

Number of Consumer Durables (NoCD):- number of Consumer Durable (Mobile telephone, radio, cassette/cd/vcd/dvd/player, television, bicycle, motorbike, cart for objects, improved stoves (gas or electric), grain mill) (Discrete).

Physical assets (Physicalasset):- household's number of physical assets (the sum of the number of productive assets, household goods and consumer durable (Discrete).

Roof Made Corrugated Iron sheet: - =1 if home roof made corrugated iron sheet after PFM; = 0 Otherwise (Dummy)

Crop Income (CropIncome):- Net income from both subsistence and cash income from farm products (Garden coffee, maize, wheat, sorghum, vegetables, teff, barley, enset, beans, pepper, chat, farm honey, godere, and others) by decreasing the cost of production in birr³(Continuous).

Livestock Income (LivestockIncome):- Net income from both subsistence and cash income from livestock products (skin and hides, eggs, milk, butter, and cheese) by decreasing the cost of production in birr (Continuous).

Forest Income (ForestIncome):- Net income from both subsistence and cash income from forest products (forest honey, forest coffee, forest fodder, firewood, charcoal, bamboo, climber, medicinal plant use, wild animal meat, wild foods, tobacco, khat, palm, korerima, wild pepper, timber, construction pole, construction material bamboo, hives from wood, hives from bamboo and farm implements) by decreasing the cost of processing in birr (Continuous).

Off-farm Income (Off-farmIncome):- Income from off-farm activities like pottery and petty trading in birr (Continuous).

Other Income (OtherIncome):- Income from other incomes like remittance, gifts, support from NGO, government, friends and relatives in birr (Continuous).

Total Income (Total Income):- The sum of net income from both subsistence and cash income of crop, livestock, forest, off-farm and other income (Continuous).

Saving Money (Saving Money):- The households' sum money of saved in bank, credit association and saving club now after PFM (SavingMoneyAPFM) in birr (Continuous).

Credit Amount (Credit amount APFM):- The amount of money that the household can get for credit from anyone (can be relatives, friends, and micro-financial saving organizations) in birr (Continuous).

Training:- the number of training (Forest conservation and management, participatory forest management, beekeeping, poultry management, livestock rearing, value addition training, resource-saving, and management, business plan management/bookkeeping, financial management training, cooperative management, soil, and water conservation practice) that had given to the household head in the two-time interval (discrete).

Variables used as the independent variables (covariates) are listed below.

Household head Sex (HhSEX):- =1 if the sex of the household head is male (dummy)

Household head Age (HhAge6):- =1 if age 40 and more (dummy)

Family size (HHSIZ):- number of persons living in the household (discrete)

Number of economically active persons (LABAGE):- number of working-age in Family (labor force age - labor age (18-64)) (Discrete)

Household head Education (HhEdu6):- =1 if literate = 0 otherwise (dummy)

Household head marital status (HhMTS):- =1 if married (dummy)

Ethnic group (EthGrp2):- =1 if Menja (dummy)

Leadership role (LR5APFM):- =1 member in any social positions (dummy)

Residence in the Study Area (YRESIDENCE):- number of years the household has lived in the study area (Discrete)

Total Land Size (TLANDSIZ):- the amount of farm size the household-owned in hectare (continuous)

Distance to the forest (DISTFOR):- distance from their home to the forest (to PFM site) in walking hours (continuous)

Distance to market (DISTMART):- distance from their home to the market in walking hours (continuous)

Distance to town (DISTTOW):- distance from their home to the town in walking hours (continuous)

Contact with extension agents (EXTSERV):- Extension contact (number in annual repetitions their coming) (discrete)

Being Member of Saving Club (SC):- =1 if a member of any saving club (dummy)

Availability of non-farm (off-farm) Income (OffIncAvailBPFM):- =1 if having non-farm income or not for before PFM (dummy).

Credit Access (CA):- =1 if the access of the household to credit (dummy)

4. Results and Discussion

4.1. Household characteristics and economic indicators for respondents

The majority of sample households were male headed (93%) (Table 1). Households who participate in the PFM are closer to forests, have lower contact with extension agents, and higher in family size from non-participants of PFM (Table 2). Generally the mean comparison in outcome variable show that, households who participate in the program group are significantly have higher number of hives, higher number of consumption assets, and higher number of physical assets after PFM compared to non-participants of PFM (Table 3). Moreover, they are more likely to higher forest income and other income. They are also characterized by lower livestock holdings and lower crop income.

³ Birr (ETB) stands for Ethiopian Birr the local currency, at the time of the field survey 1 Birr (ETB)= 0.05USD.

