division 3. The Mobile Card officers' main tasks were to promote, supervise and monitor the trial, and explain and organise contracts between blockholders and Mobile Card workers.

Immediately following the signing of a Mobile Card contract the Mobile Card officer conducted an inspection of the trial block. For each trial block, data were collected on levels of pruning, ring weeding, cover crop and general maintenance. This information provided a baseline to monitor changes in block condition. On each trial block the Mobile Card extension officers also maintained monthly production and income

records and dealt with any problems as they arose (e.g., late payments, payment inaccuracies or late renewal of contracts).

Plate 2.1. OPIC Mobile Card awareness meeting at Uasilau LSS subdivision.

Throughout the trial the officers were also responsible for conducting awareness among smallholders of the Mobile Card which they did in association with the OPIC Divisional managers and extension officers (Plate 2.1). They also reported regularly on the progress of the Mobile Card trial at OPIC staff meetings and Local Planning Committee meetings.

Prior to the trial's commencement HOPL modified their computer smallholder payment system to accommodate the trial. This involved programming the computer to accommodate the agreed percentage split between the blockholder and the Mobile Card labourer of the value of the fruit bunches weighed on the Mobile Card docket, and entering the dates of the contract period. During the trial, Mobile Card labourers were paid by cheque directly. The fortnightly production and income data recorded by HOPL for the Mobile Card, Papa and Mama production provided the data to assess the impact of the Mobile Card on block production and incomes.

To assist blockholders and Mobile Card workers with understanding the concept of a percentage split of the production and to arrive at a decision

Table 2.1. Ready Reckoner

	PERCENTAGE SPLITS																	
	Split 1		Split 2		Split 3		Split 4		Split 5		Split 6		Split 7		Split 8		Split 9	
	Papa	Mobile	Papa	Mobile	Papa	Mobile	Papa	Mobile	Papa	Mobile	Papa	Mobile	Papa	Mobile	Papa	Mobile	Papa	Mobile
	10%	**90%**	**20%**	**80%**	**30%**	**70%**	**40%**	**60%**	**50%**	**50%**	**60%**	**40%**	**70%**	**30%**	**80%**	**20%**	**90%**	**10%**
Kg harvested																		
50	5	45	10	40	15	35	20	30	25	25	30	20	35	15	40	10	45	5
100	10	90	20	80	30	70	40	60	50	50	60	40	70	30	80	20	90	10
200	20	180	40	160	60	140	80	120	100	100	120	80	140	60	160	40	180	20
300	30	270	60	240	90	210	120	180	150	150	180	120	210	90	240	60	270	30
400	40	360	80	320	120	280	160	240	200	200	240	160	280	120	320	80	360	40
500	50	450	100	400	150	350	200	300	250	250	300	200	350	150	400	100	450	50
600	60	540	120	480	180	420	240	360	300	300	360	240	420	180	480	120	540	60
700	70	630	140	560	210	490	280	420	350	350	420	280	490	210	560	140	630	70
800	80	720	160	640	240	560	320	480	400	400	480	320	560	240	640	160	720	80
900	90	810	180	720	270	630	360	540	450	450	540	360	630	270	720	180	810	90
Tonnes harvested																		
1	100	900	200	800	300	700	400	600	500	500	600	400	700	300	800	200	900	100
2	200	1800	400	1600	600	1400	800	1200	1000	1000	1200	800	1400	600	1600	400	1800	200
3	300	2700	600	2400	900	2100	1200	1800	1500	1500	1800	1200	2100	900	2400	600	2700	300
4	400	3600	800	3200	1200	2800	1600	2400	2000	2000	2400	1600	2800	1200	3200	800	3600	400
5	500	4500	1000	4000	1500	3500	2000	3000	2500	2500	3000	2000	3500	1500	4000	1000	4500	500
6	600	5400	1200	4800	1800	4200	2400	3600	3000	3000	3600	2400	4200	1800	4800	1200	5400	600
7	700	6300	1400	5600	2100	4900	2800	4200	3500	3500	4200	2800	4900	2100	5600	1400	6300	700
8	800	7200	1600	6400	2400	5600	3200	4800	4000	4000	4800	3200	5600	2400	6400	1600	7200	800
9	900	8100	1800	7200	2700	6300	3600	5400	4500	4500	5400	3600	6300	2700	7200	1800	8100	900
10	1000	9000	2000	8000	3000	7000	4000	6000	5000	5000	6000	4000	7000	3000	8000	2000	9000	1000
11	1100	9900	2200	8800	3300	7700	4400	6600	5500	5500	6600	4400	7700	3300	8800	2200	9900	1100
12	1200	10800	2400	9600	3600	8400	4800	7200	6000	6000	7200	4800	8400	3600	9600	2400	10800	1200
13	1300	11700	2600	10400	3900	9100	5200	7800	6500	6500	7800	5200	9100	3900	10400	2600	11700	1300
14	1400	12600	2800	11200	4200	9800	5600	8400	7000	7000	8400	5600	9800	4200	11200	2800	12600	1400

on the proportion of the crop to 'pay' a Mobile Card labourer (and hence their anticipated earnings), a ready reckoner was developed (Table 2.1). This was used by the Mobile Card extension officers when explaining to smallholders how the Mobile Card operated and for negotiating contract agreements. Although, initially the concept of a percentage split was difficult to grasp for many blockholders, they gradually developed an understanding of how it worked as the trial progressed. Some blockholders changed the percentage split at the contract renewal stage when they understood more about how the split determined the amounts of money paid to the Mobile Card worker and themselves.

Selection of trial participants

A total of 71 smallholder blocks were involved in the trial for varying periods. The selection of blocks for the trial focused on the following types of low producers:

- VOP growers with poorly maintained blocks.
- Caretakers receiving poor and/or irregular payment of their labour.
- Labour-short blocks of elderly or 'semi-retired' growers in the older LSS subdivisions.
- Labour-short blocks among recently married couples with young children on the new LSS subdivisions of Soi and Kabaiya.

While OPIC identified low producing blocks for inclusion in the trial, many blockholders themselves approached OPIC to be involved in the trial because they identified the potential benefits of the Mobile Card for overcoming production constraints on their block and/or solving conflicts between family members over the distribution of oil palm income. Prior to inclusion in the trial the blockholders were interviewed by the Mobile Card officers to assess their suitability for the trial. The assessment was forwarded to the OPIC Field Manager and the HOPL Smallholder Manager for final approval.

Originally, 40 blocks were to be included in the trial. However, because of the high level of interest among smallholders it was decided to progressively expand the number of trial blocks. In addition, there were 15 blocks at Uasilau LSS included in the trial. These blocks are six to ten hectares and have been informally subdivided by leaseholders to allow their children to plant and harvest oil palm. Because the block is under one agricultural lease, there are only two payments made to the block (Papa and Mama payments), which creates difficulties when allocating income amongst the family members managing these informally subdivided blocks. The Mobile Card was introduced on these blocks to solve this particular problem, and hence production data for these blocks were excluded from the analysis and are not reported here.

As shown in Table 2.2, the trial participants can be categorised into four main groups based on the relationship between the blockholder and the Mobile Card labourer. The most common contract arrangement was between fathers and sons (Table 2.2). The typical contract period was for three months with 68% of contracts being renewed one or more times. The average number of contracts per trial block was 2.28 (Table 2.3). The most common Mobile Card contract percentage split was 50:50, although the percentage split varied greatly depending on the relationship between the blockholder and the Mobile Card worker (Table 2.3) (see Section 3 for further discussion).

Table 2.2. Relationships of blockholders to Mobile Card workers.

Relationship	Number	Percentage
Son	23	32
Other co-resident relative	17	24
Caretaker	16	23
Hired labourer	13	18
Not identified	2	3
Total	71	100

Table 2.3. Mobile Card contract details by relationship of Mobile Card worker to blockholder.

Relationship	Average number of contracts	Most common percentage split Papa: Mobile Card worker
Son	2.17	40:60
Other co-resident relative	2.35	50:50
Caretaker	2.56	40:60
Hired labourer	2.23	50:50
Not identified		
Total	2.28	50:50

1. Father-son blocks. These blocks are found on the older LSS subdivisions and are heavily populated blocks with several co-resident married sons or daughters and other relatives. They

often experience conflicts over the distribution of oil palm income. Typically, these blocks have a *markim mun* production strategy in place which means that the family whose month it is to harvest and collect the income is unable to harvest all available crop in each fortnightly harvest round. Block maintenance is often poor. The most common percentage split on father-son Mobile Card contracts was 40:60 (father:son), followed by the 10:90 (father:son) percentage split. The latter was largely restricted to blocks where the father was elderly/retired or where the contract was for only one phase.

2. Other co-resident relative-blockholder blocks. Other co-resident relative is someone from outside the immediate family such as an in-law, adult brother or other relative, often someone visiting the LSS block from 'home'. They often reside on the block for relatively long periods with their residency typically dependent on their labour contribution to oil palm production. These relatives are mostly found on labour-short blocks and in some cases have been 'adopted' by the blockowner. The most common Mobile Card contract percentage split on these blocks was 50:50.

3. Caretaker blocks. Caretakers are often disadvantaged by irregular and under-payment of their labour by the blockholder. Payment uncertainty and irregular payments are disincentives to production, resulting in low production and poor block maintenance. Most of these blocks are in the LSS subdivisions of Soi, Kabaiya and Lalopo where some of the leaseholders are customary landowners from nearby villages. These leaseholders tend to spend most of their time in their villages or do not have ready access to labour. These blocks are generally very poorly maintained with high levels of under-harvesting. The most common percentage split on caretaker blocks was 40:60 (blockholder:caretaker), followed by the 60:40 percentage split.

4. Hired labourers. Hired labourers were mostly engaged by aged or widowed blockholders with few adult sons living on the block, or by young families with dependant children. Production on blocks owned by elderly leaseholders is low and variable because they experience regular labour shortages. These types of blocks are common in the older LSS subdivisions in Division 2. The most common percentage split for contracts with hired labourers was 50:50, followed by the 10:90 (blockholder:hired labourer) percentage split. The latter split was used on semi-abandoned and abandoned blocks where

yields were very poor and enormous effort was required by the hired labourer to rehabilitate the blocks before production levels could be improved. On these blocks there was an understanding that the percentage split would eventually move in favour of the blockholder once the production of the block improved.

Whilst it was anticipated that VOP blocks would be a target group for the trial, recruitment of young men as Mobile Card workers was limited because many of them in Division 2 and 3 were employed with logging companies at Barema and further east along the coast near Ulamona. Also, the record high oil palm prices from April 2007 meant that many young village men with their own oil palm holdings were unwilling to form youth groups to work on other people's blocks.

The trial results are discussed in the next section.

3. TRIAL RESULTS AND DISCUSSION

Productivity improved significantly on Mobile Card blocks as measured against average monthly LSS and VOP production. Monthly production increased from 6% above the LSS/VOP average without the Mobile Card to 40.45% above the LSS/VOP average during months when Mobile Card labour was deployed. This gave a productivity improvement of 34.4 percentage points, just less than the 38 percentage point gain recorded for the Mobile Card trial at Hoskins (Curry & Koczberski 2004). The success of the Mobile Card trial can also be gauged by the fact that 68% of contracts were renewed once or more, with the average number of contracts per block being 2.28 (Table 2.3).

Factors affecting the trial results

Productivity improvements were documented for 72% of trial blocks with 28% improving by more than 50 percentage points (Table 3.1). At the earlier Hoskins trial, productivity improvements were recorded on 90% of trial blocks. The difference between Bialla and Hoskins in the proportions of trial blocks showing an improvement in productivity relates to the relatively large proportion of blocks in the Bialla trial that were already high producers. Indeed, 30% of trial blocks were achieving productivity levels of more than 50% above average productivity ***before*** entering the trial (Table 3.2). These blocks were concentrated in Soi and Kabaiya. Prior to joining the trial they were achieving productivity rates of 43% and 28% respectively above average LSS productivity. Understandably, from such a strong starting position scope for further improvement was limited (Table 3.3). Consequently, only 50% of Soi trial blocks (69% of Kabaiya blocks) experienced productivity increases with the deployment of Mobile Card labour.

The intention during the trial was to recruit low-producing 'problem' blocks. High producing blocks at Soi and Kabaiya were recruited to the trial for two main reasons. First, some were self-identified blocks which sought to enrol in the trial because they saw the Mobile Card as providing some additional benefit for themselves, not because they were low producers, *per se*. These high producers viewed the Mobile Card as potentially assisting with financial and labour management on their blocks through providing an additional mechanism for allocating labour

and income. Second, early in the trial the Mobile Card extension officer tended to recruit better producing blocks (the usual practice in on-farm research trials). As the trial progressed, a higher proportion of 'difficult' blocks that were often conflicted, were recruited.

Table 3.1. Improvement in production on trial blocks using the Mobile Card.

	Improvement in Percentage Points*				
	No gain	>0-10	>10-50	>50	Total
No. of blocks	20	7	24	20	71
Per cent of trial blocks	28	10	34	28	100

*0 represents mean productivity.

Table 3.2. Productivity of trial blocks in relation to the smallholder average *before* the introduction of the Mobile Card.

	Starting Point in Relation to Average LSS/VOP Productivity*				
	<-50	>-50 to <0	0 to <+50	50+	Total
No. of blocks	10	22	18	21	71
Per cent of trial blocks	14	31	25	30	100

*0 represents mean productivity.

While the results of the trial indicate positive production and socio-economic gains (see below), productivity improvements have probably been under-estimated for several reasons.

- There were occasional delays in the renewal of Mobile Card contracts leading to the company computer payroll system rejecting Mobile Card weigh dockets. These weights were thus recorded as production on the Papa dockets. Because payroll and production data for the trial were obtained from the smallholder payment system, these months would have been analysed as 'months without Mobile Card labour'. Although efforts were made to correct these data through checking individual weigh dockets, it is likely that some errors slipped through.

- Many instances were identified of Mobile Card fruit being recorded as Papa or Mama production in the smallholder payment database. These errors arose because of incorrect

labelling of dockets at the fruit pickup point, or errors in data entry on the payroll system resulting in Mobile Card payments being coded as Papa or Mama payments.

- On some blocks the fruit bunches harvested by the Mobile Card worker were weighed on both the Mobile Card and Papa docket. That is, after harvesting the Mobile Card worker and the blockholder mutually agreed to divide the Mobile Card fruit between the two payment dockets, indicating that some trial participants had difficulty with the concept of a percentage split — see Section 2.

- The sharp rise in oil palm prices since April 2007 may have masked some of the productivity improvement because of the rise in average productivity across the scheme as growers in general increased production in response to the sharp rise in prices.

Finally, unlike most on-farm research or extension trials that target innovative and progressive farmers, the Mobile Card trial targeted 'problem' blocks, often characterised by very low production, a history of disruptive family conflict and debt avoidance. The likelihood of success of the trial on such problem blocks was potentially low. Whilst the Mobile Card was able to overcome conflict and payment problems on most blocks, sometimes the problems were just too great for the Mobile Card alone to resolve.

Productivity improvements

Despite the presence of these confounding factors, marked increases in productivity were recorded with the largest improvements in productivity being associated with the most poorly performing blocks prior to the trial (Table 3.3). For example, blocks that started at worse than 50% below average productivity improved their position to above average productivity with the Mobile Card. Blocks that were in the range of average to 50% above average productivity managed to improve by 20 percentage points. However, as pointed out above, blocks that were high performing to begin with (more than 50% above average productivity), improved their productivity only minimally (Table 3.3).

Further, all trial blocks that were below average productivity on entering the trial showed some improvement in productivity with the Mobile Card (Table 3.3). In the range of average to 50% above average productivity, the proportion of blocks that improved was still high at 67%. Even in the most productive group entering the trial, one-third of blocks showed an improvement in productivity (Table 3.3).

Table 3.3. Mean productivity improvements by initial starting position in relation to the smallholder average.

	Starting Position in Relation to Smallholder Average				
Position before Mobile Card	<-50	>-50 to <0	0 to <+50	50+	Total
No. of blocks	10	22	18	21	71
Improvement in percentage points	84	54	20	3	
Per cent of blocks showing improvement	100	100	67	33	72

Productivity gains by relationship between blockholder and Mobile Card labourer

Improvements in productivity by type of relationship between blockholder and Mobile Card worker were similar to those observed at Hoskins (Table 3.4). 'Hired labourer' and 'other co-resident relative' showed greatest improvement at Bialla followed by 'caretaker' and then 'son'.

Table 3.4. Average productivity improvement in percentage points by relationship between blockholder and Mobile Card labourer for Bialla and Hoskins.

	Improvement in Percentage Points	
	Bialla	Hoskins*
Hired labourer-blockholder	45	58
Caretaker- blockholder	40	37
Son-father	17	18
Other co-resident relative- blockholder	44	n.a.

*Hoskins data reported in Curry & Koczberski (2004, 21).

Hired labour

As stated above, blockholders employing 'hired labourer' showed the largest improvement in productivity following adoption of the Mobile Card (Table 3.4). Eighty-five per cent of blocks employing hired labour experienced an improvement in productivity, which was the highest proportion of blocks to show an improvement amongst the different relationship categories (Table 3.5). These findings are not surprising

given that those blocks recruiting off-block labour are usually faced with long-term labour shortages. That is, they tend to have low numbers of able-bodied workers (e.g., elderly blockholders with few co-resident adult sons or blocks occupied by young families with dependant children).

Table 3.5. Per cent of blocks showing an improvement in productivity by relationship between blockholder and Mobile Card labourer.

Relationship	Per cent of Blocks
Hired labourer	85
Caretaker	81
Son	52
Other co-resident relative	76

Also, the use of Mobile Card contracts for hired labour addresses one of the key disincentives to employing hired labour in the smallholder sector — the risk that labourers recruited from off the block will accumulate tenure rights through expending their labour in oil palm production. Some blockholders are reluctant to address labour shortages by employing hired labour because they are fearful that the labour 'investments' of hired labour might lead to compensation demands being made on them by the worker, especially when the work is for an extended period. As discussed further below in relation to caretaker blocks where these issues are more significant, the existence of a Mobile Card contract for hired labour formalises the relationship between blockholder and worker and makes such claims less likely. Thus the Mobile Card overcomes not only payment uncertainty for workers, but also eases the concerns of blockholders that the recruitment of outside labour might ultimately be a threat to their tenure rights. The easing of such fears and the effectiveness of the Mobile Card in overcoming long-term labour shortages are reflected in the high proportion of contracts that were renewed during the trial (68%). Some blockholders were into their seventh Mobile Card contract by the end of the trial.

Other reasons for the success of Mobile Card contracts for hired labour included:

- Improved access to labour for elderly and widowed growers with long-term labour shortages. By offering hired workers guaranteed 'employment' of at least three months with regular fortnightly pay, it was much easier for elderly and widowed growers to recruit young men.

- It offered a solution to short-term labour shortages when blockholders were ill or had temporary off-block commitments such as visits to the home village or short-term work commitments elsewhere. It is therefore very useful for addressing temporary labour shortages of up to two or three months.

- Improved working environment for hired labourers. Mobile Card labourers and blockholders had much praise for the Mobile Card. For Mobile Card labourers there were increased opportunities for work with much lower risks of delayed payment or under-payment. As one Mobile Card worker pointed out, he no longer had to hound the blockholder for payment. For blockholders the payment of labour in fruit with the transaction handled by the company circumvented the difficulty of trying to retain cash for the payment of labour.

Caretakers

The impact of the Mobile Card was significant on caretaker blocks where 81% of blocks showed an improvement in productivity (Tables 3.4 and 3.5). The payment initiative was very acceptable to caretakers and absentee blockholders, as demonstrated by the high proportion (75%) of contracts renewed during the trial and the large number of requests to the Mobile Card officers for 'permanent' Mobile Card contracts. The production data show that the Mobile Card is very effective for overcoming the problems of uncertain and unfair payments that create disincentives for caretakers to harvest regularly and invest labour in block maintenance. Also, it is likely that the practice of some caretakers to weigh their fruit using a neighbouring block's number on the weigh docket (to ensure adequate and timely payment) may cease with the adoption of Mobile Cards on caretaker blocks.

It is also probable that in the long-term the use of Mobile Cards on caretaker blocks will reduce the incidence of tenure disputes and compensation claims that commonly arise on these blocks, a problem that also deters the recruitment of hired labour as highlighted above. Tenure disputes often arise after a caretaker has resided and worked on a block for several years or more while the blockholder has resided elsewhere and has taken scant interest in the day-to-day management of the block. Such disputes are more likely to arise in cases where the caretaker has undertaken poisoning and replanting, and repaid loans. In these situations, the caretaker often views such labour and capital investments as building an ownership claim to the block in the same way that tenure rights to land and crops in subsistence production are reinforced by working the land (see Curry *et al.* 2007). Such investments by caretakers often mean that they will strongly contest attempts by the original blockholder or his descendants to reclaim or sell the block and

the caretaker will often demand monetary compensation if forced to vacate the block. Such disputes can be protracted and result in reduced oil palm productivity for extended periods as the conflict plays out through the various dispute resolution channels such as OPIC mediation or local courts.

Mobile Card contracts on caretaker blocks can reduce the likelihood of these disputes in four interrelated ways. First, Mobile Card contracts signed by the blockholder, the Mobile Card labourer and witnessed by an OPIC extension officer specify the contract period, the percentage split of the income, the work tasks to be completed, and the phases to be harvested and maintained. The Mobile Card is in effect a contract between an employer (the blockholder) and an employee (the caretaker). By defining their respective positions and roles, dispute rates are likely to be lower as Mobile Card contracts become increasingly accepted as evidence of the respective tenure rights of blockholders and caretakers. Second, the tenure security of the absentee leaseholder is strengthened because claims of ownership by the caretaker are diminished by the regular fortnightly payments received by the caretaker as specified in the Mobile Card contract. Third, loan repayments for company or bank credit are deducted from the blockholder's payments (the Papa payment), not the Mobile Card, leaving less scope for caretakers to assert ownership claims based on their capital investments in the block. Fourth, the smallholder payment system of the company provides a permanent record of payments to caretakers. These records are a source of evidence for resolving disputes over tenure or compensation claims by caretakers.

Thus, the Mobile Card has the potential to overcome some of the long-standing production problems on caretaker blocks and turn these blocks into stable high producing blocks that benefit both caretakers and blockholders. Given the large number of low-producing caretaker blocks in the newer LSS subdivisions of Soi and Kabaiya it may be useful to suspend the Papa docket and replace it with a long-term Mobile Card, where there is an automatic rollover of contracts every six months (see recommendations in Section 4 for further discussion).

Family labour

Soon after the commencement of the trial there were numerous requests for Mobile Cards from blockholders with married, co-resident sons. These growers saw the Mobile Card as a way to better manage the distribution of work and income on their blocks and to reduce the competing demands on the Papa payments. Despite the marked interest in the Mobile Card, productivity gains were lower for this relationship category than other categories (Table 3.4). This was also observed in the earlier Hoskins trial. Further, almost half those blocks where a son was

using a Mobile Card showed no improvement in productivity (Table 3.5).

The lower productivity gain for sons with Mobile Cards was not surprising because typically these blocks were not confronted with absolute labour shortages. Rather, as indicated above, the blockholder used the Mobile Card as a way to improve financial and labour management on the block. Therefore, the Card may be valued more as a social innovation because of its capacity to reduce conflict amongst family members, especially between fathers and sons on the more heavily populated LSS blocks. Some of these leaseholders had already tried other avenues to reduce conflict on their blocks such as rotating monthly production and oil palm payments amongst co-resident sons (the *markim mun* production strategy), but for various reasons these efforts were relatively unsuccessful. As previous research among Bialla and Hoskins smallholders has demonstrated, social conflict among co-resident households is a major factor explaining long-term low production and poor block management (Koczberski *et al*. 2001; Koczberski & Curry 2003). The Mobile Card, and its proportional split of the harvest, was attractive to the residents of highly populated blocks because it added flexibility to how income and labour could be allocated among co-resident households.

The enhanced social stability, especially on densely populated LSS blocks following the Card's introduction, is likely to lead to more stable production over the longer term, and may facilitate a smoother inter-generational transfer of block management from father to son. For leaseholders whose authority and leadership are increasingly being challenged by a younger generation of males, the Mobile Card provides the father with a means to maintain his control over production and income through assisting with the retention of the *wok bung* production strategy. For some blockholders, the rationale for acquiring Mobile Cards was to sustain the *wok bung* production strategy that was under increasing pressure from co-resident adult sons seeking to adopt the *markim mun* production strategy. The main feature of the *wok bung* strategy is its highly centralised control of production, with the leaseholder responsible for organising labour and distributing income.

The switch to a *markim mun* production strategy may be a less efficient production strategy than the *wok bung* strategy. There is evidence to suggest that oil palm productivity is lower on highly populated blocks employing a *markim mun* production strategy than on highly populated blocks that continue to practice the *wok bung* production strategy where all adult males participate in block maintenance and harvesting (Koczberski *et al*. 2001). Because there is less inter-household cooperation with a *markim mun* production strategy, the family whose

month it is to harvest often runs into labour shortages and is unable to complete a full harvest in each fortnightly harvest round of three days. The total income and production for the block may therefore be less than it would be under a *wok bung* strategy. Other implications arising from the switch to a *markim mun* production strategy which the introduction of Mobile Cards on highly populated blocks may avoid or postpone, include:

- Greatly reduced motivation to invest in farm inputs, such as fertiliser — the costs of such inputs are disproportionately borne by one or two households (those households whose turn it is to harvest when loan repayments are being made) while the benefits accrue to other households.

- Reduced incentives to undertake block maintenance as no single household is willing to take responsibility for block maintenance — most of the benefits of such expenditures of labour accrue to other households.

- Limited capacity for individual households to accumulate savings to invest in other businesses or material improvements on the block (e.g., water tanks, housing improvements, poultry projects, etc.). Under a *markim mun* production strategy, co-resident households might receive only three or four oil palm payments per year making it very difficult to save.

- Greater desire of co-resident households to avoid loan repayments when households face long periods between oil palm payments and have limited opportunity to save. On some blocks, when it is a household's allocated month to collect the oil palm income they will attempt to maximise household income by avoiding the monthly deductions for loan repayments by weighing fruit on the Mama docket or on the Papa docket of a neighbouring block.

If the Mobile Card is effective in either delaying or preventing the shift from the *wok bung* to the *markim mun* production strategy on highly populated blocks, then it would be worthwhile promoting its use on densely populated LSS blocks contemplating abandoning the *wok bung wantaim* production strategy in favour of more individualised forms of production. Further, whilst the production gains were lower on father-son blocks than other categories (e.g., hired labour) the improvements in social relations among family members and the more equitable distribution of the oil palm income were of considerable benefit to block residents.

Block management

Alongside the increases in productivity and incomes resulting from the reorganisation and increased deployment of labour, improvements in block management were also noted (Table 3.6). On average, general block condition improved by 20% (Table 3.6).

Table 3.6. Impact of Mobile Card on block management.

Activity	Before Mobile Card (June 2006)		After Mobile Card (June 2007)		% Improve-ment
	Score	Average	Score	Average	
Paths	162/310	5.22	199/310	6.42	23
Pruning	157/310	5.06	187/310	6.03	19
Ring Weeding	136/310	4.39	187/310	5.68	29
Maintenance	163/310	5.26	198/310	6.39	21
Loose fruit	161/310	5.19	179/310	5.77	11
Cover Crop	146/310	4.71	177/310	5.71	21
Management	163/310	5.26	193/310	6.23	18
Fertiliser	115/310	3.71	135/310	4.35	17
Total	1203/2480	4.85	1444/2480	5.82	20

Table adapted from Henry Turuo's October, 2007 report to OPIC Field Manager. Data based on 31 trial blocks.

The most marked improvements in block condition following the introduction of the Mobile Card were on semi-abandoned blocks. The leaseholder of the LSS block pictured in Plate 3.1 and Plate 3.2 resided in a nearby village and only occasionally visited the block. This grower was invited to join the trial because the block was semi-abandoned and had consistently low production over several years. Whilst there had been a resident caretaker for a period of time, production was well below average because of irregular and under-payment of the caretaker. The Mobile Card caretaker and his wife moved onto the block after the contract was signed and together rehabilitated the block.

Plate 3.1. An LSS block at Wilelo *before* the deployment of Mobile Card labour.

Plate 3.2. An LSS block at Wilelo *after* the deployment of Mobile Card labour.

In summary, the range of socio-economic benefits for smallholders from adoption of the Mobile Card included the following:

- Utilisation of under-employed labour on LSS blocks.
- Greater capacity of growers to overcome long and short-term labour shortages and thus generate higher incomes for themselves.
- Improved access to labour for elderly and disabled growers.
- Greater financial security for long-term caretakers and increased tenure security for absentee leaseholders.
- Greater opportunities for work as hired labourers with full and timely payment assured.
- More equitable distribution of oil palm income amongst household members.
- Less social conflict on highly populated blocks (fewer disruptions to oil palm production).

4. RECOMMENDATIONS

The primary objective of the Mobile Card initiative was to overcome labour supply constraints by eliminating payment uncertainty and reducing disputes over labour remuneration through guaranteeing timely and full payment of labour. The trial results demonstrate that the payment of labour in fruit (a share of the fruit harvested by the worker) overcomes the reluctance or inability of blockholders to pay cash for family or hired labour, thereby improving the supply of labour for oil palm production. Further, by reducing intra- and inter-household conflicts over work and income and facilitating a more equitable distribution of income among household members, the Mobile Card is one way for the industry to address some of major socio-demographic and economic pressures now affecting the smallholder sector.

Based on the successful results of the trial and the support for the Mobile Card by all key stakeholders (smallholders, OPIC and the Company), we recommend that HOPL introduce the Mobile Card as a payment option for smallholders. We make the following recommendations to assist the company and OPIC with introducing this payment initiative.

Mobile Card payment mechanism and contracts

It is recommended that the Company re-programmes the smallholder payment system to incorporate a Mobile Card payment that enables a percentage split of the value of the crop harvested by the Mobile Card worker to be made between the blockholder and the Mobile Card worker. By enabling the Mobile Card to operate on a percentage split of the harvest, it will accommodate the broadest possible range of situations under which the Mobile Card is likely to be used for the payment of labour. The percentage split payment method with the fruit weighed and recorded on a single docket is preferred to a set payment for labour for the following reasons:

- Payment for labour with a specified fixed rate of pay (e.g., kina per task per hectare) may reduce the Mobile Card labourer's incentive to fully harvest a block. For example, difficult to harvest fruit bunches on very tall palms or on palms at the rear of the block may not be harvested once a perceived value of work (e.g., K200/4 hectares) has been completed. The ratio method

maintains an incentive to fully harvest a phase/block — the more one harvests the more one earns.

- A proportional split seems to be more suitable for the payment of family labour as there is no 'fixed' rate of payment operating among family members and payments for oil palm work have little relationship to formal market rates for hired labour. Instead, 'payment' rates are often determined by a range of factors such as age of the father, marital status of co-resident sons and daughters, other income sources of family members, individual family needs and other socio-economic circumstances on the block. Also, how the Papa payments are distributed among other co-resident households may determine the proportional split agreed to by the father and the son holding the Mobile Card. In deciding upon a percentage split, such factors in addition to current oil palm prices and the amount of work to be done are taken into consideration. By allowing blockholders to choose the pay rate for family labour (the percentage split) the Mobile Card will be flexible enough to accommodate the diverse socio-economic circumstances of families, especially those on highly populated blocks.

- Related to the previous point, a proportional split of the harvest among family members may facilitate the inter-generational transfer of block management from elderly fathers to their sons. In such situations a 10:90 or 20:80 split with 10% or 20% of the value of the crop being paid to the father may provide him with a 'retirement' income, earned from his son's labour.

- With an 'appropriate' percentage split on caretaker blocks, where payment is above the average rate for hired labour, it is likely that generous pay rates will reduce incentives to weigh fruit on the weigh dockets of neighbouring blocks.

- A proportional split seems to be favoured by Mobile Card workers because they feel that they too are sharing in the benefits of the current high prices. In PNG, pay rates for family and hired labour are influenced by cash crop prices. During high prices, pay rates tend to rise and conversely they tend to fall during low price periods. When there is a perception of a growing divergence between pay rates for labour and cash crop prices (the returns to blockholders), family labour, caretakers and, to a lesser extent, hired labour become dissatisfied.

How the percentage split would work

Initially, many growers had difficulty understanding the concept of a percentage split between the blockholder and the Mobile Card worker. Generally, when payments commenced (and with the aid of a ready reckoner — Table 2.1), growers and workers came to understand the proportional payment system. In some cases blockholders adjusted the percentage split after the first contract expired.

It is suggested that to facilitate understanding of the concept of the percentage split, each blockholder and potential worker interested in the payment scheme be given a copy of a ready reckoner incorporating the prevailing FFB price (see for example Table 4.1). This will help extension officers explain the concept of a percentage split, and blockholders and potential workers will see their respective potential incomes under different percentage splits and FFB prices. It is important for extension officers to explain to smallholders that the prevailing oil palm price, the condition of the block, and the amount of work to be done should be key determinants of the percentage split. Mr Graham King of HOPL is presently developing a ready reckoner that incorporates the daily labour market rate of different tasks likely to be undertaken by Mobile Card workers. This will help guide blockholders and hired labourers to arrive at an appropriate percentage split (G. King pers. comm., April, 2008). While some types of Mobile Card blocks like the father-son blocks discussed above, will include other considerations in deciding the percentage split (e.g., individual family and household needs on the block), prices, block condition and the amount of work to be done should be central to determining the percentage split.

Some percentage splits might not be used very often. For instance, during the trial the 10:90 split (blockholder:Mobile Card worker) was largely restricted to Mobile Card contracts between fathers and sons where the father was effectively retired and the son had taken over management of the block, and between blockholders and hired labourers employed to rehabilitate 'bush' blocks that had been abandoned for many years. On abandoned blocks the percentage split on the succeeding contracts tended to move more in favour of the blockholder as the block came back into production and the amount of maintenance work declined. Another example is the well-maintained high producing block where the palms are not too tall and the fruit is harvested easily by chisel. If the blockholder were to miss a single harvest round because of a short absence from the block and the work required is limited to harvesting, the split might be 90:10 in favour of the blockholder. Most splits would typically be in favour of the blockholder especially when prices are high. As a general rule, the blockholder must always see an increase in his/her income from employing Mobile Card labour.

Table 4.1. Ready Reckoner for income by percentage split, using an FFB price of K254.68/tonne*.

	FFB PRICE PER TONNE										254.68							
	INCOME IN KINA UNDER DIFFERENT PERCENTAGE SPLITS																	
	Split 1		Split 2		Split 3		Split 4		Split 5		Split 6		Split 7		Split 8		Split 9	
	Papa	Mobile	Papa	Mobile	Papa	Mobile	Papa	Mobile	Papa	Mobile	Papa	Mobile	Papa	Mobile	Papa	Mobile	Papa	Mobile
	10%	90%	20%	80%	30%	70%	40%	60%	50%	50%	60%	40%	70%	30%	80%	20%	90%	10%
Kg harvested																		
50	1.27	11.46	2.55	10.19	3.82	8.91	5.09	7.64	6.37	6.37	7.64	5.09	8.91	3.82	10.19	2.55	11.46	1.27
100	2.55	22.92	5.09	20.37	7.64	17.83	10.19	15.28	12.73	12.73	15.28	10.19	17.83	7.64	20.37	5.09	22.92	2.55
200	5.09	45.84	10.19	40.75	15.28	35.66	20.37	30.56	25.47	25.47	30.56	20.37	35.66	15.28	40.75	10.19	45.84	5.09
300	7.64	68.76	15.28	61.12	22.92	53.48	30.56	45.84	38.20	38.20	45.84	30.56	53.48	22.92	61.12	15.28	68.76	7.64
400	10.19	91.68	20.37	81.50	30.56	71.31	40.75	61.12	50.94	50.94	61.12	40.75	71.31	30.56	81.50	20.37	91.68	10.19
500	12.73	114.61	25.47	101.87	38.20	89.14	50.94	76.40	63.67	63.67	76.40	50.94	89.14	38.20	101.87	25.47	114.61	12.73
600	15.28	137.53	30.56	122.25	45.84	106.97	61.12	91.68	76.40	76.40	91.68	61.12	106.97	45.84	122.25	30.56	137.53	15.28
700	17.83	160.45	35.66	142.62	53.48	124.79	71.31	106.97	89.14	89.14	106.97	71.31	124.79	53.48	142.62	35.66	160.45	17.83
800	20.37	183.37	40.75	163.00	61.12	142.62	81.50	122.25	101.87	101.87	122.25	81.50	142.62	61.12	163.00	40.75	183.37	20.37
900	22.92	206.29	45.84	183.37	68.76	160.45	91.68	137.53	114.61	114.61	137.53	91.68	160.45	68.76	183.37	45.84	206.29	22.92
Tonnes harvested																		
1	25.47	229.21	50.94	203.74	76.40	178.28	101.87	152.81	127.34	127.34	152.81	101.87	178.28	76.40	203.74	50.94	229.21	25.47
2	50.94	458.42	101.87	407.49	152.81	356.55	203.74	305.62	254.68	254.68	305.62	203.74	356.55	152.81	407.49	101.87	458.42	50.94
3	76.40	687.64	152.81	611.23	229.21	534.83	305.62	458.42	382.02	382.02	458.42	305.62	534.83	229.21	611.23	152.81	687.64	76.40
4	101.87	916.85	203.74	814.98	305.62	713.10	407.49	611.23	509.36	509.36	611.23	407.49	713.10	305.62	814.98	203.74	916.85	101.87
5	127.34	1146.06	254.68	1018.72	382.02	891.38	509.36	764.04	636.70	636.70	764.04	509.36	891.38	382.02	1018.72	254.68	1146.06	127.34
6	152.81	1375.27	305.62	1222.46	458.42	1069.66	611.23	916.85	764.04	764.04	916.85	611.23	1069.66	458.42	1222.46	305.62	1375.27	152.81
7	178.28	1604.48	356.55	1426.21	534.83	1247.93	713.10	1069.66	891.38	891.38	1069.66	713.10	1247.93	534.83	1426.21	356.55	1604.48	178.28
8	203.74	1833.70	407.49	1629.95	611.23	1426.21	814.98	1222.46	1018.72	1018.72	1222.46	814.98	1426.21	611.23	1629.95	407.49	1833.70	203.74
9	229.21	2062.91	458.42	1833.70	687.64	1604.48	916.85	1375.27	1146.06	1146.06	1375.27	916.85	1604.48	687.64	1833.70	458.42	2062.91	229.21
10	254.68	2292.12	509.36	2037.44	764.04	1782.76	1018.72	1528.08	1273.40	1273.40	1528.08	1018.72	1782.76	764.04	2037.44	509.36	2292.12	254.68
11	280.15	2521.33	560.30	2241.18	840.44	1961.04	1120.59	1680.89	1400.74	1400.74	1680.89	1120.59	1961.04	840.44	2241.18	560.30	2521.33	280.15
12	305.62	2750.54	611.23	2444.93	916.85	2139.31	1222.46	1833.70	1528.08	1528.08	1833.70	1222.46	2139.31	916.85	2444.93	611.23	2750.54	305.62
13	331.08	2979.76	662.17	2648.67	993.25	2317.59	1324.34	1986.50	1655.42	1655.42	1986.50	1324.34	2317.59	993.25	2648.67	662.17	2979.76	331.08
14	356.55	3208.97	713.10	2852.42	1069.66	2495.86	1426.21	2139.31	1782.76	1782.76	2139.31	1426.21	2495.86	1069.66	2852.42	713.10	3208.97	356.55

* In 2007 average price of FFB price paid to smallholders was K254.68/tonne.

Implementation of the Mobile Card

Other aspects to be taken into consideration when implementing the Mobile Card include:

- The erection of signs at the fruit collection point of blocks where Mobile Card workers are engaged. This will signal to truck drivers to be alert for fruit to be weighed on the Mobile Card.

- Design an easily recognisable weigh docket for Mobile Card fruit to reduce the probability of data entry errors in the smallholder payment office. A coloured docket might offer the simplest solution (green or yellow). The company may also wish at the same time to introduce a coloured docket for loose fruit weighings so that the three types of payments for fruit are easily distinguished from each other (white docket for Papa payments, red for loose fruit and green for Mobile Card fruit).

- Automatic rollover of contracts where the Mobile Card is working successfully on a long-term basis, such as on caretaker or father-son blocks.

- Direct credit to bank accounts for payments to Mobile Card workers on contracts of at least one month. Most caretaker and father-son blocks are likely to fall into this category as well as a significant proportion of hired labour blocks. This will ensure timely payments of workers.

- Loan repayments for farm inputs should **not** normally be deducted from Mobile Card payments. This will reinforce the employee status of Mobile Card labour and help prevent the build-up of ownership claims in the block resulting from capital investments (see Section 3). Conversely, deductions for farm inputs from the payments to the blockholder will reinforce his or her employer status and tenure rights to the block. One exception is where the Mobile Card contracts have been made between fathers and sons in transitional arrangements where block management is in the process of being passed from an elderly father to a son. In such cases, the son may be receiving the larger share of the income and be responsible for most of the work on the block, and therefore should also be responsible for loan repayments for farm inputs (see below).

- OPIC to adjudicate any disputes between blockholders and Mobile Card workers.

We make several recommendations for specific types of blocks.

Low producing VOP blocks

Low producing VOP blocks should be a priority for uptake of the Mobile Card given their very low productivity relative to LSS growers. Indeed, *promotion of fertiliser among low producing VOP growers should be suspended until harvesting rates are raised* because loan deductions can further undermine the motivation to harvest on low producing blocks (see Curry *et al.* 2007). With regular and full harvesting with the Mobile Card, the purchase of farm inputs such as fertiliser becomes more attractive to growers because they are able to realise the income gains from yield increases.

We recommend that one or two low producing VOP villages be targeted for the introduction of the Mobile Card. The promotion and introduction of the Mobile Card by OPIC should be undertaken in collaboration with village leaders for two main reasons. First, the support of village leaders may allay some of the concerns VOP growers have about recruiting off-block labour (concerns also found among some elderly LSS growers). Like the ownership claims that can arise from labour and capital investments by caretakers, some VOP growers fear that employing outside labourers may lead these labourers to make ownership claims on the block or to demand compensation based on their labour investments in the block. However, village leaders working with OPIC should emphasise to blockholders that employing a Mobile Card worker does not undermine their 'ownership' of the block because the Mobile Card contract reinforces the worker's status as a labourer (*olsem fotnait man*). In effect, the tenure rights of the blockholder *vis-à-vis* the Mobile card worker are strengthened by the existence of the contract.

Second, village leaders could identify trustworthy and conscientious village youth to be employed as Mobile Card workers, or identify church, sports or youth groups to be employed as Mobile Card groups of labourers. The use of village work groups does not appear to undermine the tenure rights of growers employing these groups. This is probably because such work groups are modelled on traditional labour exchange practices that are still used for large-scale subsistence tasks such as clearing bush for new gardens.

A related recommendation for low producing VOP villages is that village sporting clubs, church groups and schools should also have access to Mobile Cards for fund raising. These groups could be used as harvesting or block maintenance teams employed on Mobile Card contracts with work focused on blocks with consistently low production. Income earned by such village/community groups could fund projects that strengthen the community while creating awareness among the

smallholder population that the company is interested in supporting community and village development activities.

Caretaker blocks

On caretaker blocks where the Mobile Card contract has been renewed several times and is working well (i.e., stable production, good block maintenance and the absence of conflict between the blockholder and the Mobile Card worker), the blockholder should be encouraged to sign a 'rollover' contract form that allows automatic renewal of contracts after their expiry. This will lead to less disruption in payments to caretakers and ease the administrative burden of OPIC and the company. When long-term roll-over contracts are in place, caretakers should be encouraged to open bank accounts for direct payments, and the company, with the blockholder's consent, should suspend separate weighings on the Papa docket.

Again, the existence of a contract specifying the roles and responsibilities of the blockholder and caretaker will reinforce their respective positions and interests in the block and preclude caretakers from building up ownership claims. Also, loan repayments for farm inputs (e.g., for fertiliser and replanting) should be deducted from the blockholder's portion of the payment, not from the caretaker's payment. This too will reinforce their respective positions as blockholder and caretaker and reduce the probability that caretakers will assert ownership claims on the block or make demands for additional compensation. This is critical if caretaker Mobile Cards are to receive widespread acceptance amongst blockholders.

Father-son blocks

The Mobile Card should be encouraged on blocks where there is emerging or prolonged conflict between blockholders and their sons over the allocation of oil palm labour and income. As discussed in Section 3, production gains following the introduction of the Mobile Card were not as great as those recorded on caretaker or hired-labour blocks. However, it is likely that the reduction in social conflict and the more equitable distribution of oil palm income among households on these blocks will lead to long-term benefits through creating a more stable and harmonious social environment for oil palm production.

Also, as mentioned earlier, the presence of a Mobile Card may facilitate the transition in block management from ageing blockholders to their sons because the fathers are still able to derive an income from the block. Thus, because the Mobile Card guarantees the blockholder an income in 'retirement', ageing blockholders are more likely to relinquish block management to a son thereby avoiding the often protracted disputes and disruption of production that can afflict these blocks.

Further, it is recommended that HOPL consider introducing multiple Mobile Cards on the more populated blocks, with each contract specifying the work tasks to be completed, and the phases to be harvested and maintained by the Mobile Card worker. This may assist households on these more populated blocks to better distribute income and oil palm work among the various households and family members. On these blocks Mobile Card contracts should not be applied to an area of less than 2 ha of oil palm. The above average size of blocks (10 ha +) at Uasilau LSS would be an appropriate situation to test multiple Mobile Cards on blocks.

Hired labour

There is scope for the market in hired labour to be expanded with the introduction of the Mobile Card thereby making it easier for blockholders with long-standing or short-term labour shortages to recruit young men, either as individuals or as youth, sports or church groups. Productivity gains are likely to be greatest for this category of worker as evidenced by the trial results at both Bialla and Hoskins. Further, as revealed in the Hoskins Mobile Card trial, the most successful blockholder-Mobile Card labourer relationships were those where the blockholder identified the worker (Curry & Koczberski 2004). Thus, blockholders should be given every opportunity to identify their own workers.

Like the caretaker category of Mobile Card worker, the existence of a Mobile Card contract formalises the work relationship and makes claims of tenure or for compensation by Mobile Card hired labourers less likely. This should be highlighted by OPIC when the Mobile Card is being promoted amongst blockholders as a way to recruit hired labour.

A final recommendation in relation to the hired labour category is that OPIC hold several Mobile Cards for short-term work activities, such as the one-off harvest round where there may be a temporary production problem (e.g., illness), or a block requires some additional maintenance labour to maintain stable production (e.g., weeding palm circles and maintaining access paths for harvesting).

Conclusion

To conclude, labour supply constraints are the primary cause of under-harvesting and low smallholder productivity. Constraints on the supply of labour lead to the under-utilisation of family or caretaker labour and the minimal supply of hired labour. Labour supply constraints also mean that potential yield increases from farm inputs are not realised. The absence of a market in hired labour has severely constrained the income opportunities of young men and women from highly populated

blocks while at the same time limiting the productivity and incomes of labour-short blocks, with the result that approximately 25% of the crop is not harvested. The constraints on the supply of labour are due largely to the reluctance of people to provide labour because of inadequate, uncertain or disputed remuneration of their labour. The Mobile Card addresses these long-standing problems of poor and uncertain remuneration of caretakers and hired labourer by guaranteeing timely payment of labour. The trial demonstrated that the Mobile Card was effective in overcoming constraints on the supply of family, caretaker and hired labour. It has also generated social benefits for smallholders by enabling them to tailor their household labour and payment strategies to better accommodate their varying socio-demographic situations on their blocks.

In summary, the Mobile Card is effective for three reasons. First, it gives confidence to workers that they will be paid in full and in a timely manner for work completed. Second, it provides a mechanism for overcoming the difficult problem that blockholders have retaining cash for the payment of labour. Third, by formalising in a contract the roles and status of both blockholder and worker, the Mobile Card helps ameliorate blockholders' fears that the recruitment of labour is a threat to their tenure rights.

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Appendix 1. Mobile Card Contract.

MOBILE CARD CONTRACT
BIALLA SCHEME

This contract agreement is between the registered blockowner (*papa bilong blok*) and the Mobile Card holder whose names and signatures appear below.

NAME OF BLOCKOWNER:	NAME OF MOBILE CARD HOLDER:

Block where work is to be carried out:

Division: __ Subdivision: _____ Section: __ Block Number: _____

CONTRACT PERIOD:
Start Date: ___/_____/200_ Finish Date: ___/_____/200_

Work contract applies to the following phases (please tick - √**)**:

Phase 1 ☐ Phase 2 ☐ Phase 3 ☐

Agreed Tasks (Tick √ if applicable):

Under Brush ☐ Circle Weed ☐
Pruning ☐ Harvesting ☐
Loose Fruit Collection ☐ Other (specify task): _____

For the duration of this contract the agreed split between the blockowner (papa bilong block) and the Mobile Card Holder is:

Papa ☐ % Split
Mobile Card ☐ % Split

The Mobile Card holder agrees to perform the following work tasks to the satisfaction of the blockowner. Any disputes will be mediated by the OPIC Mobile Card Officer. The Mobile Card will be cancelled if the agreed work tasks are not carried out satisfactorily.

Signature Blockowner: _____Name: _____

Signature Mobile Card Holder: _____Name: _____

Witnessed and Approved By OPIC Mobile Card Officer: _____

Date of Signing: ___/_____/200_