

HOUSEHOLD CHARACTERISTICS, AGRICULTURAL PRODUCTIVITY AND INPUT USE

TEGEMEO INSTITUTE, EGERTON UNIVERSITY

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Agricultural Productivity and Market Participation for Improved Food Security and
Incomes” Kindu Mall, Emali, 16th August, 2011*



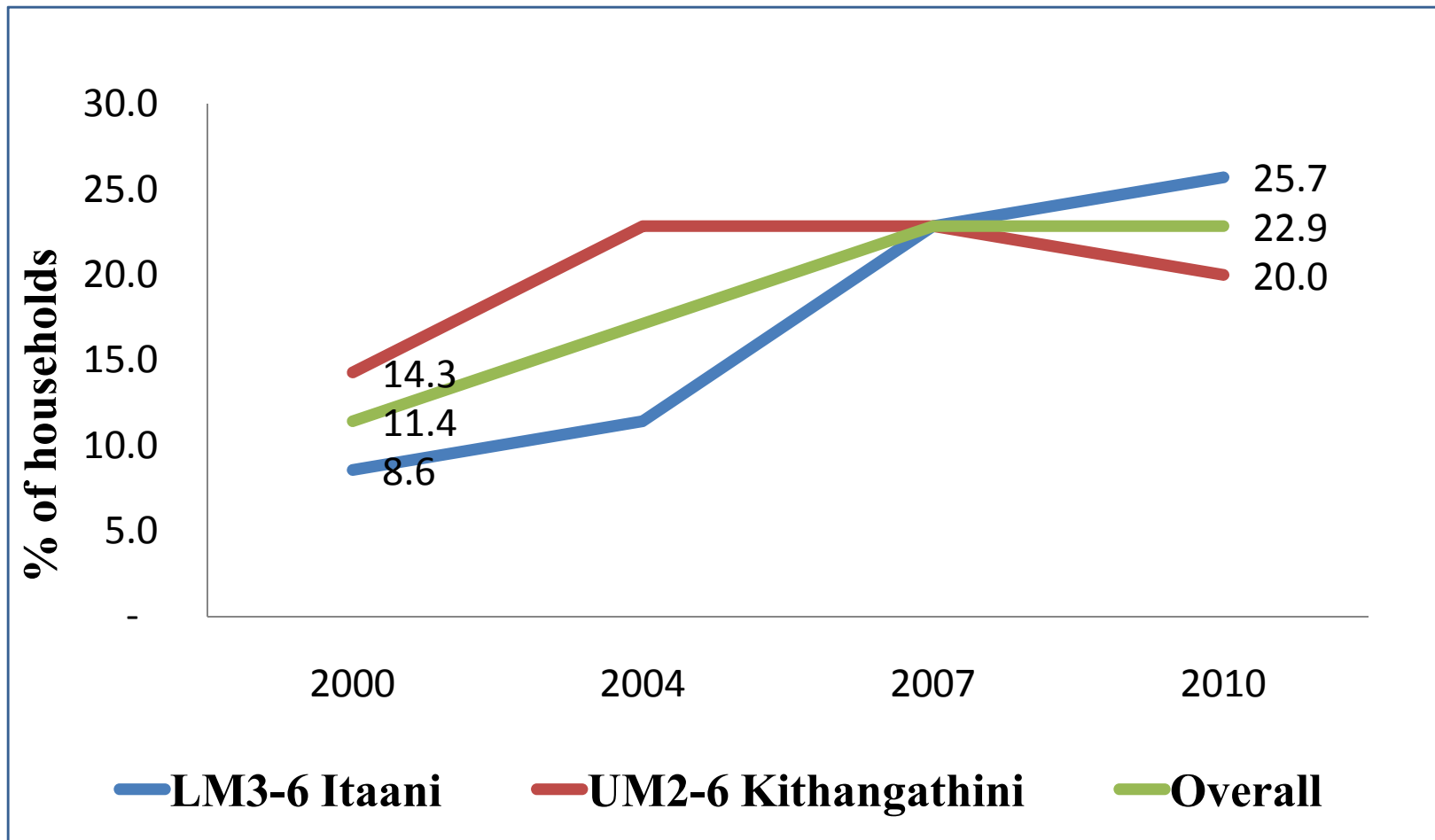


HOUSEHOLD CHARACTERISTICS: STATUS AND TRENDS

Outline

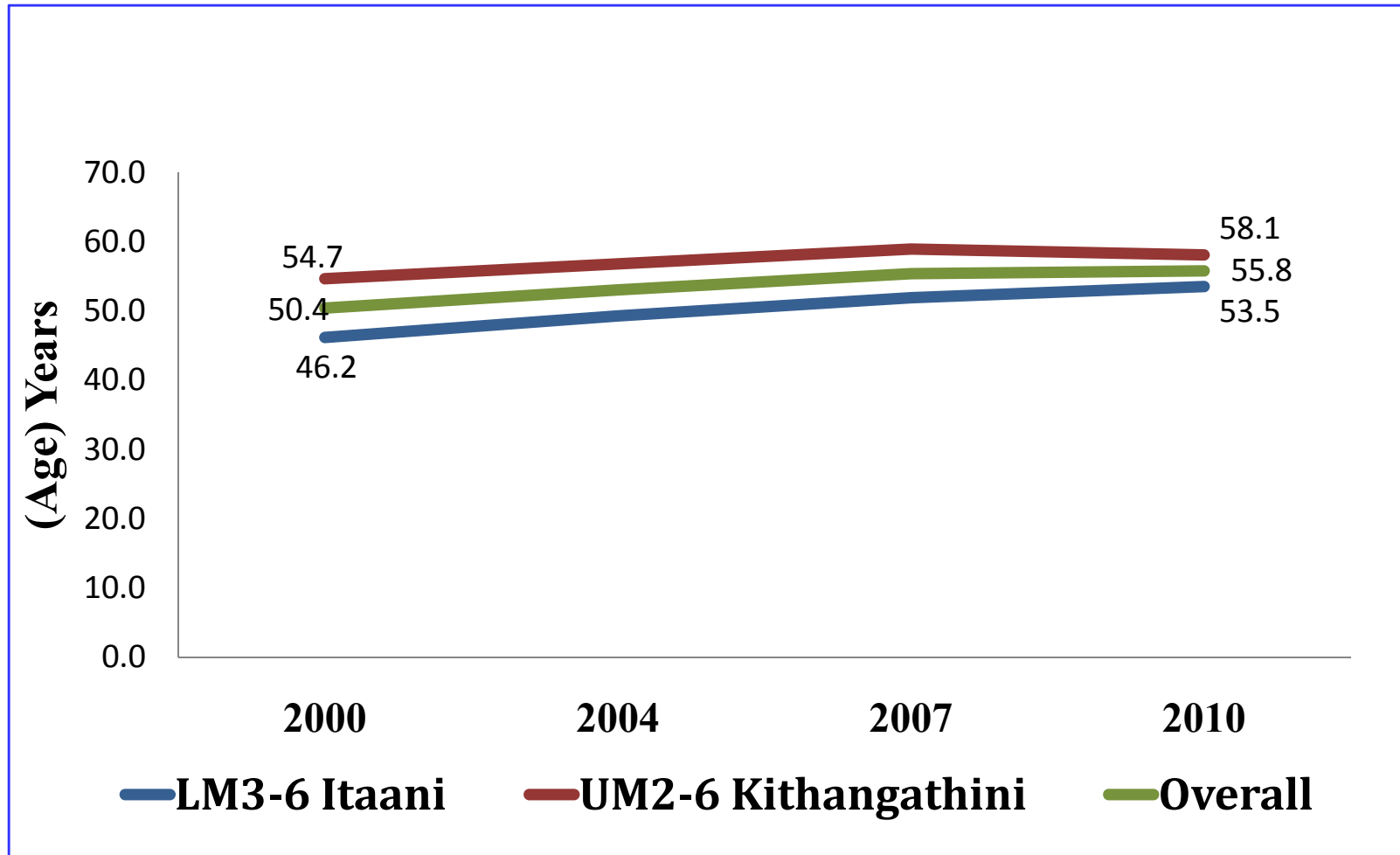
- Gender of head
- Age of head
- Household size
- Dependency ratio
- Land size (owned and cultivated)
- Value of assets
- Livestock keeping
 - % of hh keeping various livestock types
 - Livestock herd/flock sizes
- Coping mechanism against food shortage

Percent of Female headed households



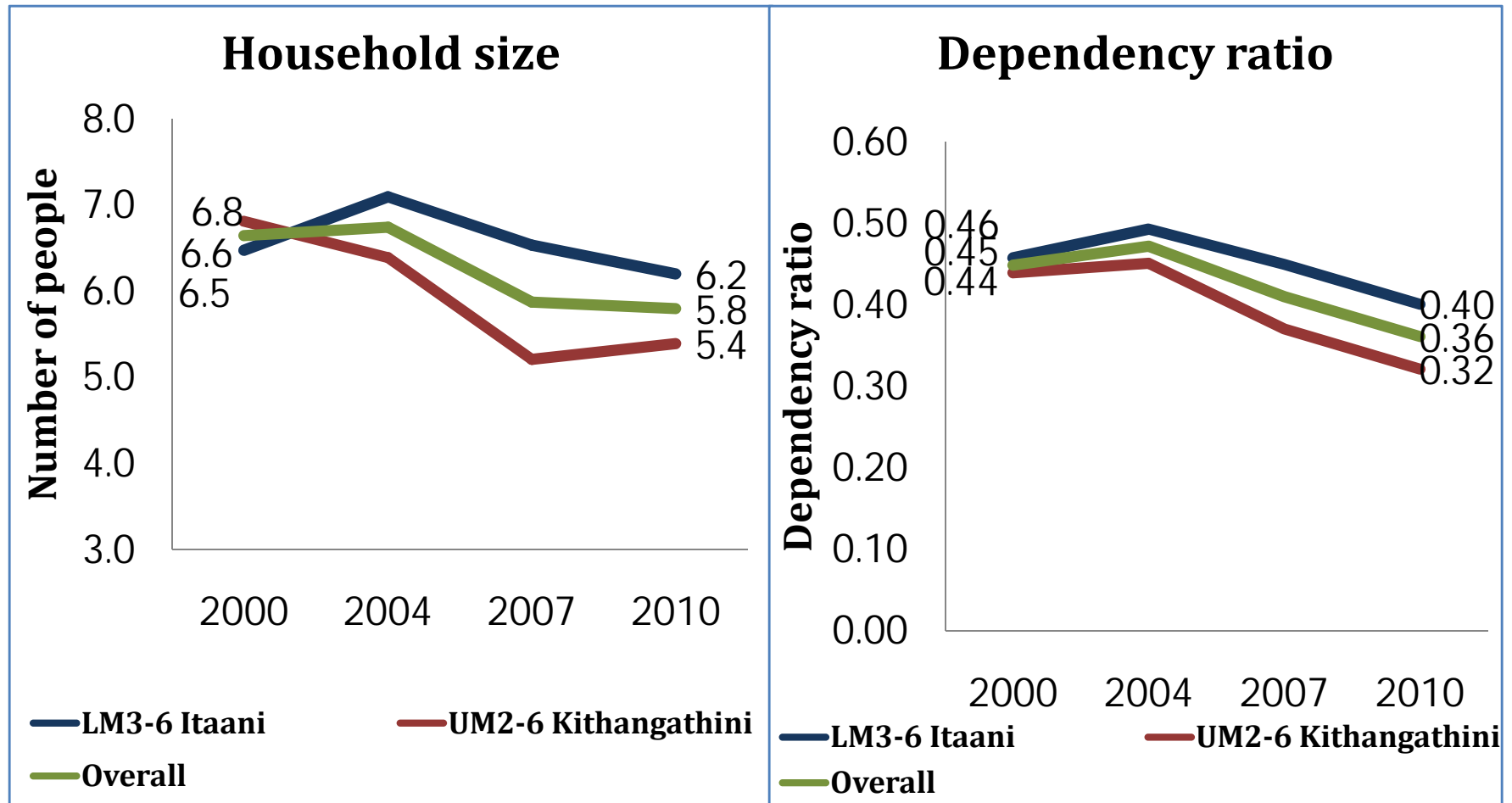
- 23% of households headed by women; double the proportion in 2000

Age of household head



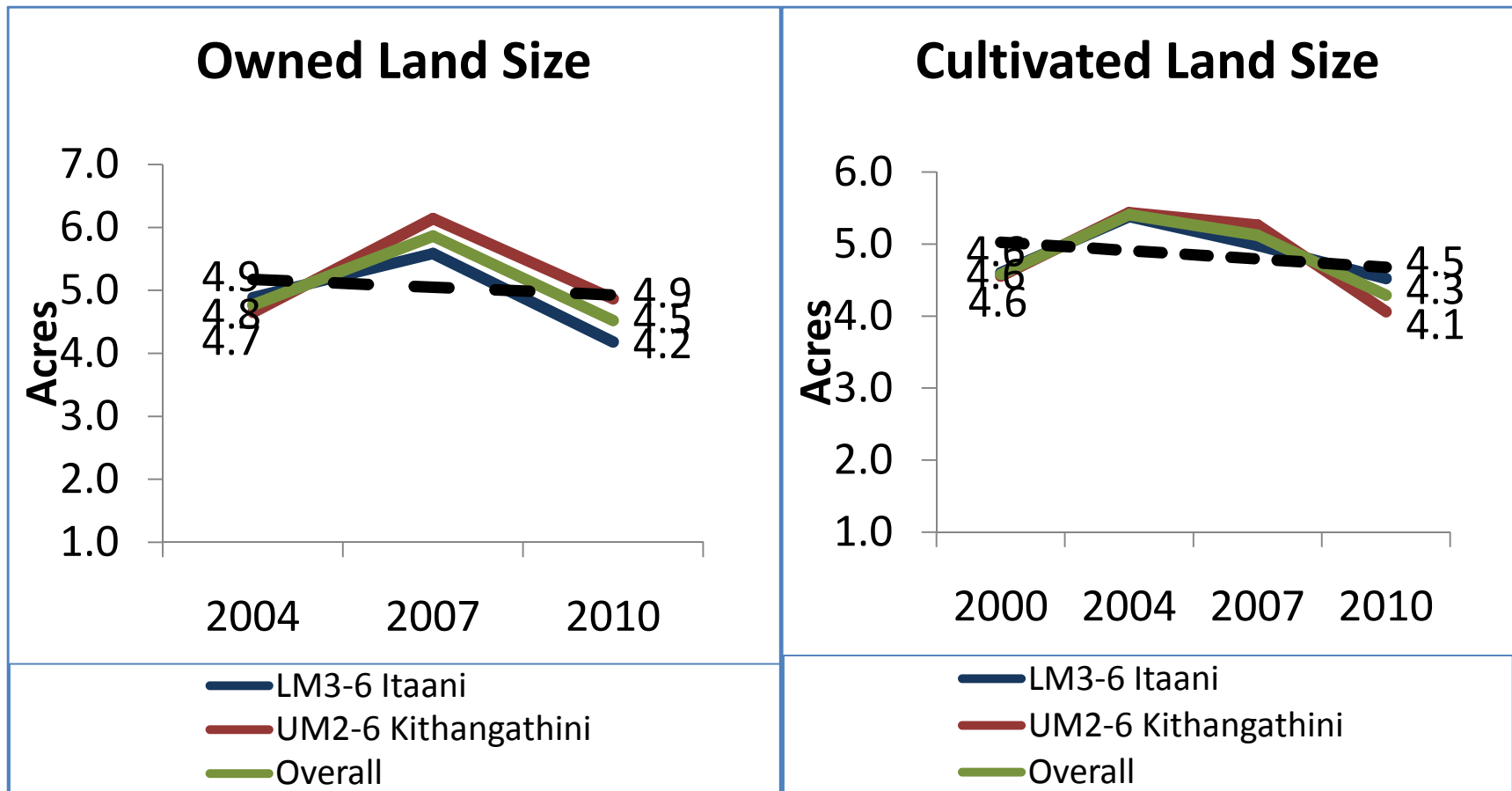
- Household heads aged over 55 years on average

Household Size & Dependency Ratio



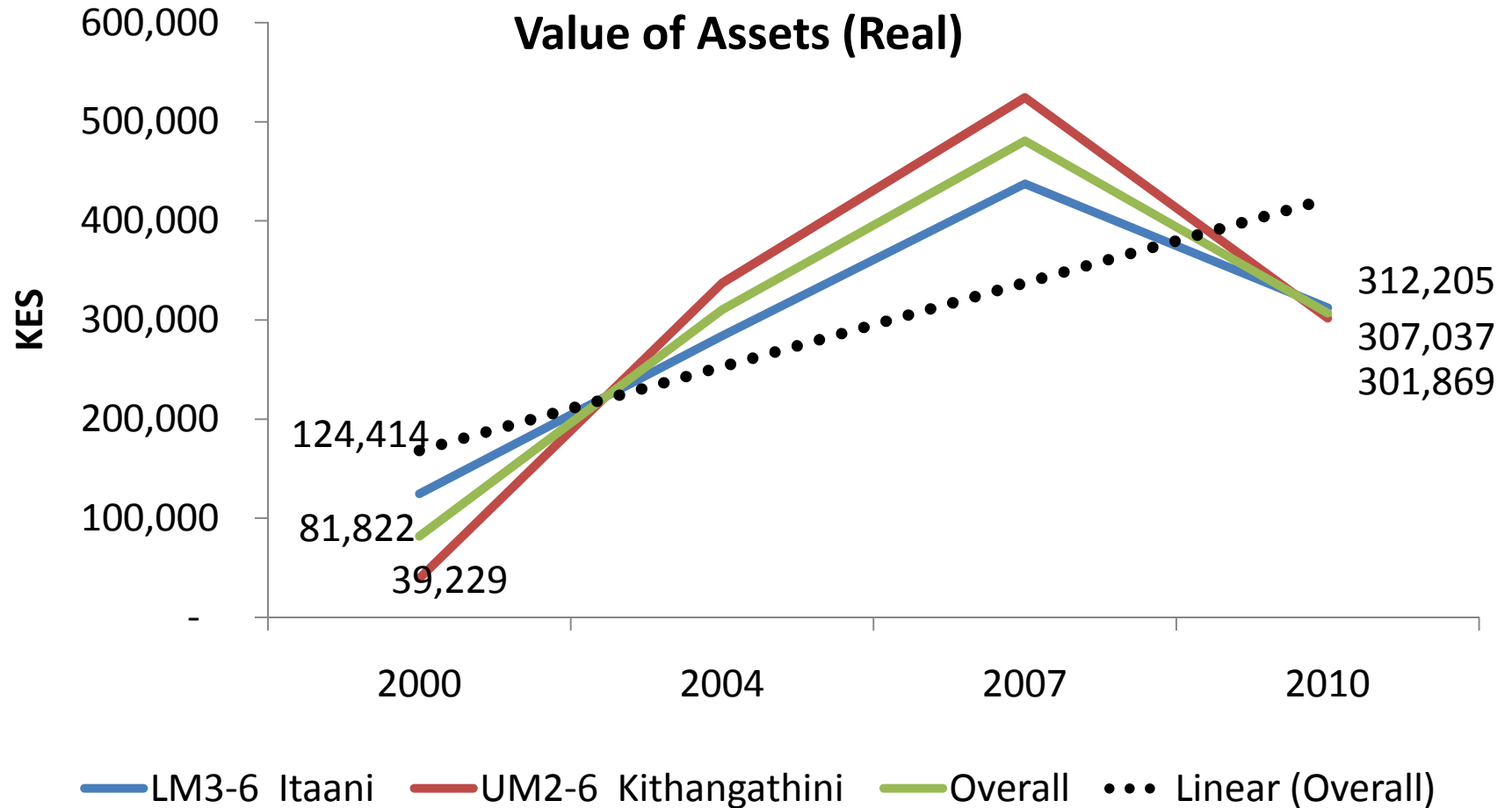
- Declining household size and dependency ratio; size and ratio higher in Itaani

Household Land Size



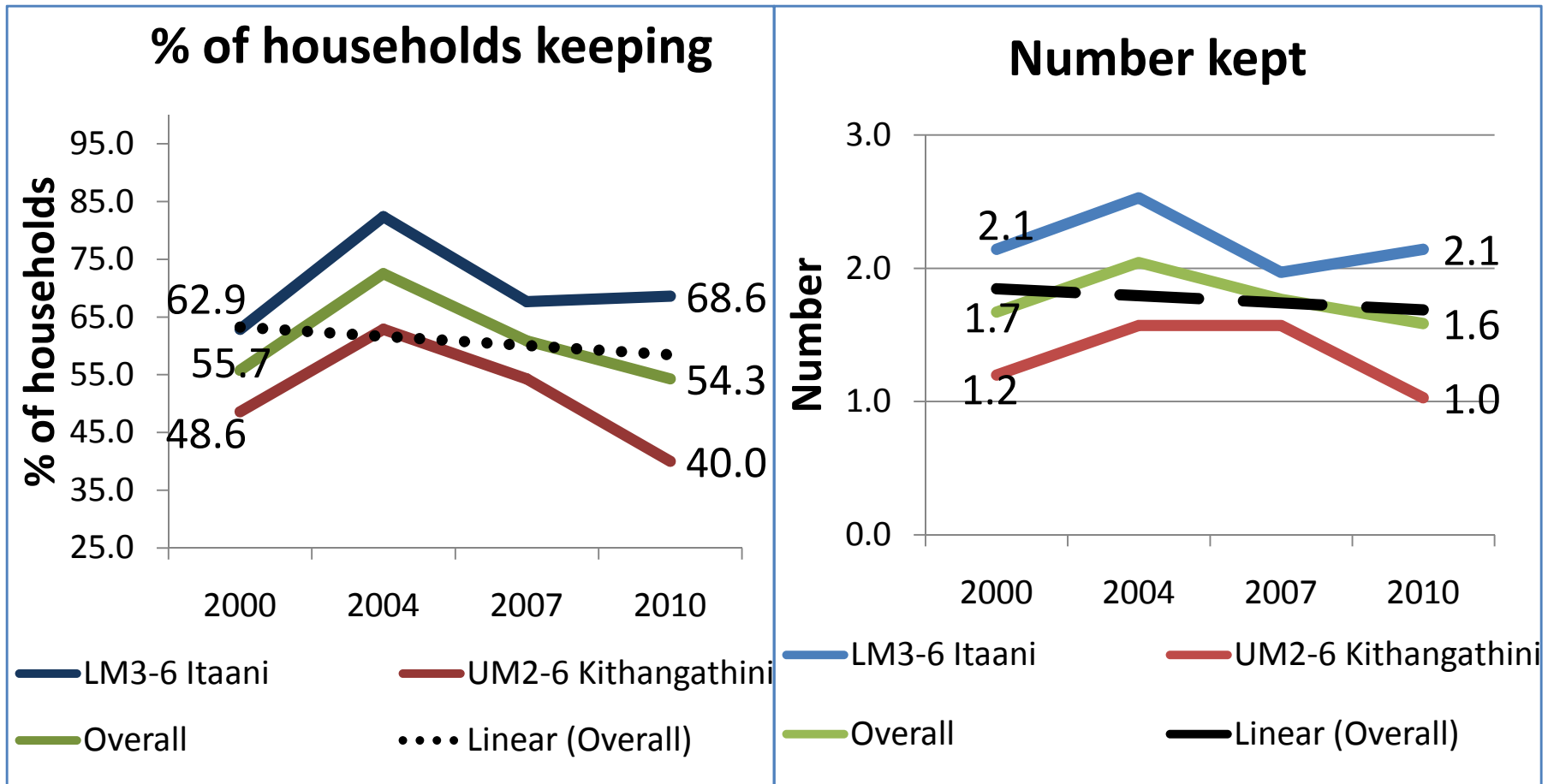
- Land size varied across years, but remained the same over time

Household Assets



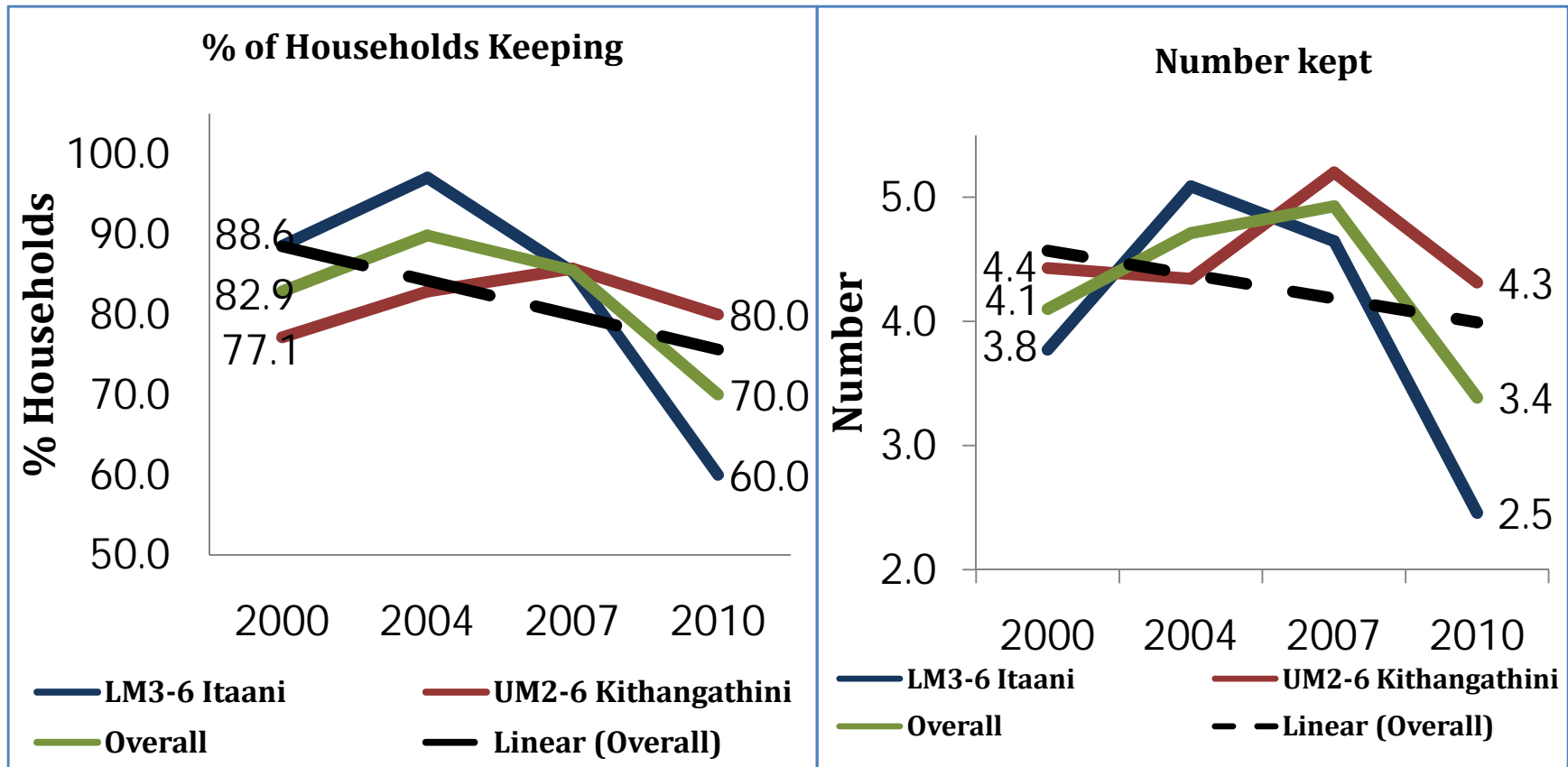
- Value of assets increasing over time
- Assets mainly agricultural (e.g. farm implements and structures)

Improved Cattle Keeping



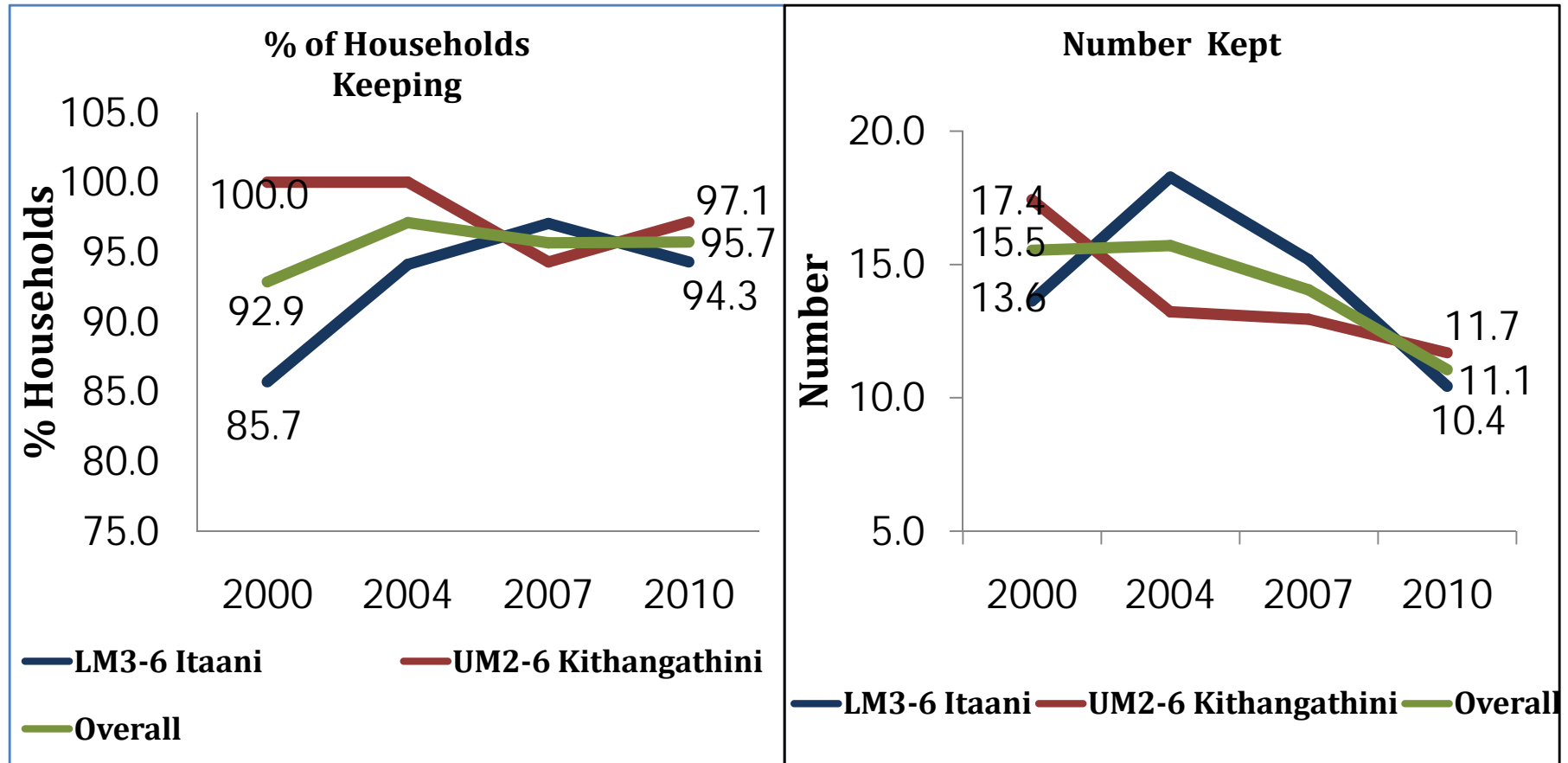
- % of hh keeping improved (grade and cross breed) same over time; higher in Itaani
- Number kept was about 2; lower (1) in Kithangathini

Sheep and Goats Keeping



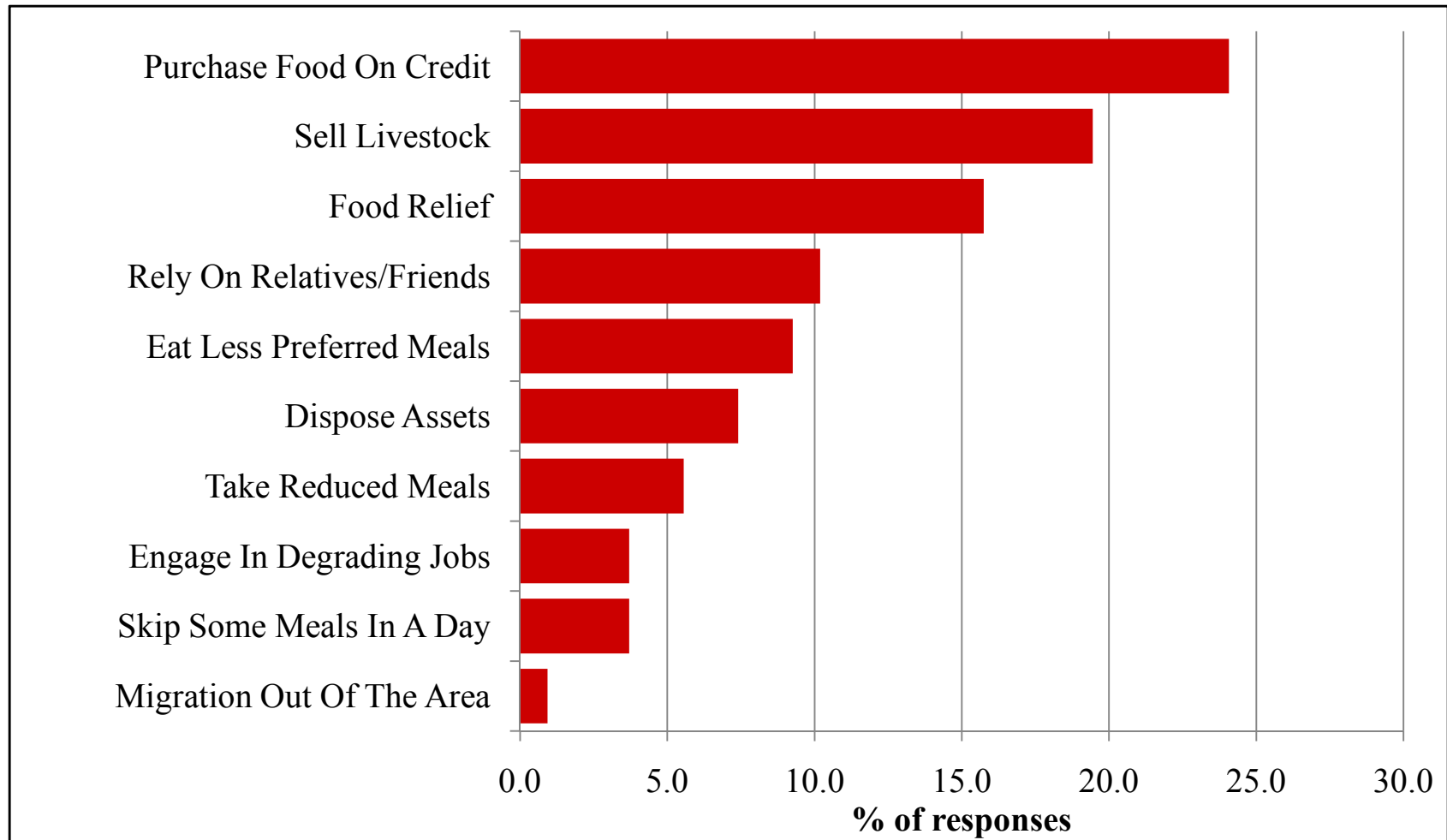
- Overall decline in both % keeping and number kept of sheep and goats
- More widely kept in Kithangathini; number also higher

Chicken Keeping



- Chicken most widely kept and in largest numbers
- Decline in number kept

Coping Mechanisms Against Food Shortage



- Several mechanisms employed to cope with food shortage in households



AGRICULTURAL PRODUCTIVITY

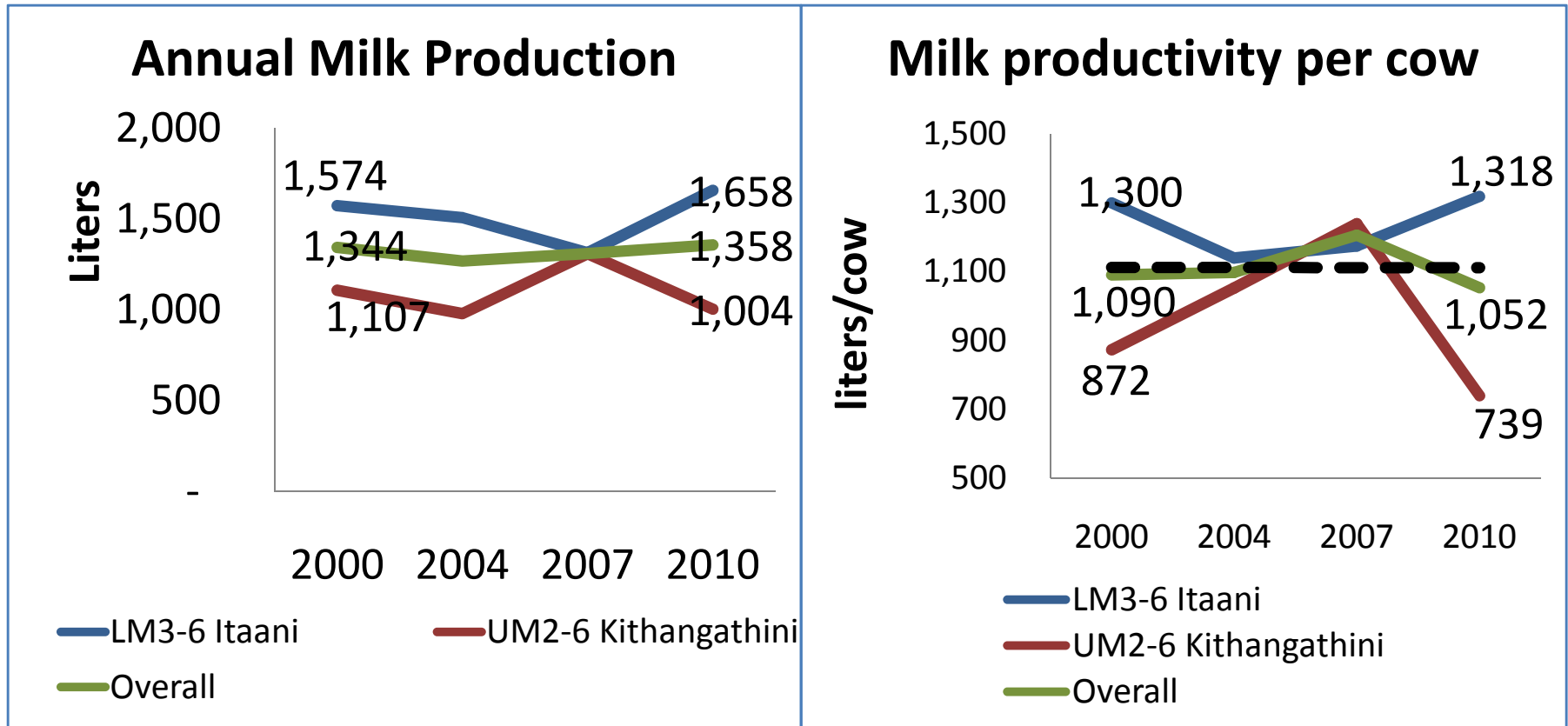
Outline

- Production and Productivity (yield)
 - Milk (dairy)
 - Food crops (Maize, Beans)
 - Cash crop (Coffee)



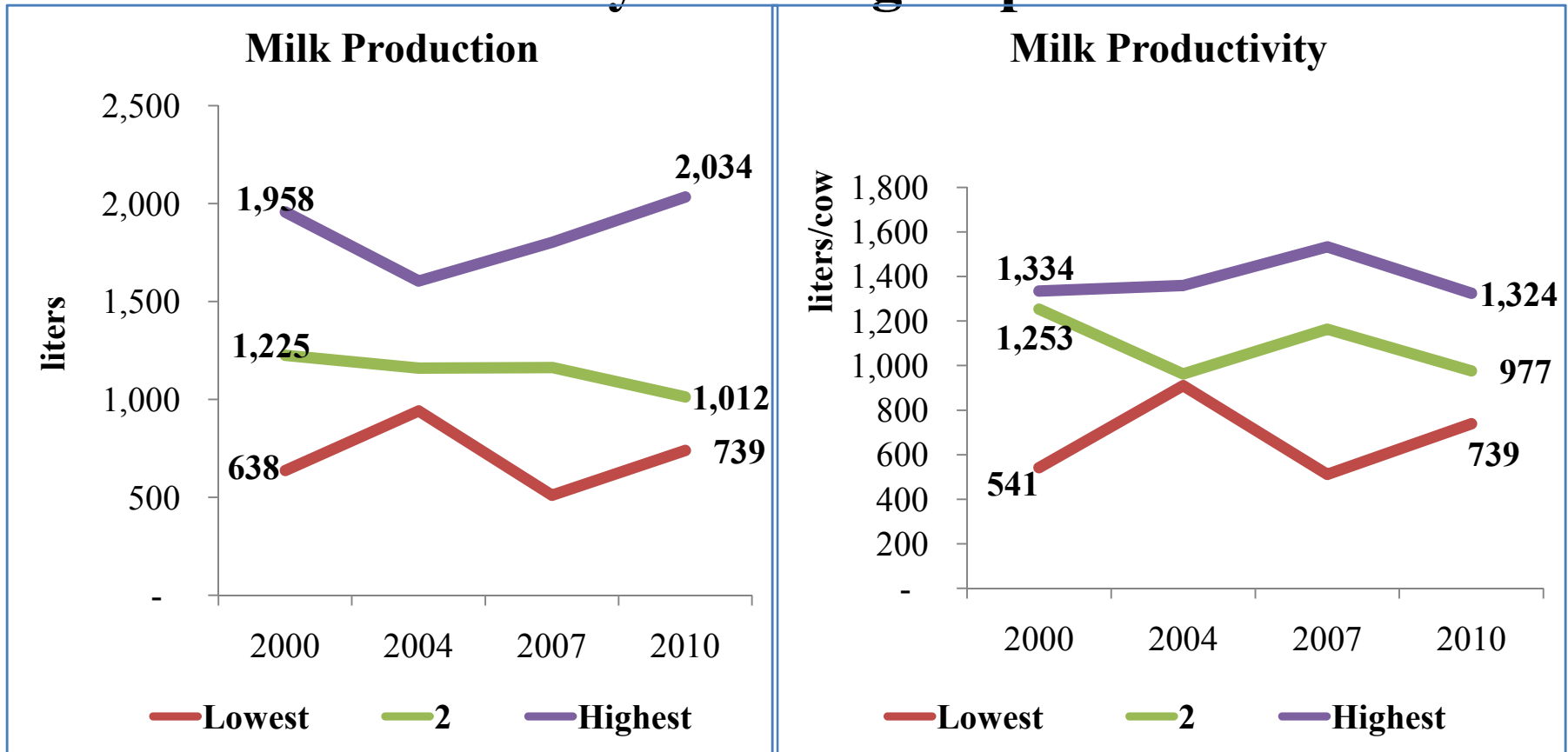
Dairy

Household Annual Milk Production and Productivity – by region



- Production and productivity varied across years, but remained nearly the same over the period
- Higher production & productivity in Itaani

Household Annual Milk Production and Productivity – by income group

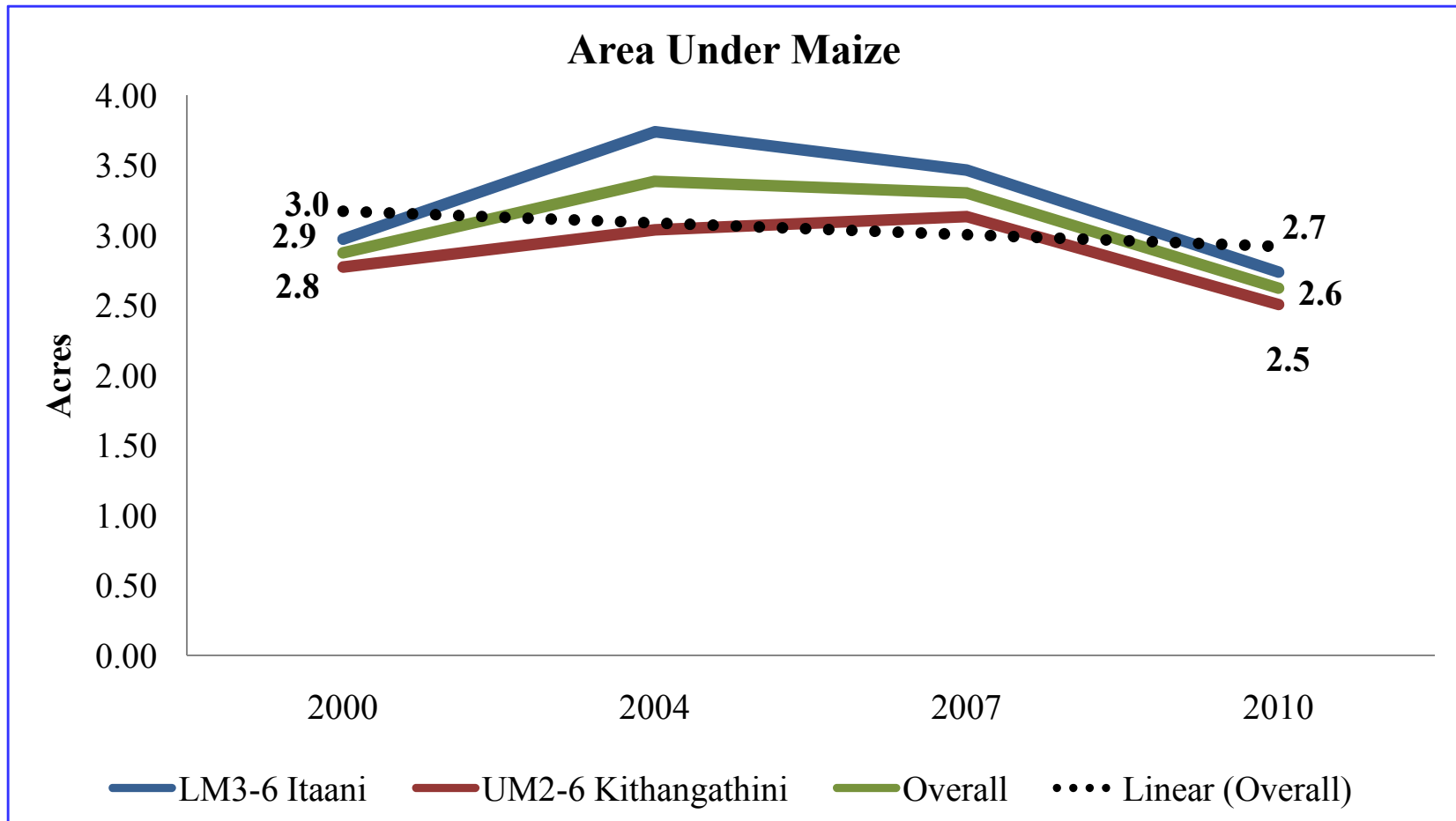


- Highest income group had much higher production and productivity relative to lower income groups
- Noticeable productivity growth for lowest income group



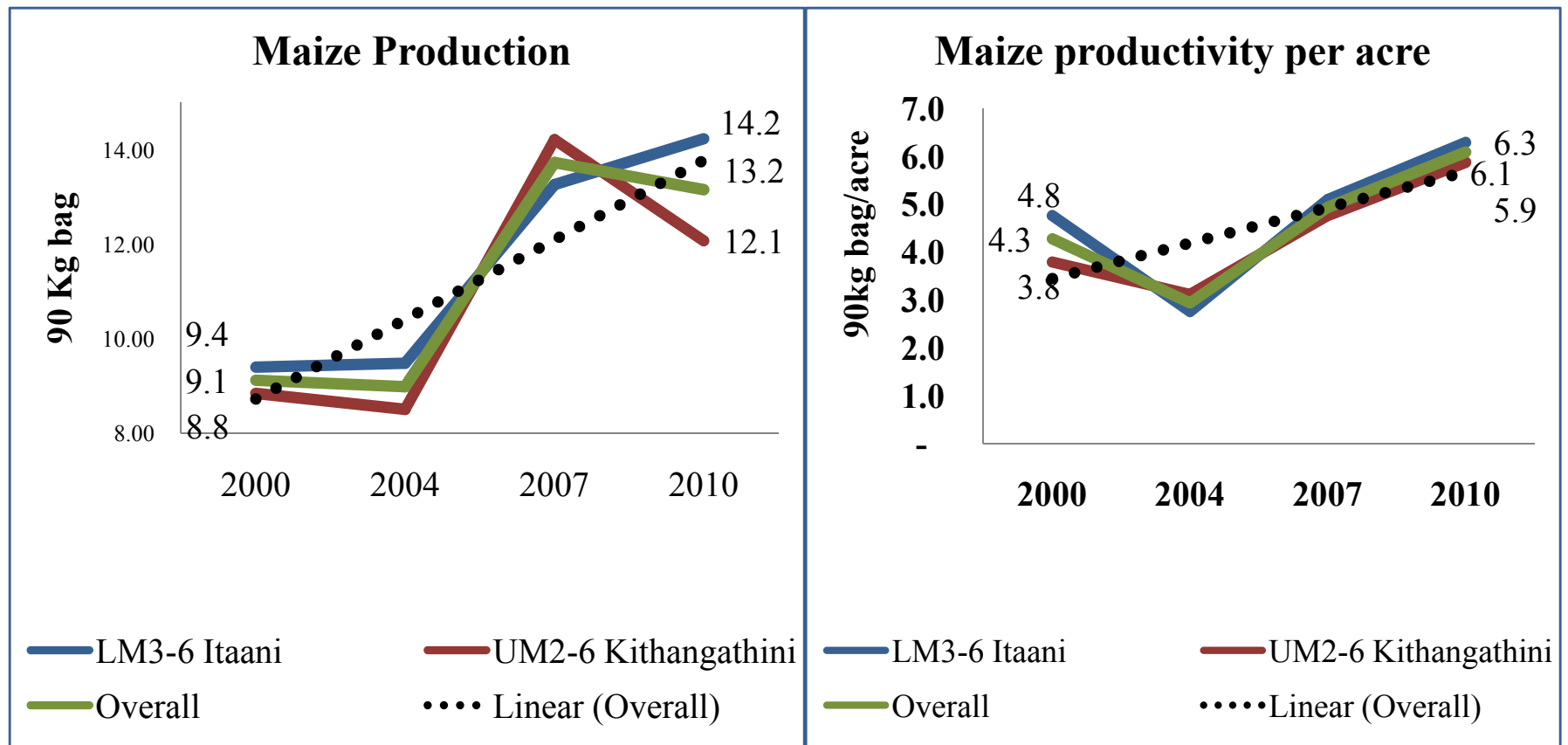
Maize

Cultivated Area Under Maize



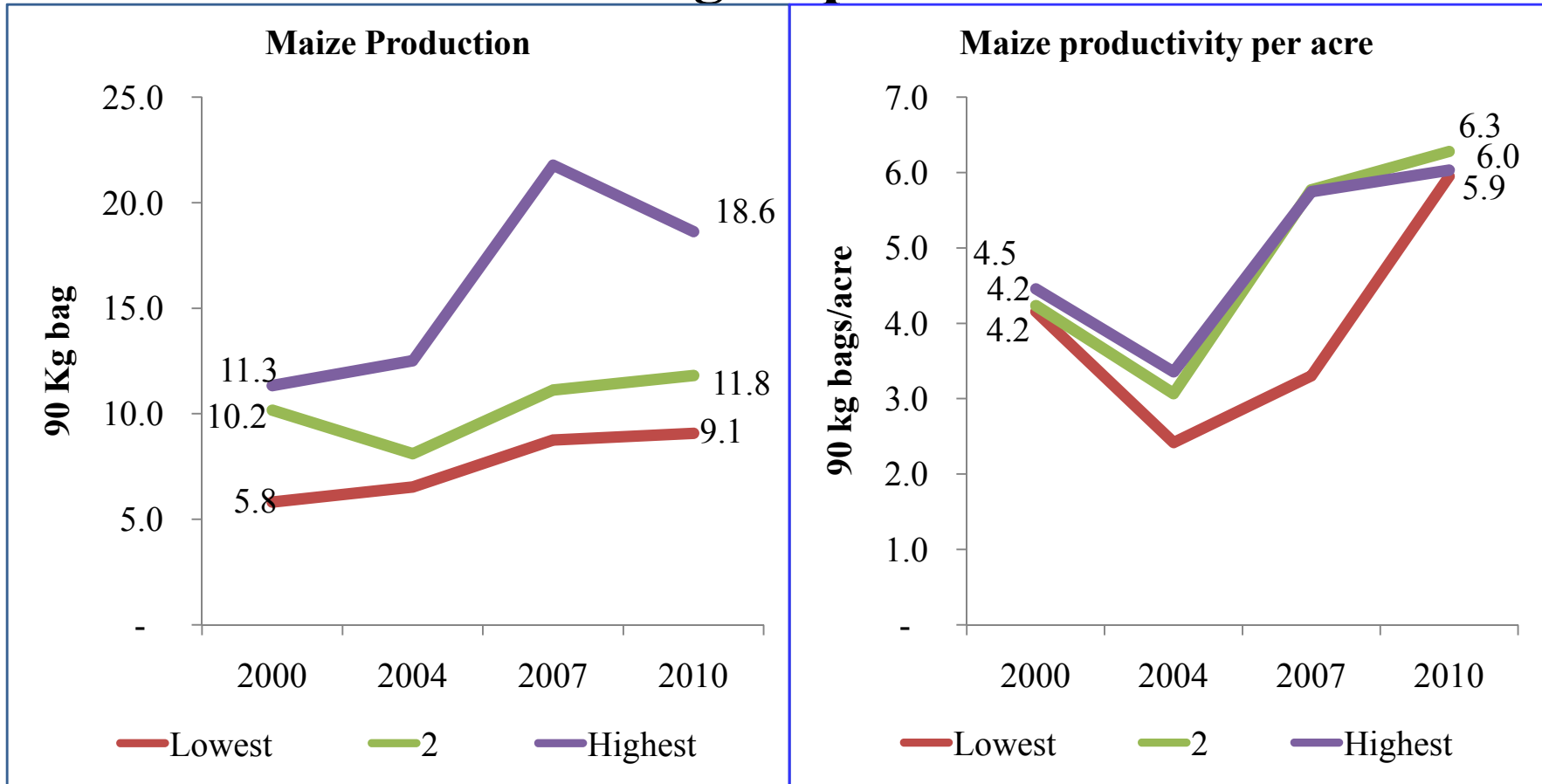
- Small decline in area cultivated in maize in both regions

Household Maize Production and Yield – by region



- Maize production and yield generally increased over the period
- A decline observed in 2004; attributed to depressed and erratic rainfall in the 2003/2004 cropping year

Household Maize Production and Yield – by income group

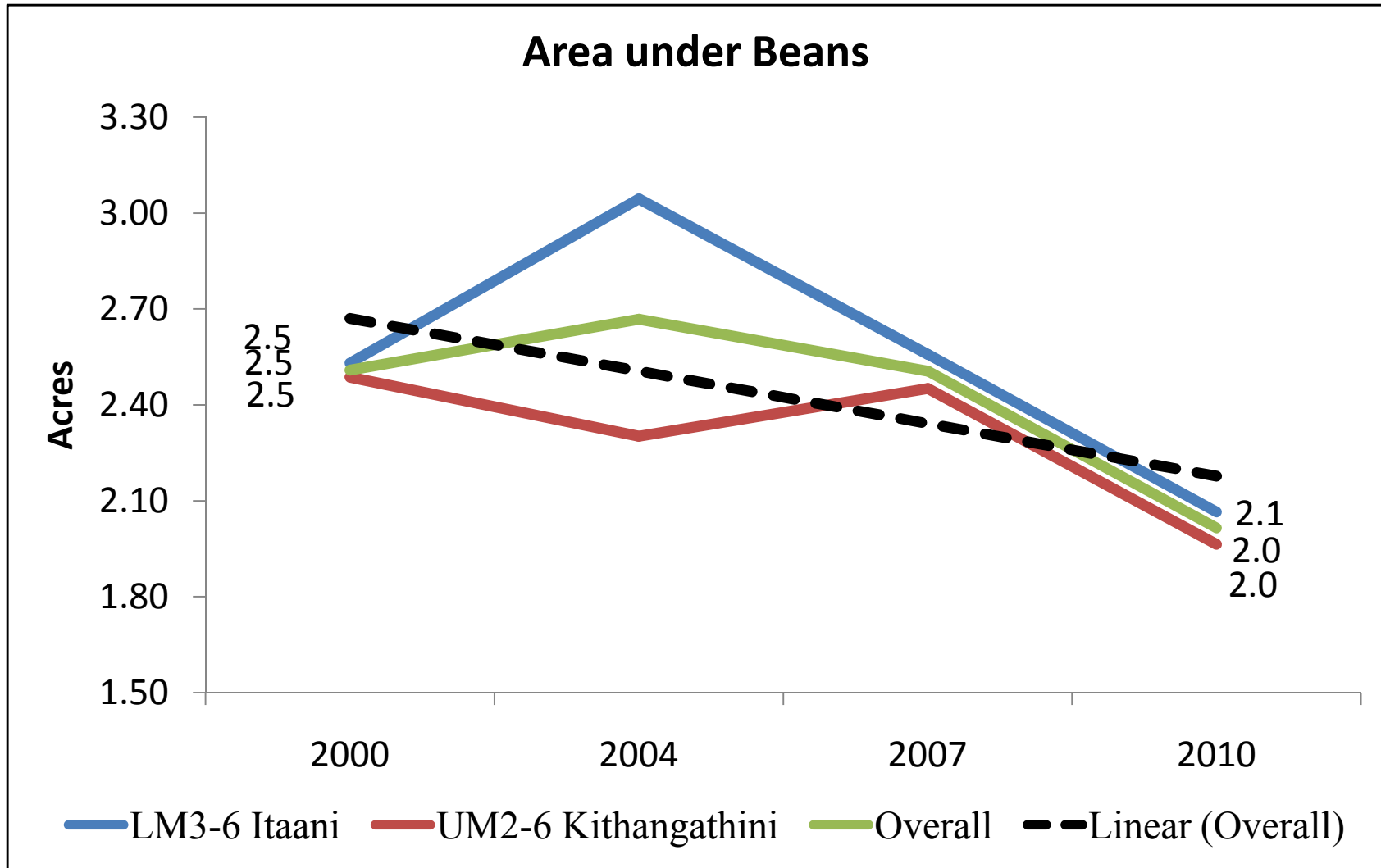


- Production highest for the highest income group
- Productivity the same across income groups in 2010
- Lowest income group closed productivity gap with highest income group



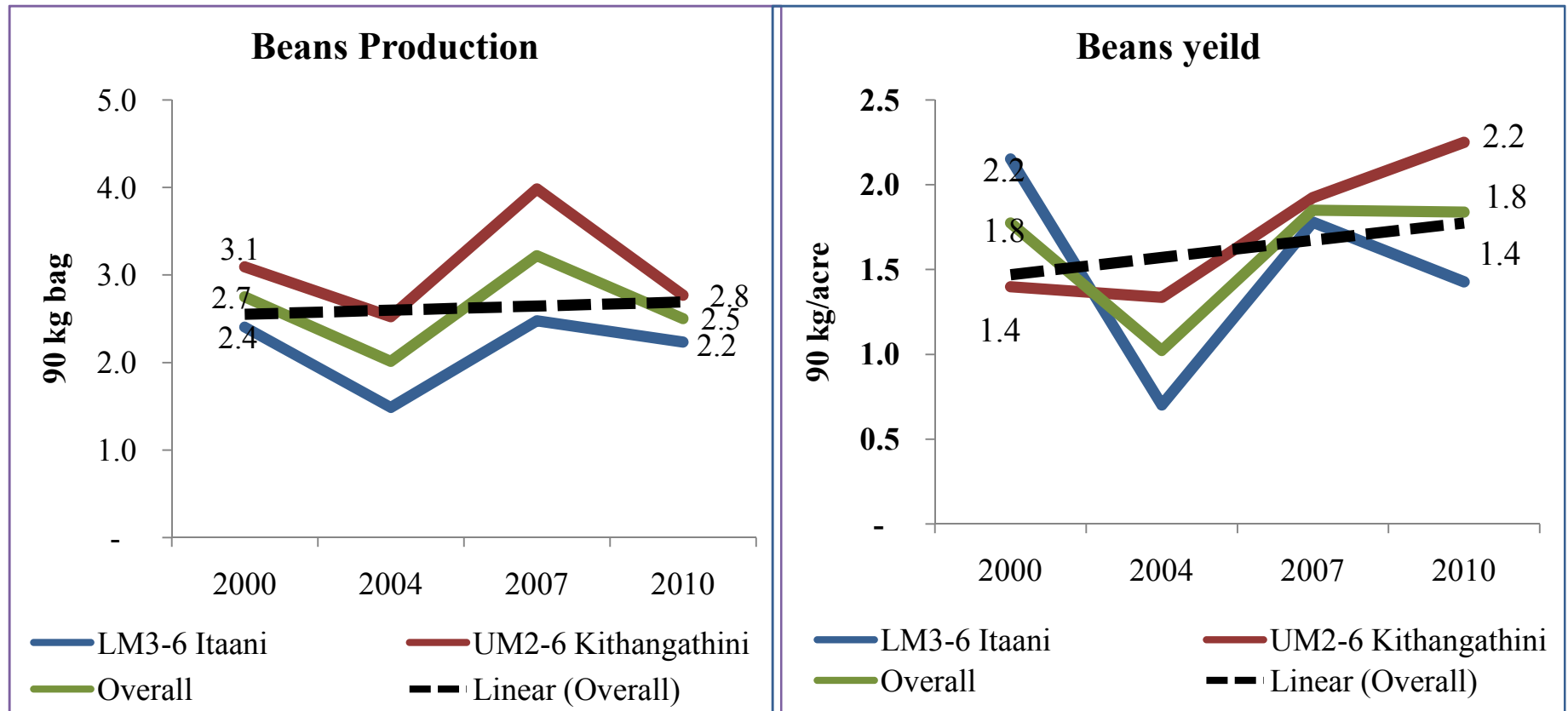
Beans

Cultivated Area Under Beans



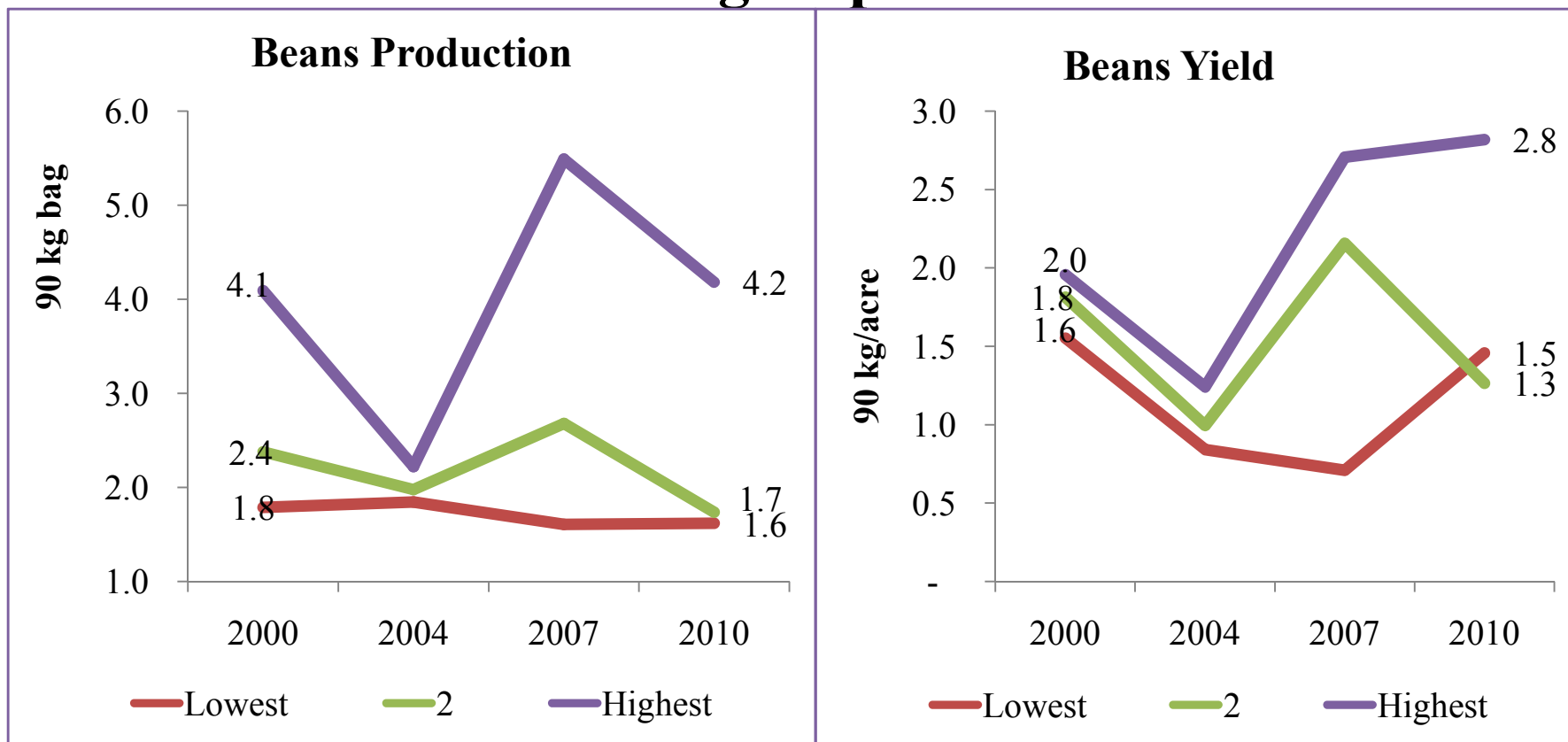
- Area under beans declined by about 0.5 acre

Household Beans Production and Yield – by region



- Production and productivity remained the same over the entire period
- Increase in productivity observed in Kithangathini

Household Beans Production and Yield – by income group

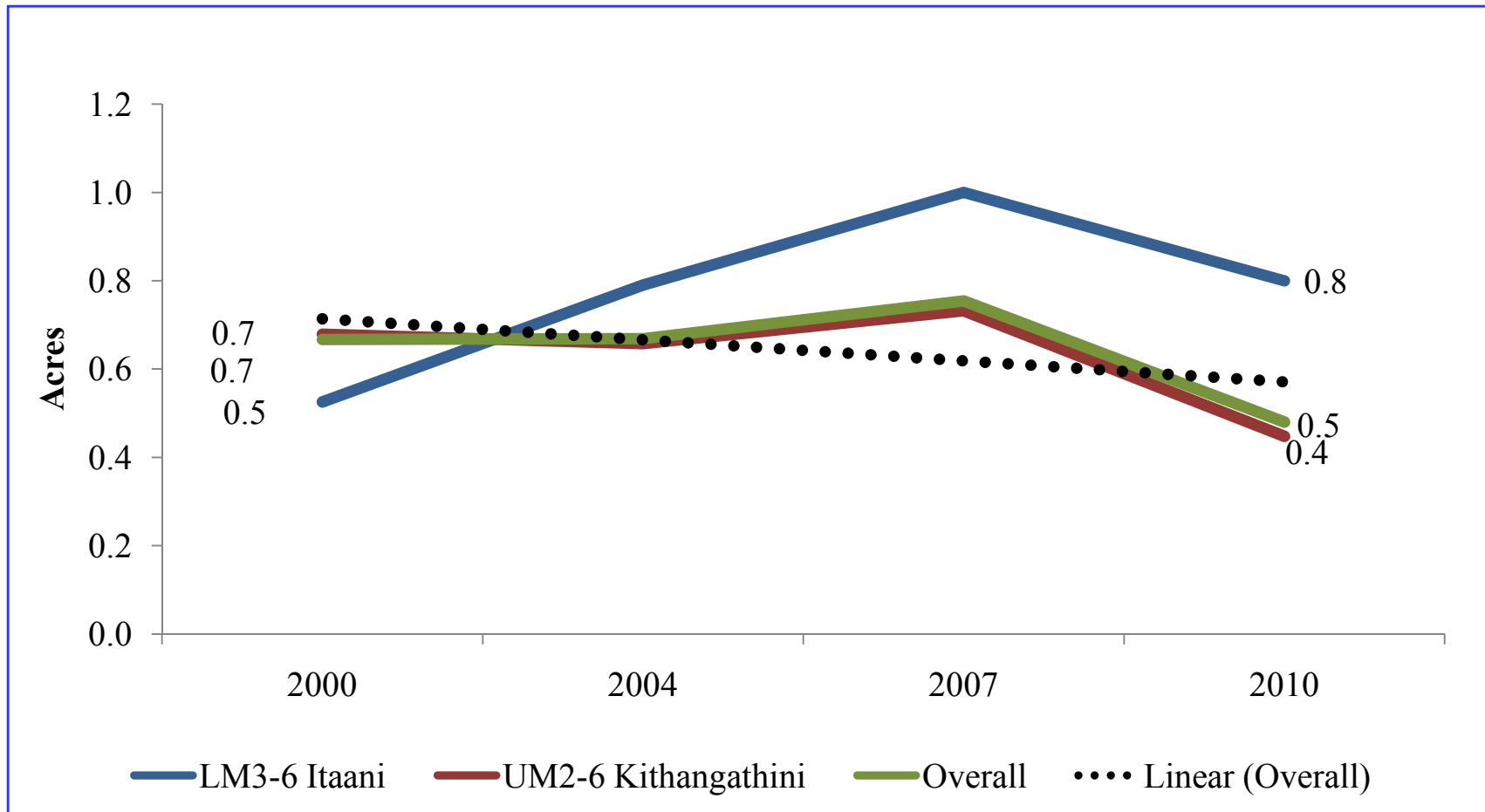


- Production and yield highest for the highest income group; much lower for lower income groups



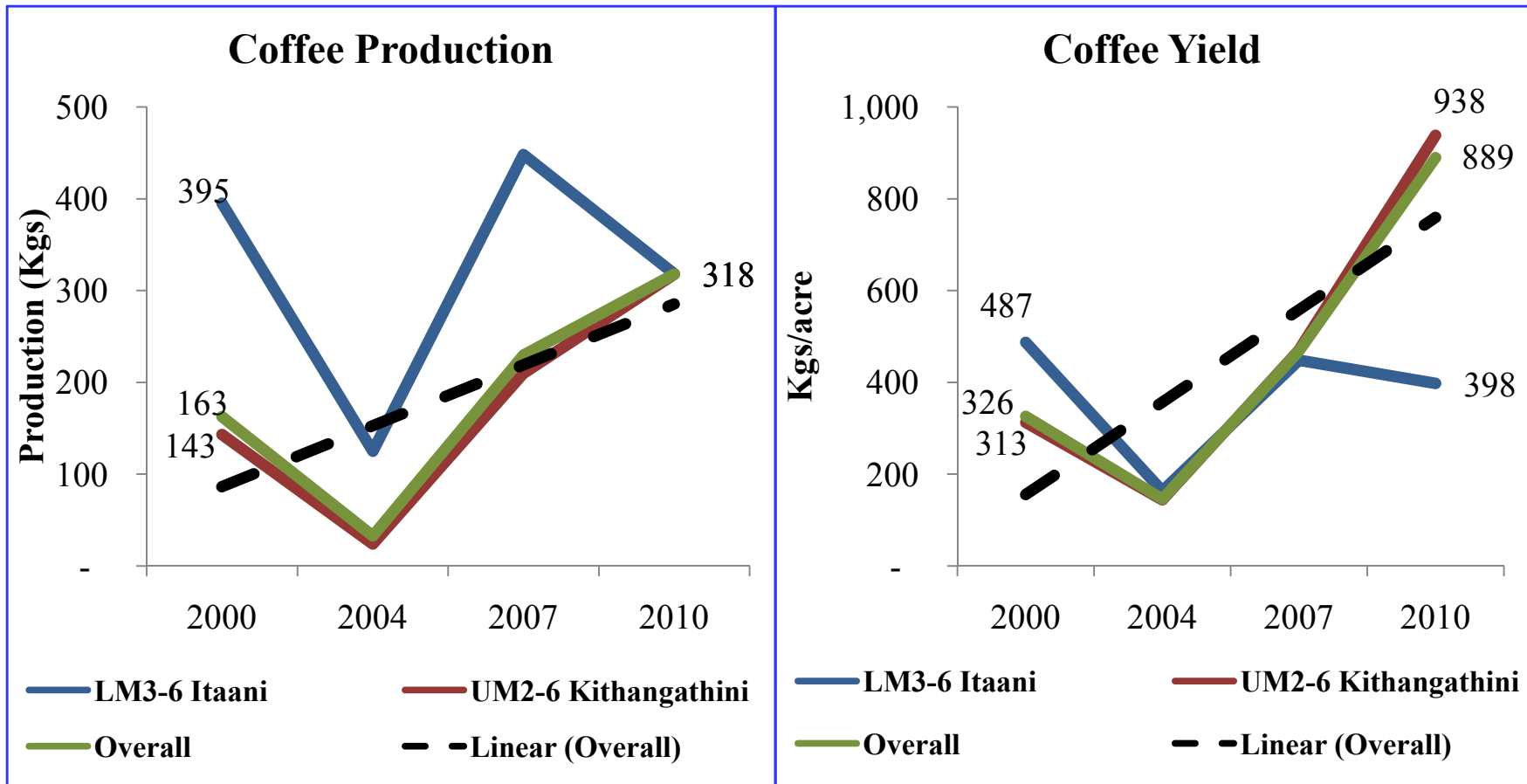
Coffee

Cultivated Area Under Coffee



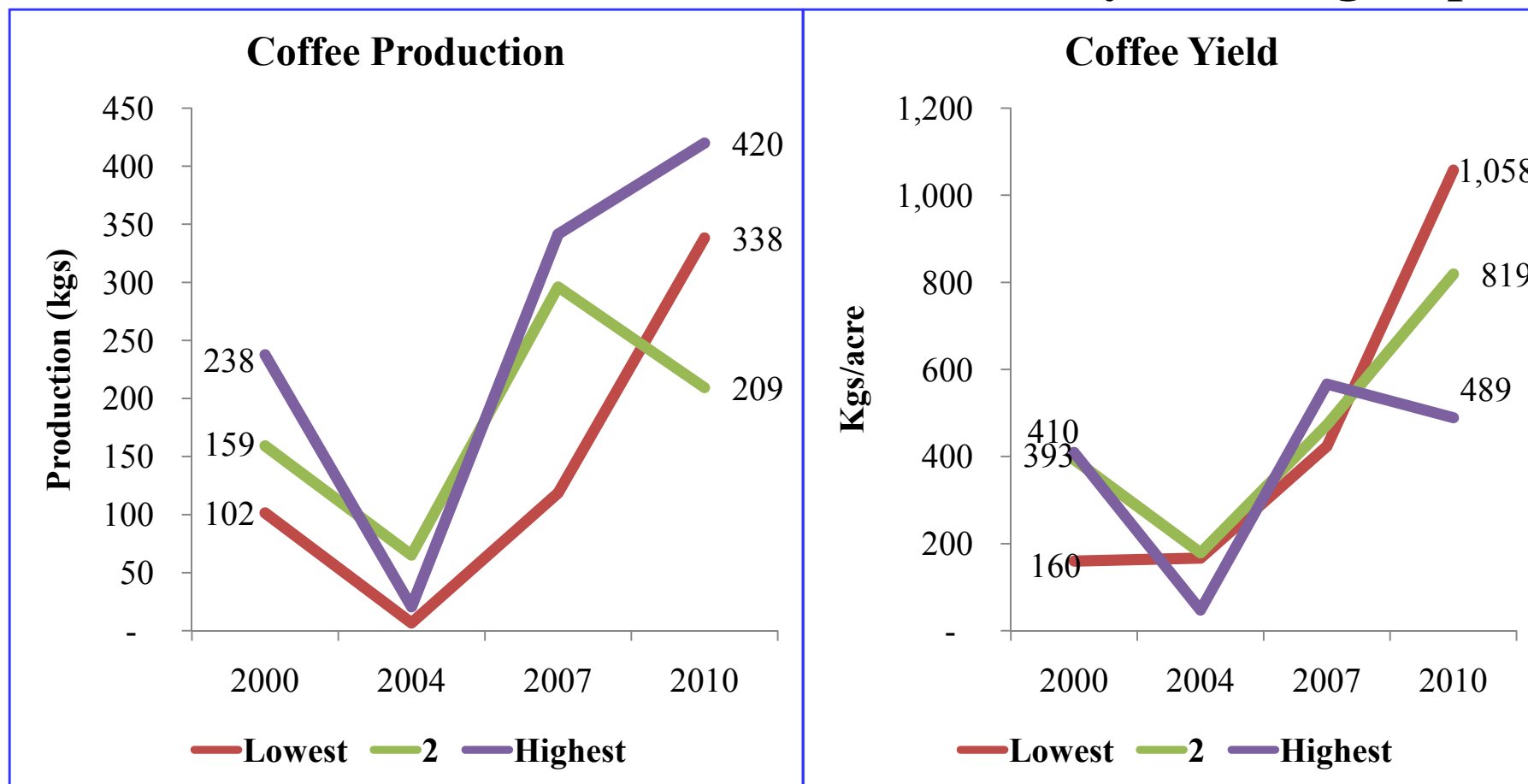
- Overall decline in area by 0.2 acres (approximately 108 trees)
- Area larger in Itaani

Household Production & Yield of Coffee– by region



- Production and yield declined in 2004, then increased thereafter; increase higher in Kithangathini
- Yield higher in Kithangathini (1.7 kg per tree)

Household Production & Yield of Coffee– by income group



- Production and yield declined in 2004 for all groups, then increased; increase remarkably fastest for lowest income group
- Yield highest for the lowest income group



INPUT USE

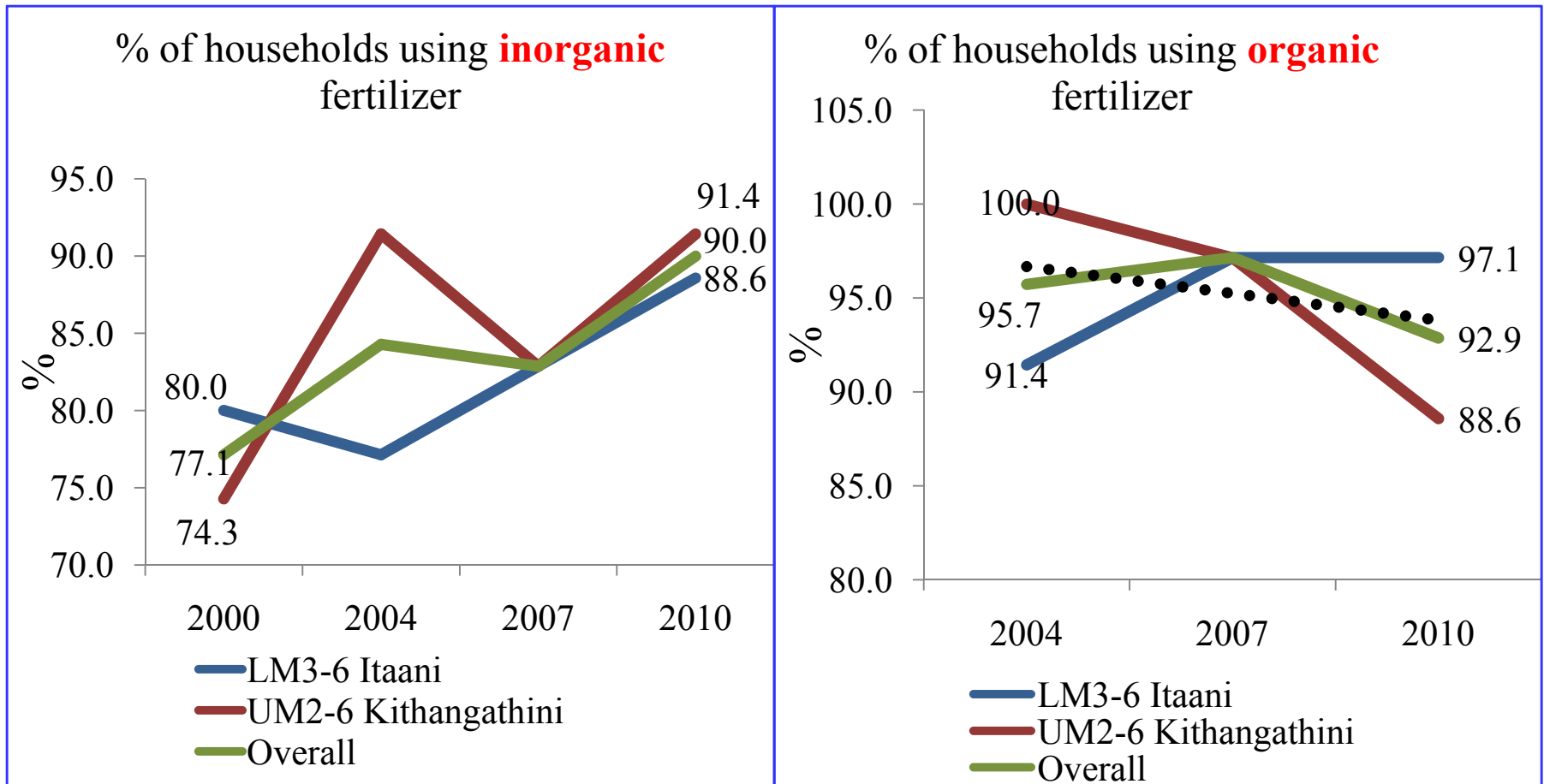
Outline

- Use of Fertilizer
 - % of hh using fertilizer (organic & inorganic)
 - % of land under organic & inorganic fertilizer
 - Fertilizer dose rate
- Use of Improved Certified Seed
 - % of hh using improved certified maize seeds
- Expenditure on Livestock Input



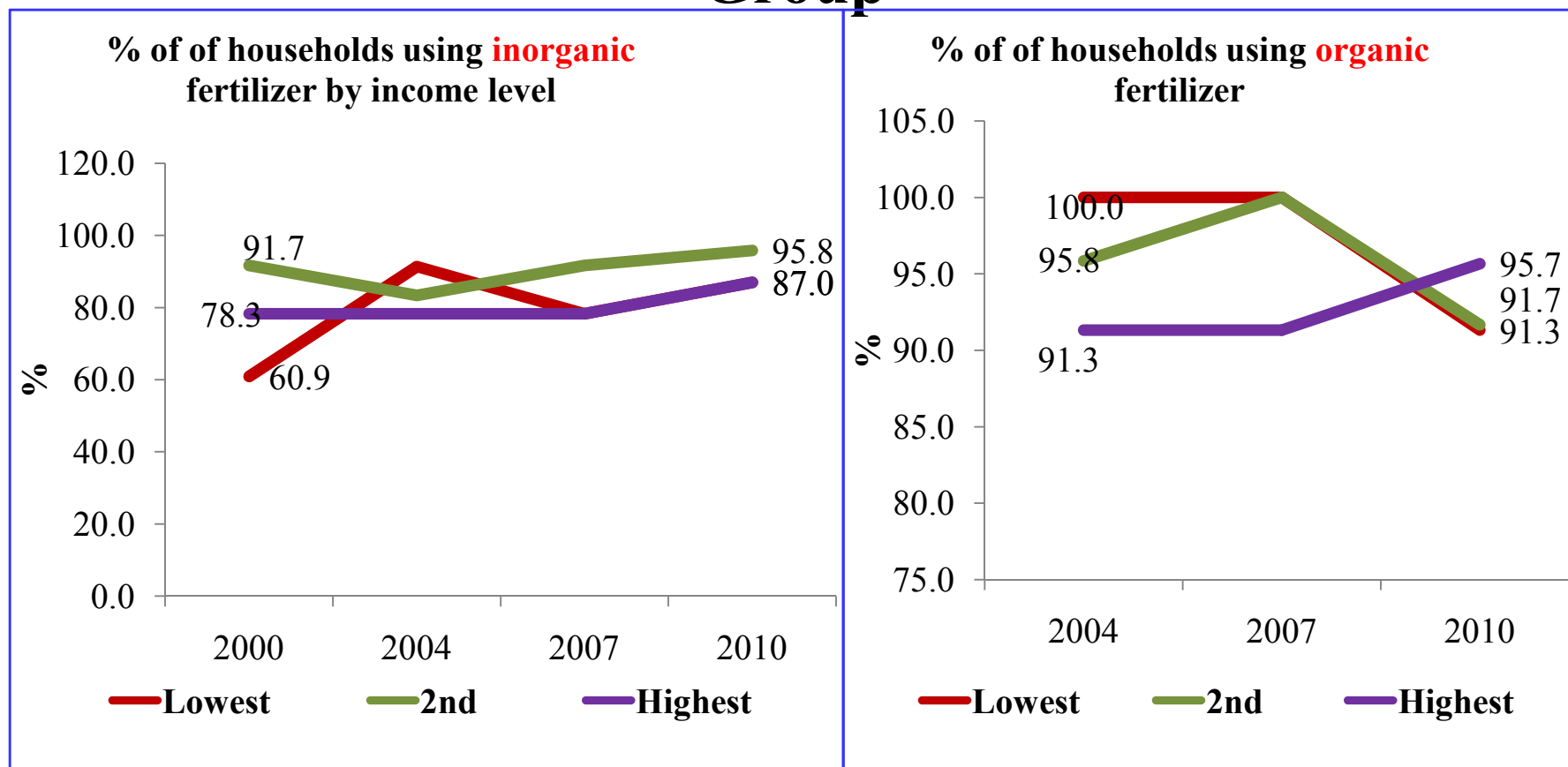
Fertilizer

Percent of households using Fertilizer by Region



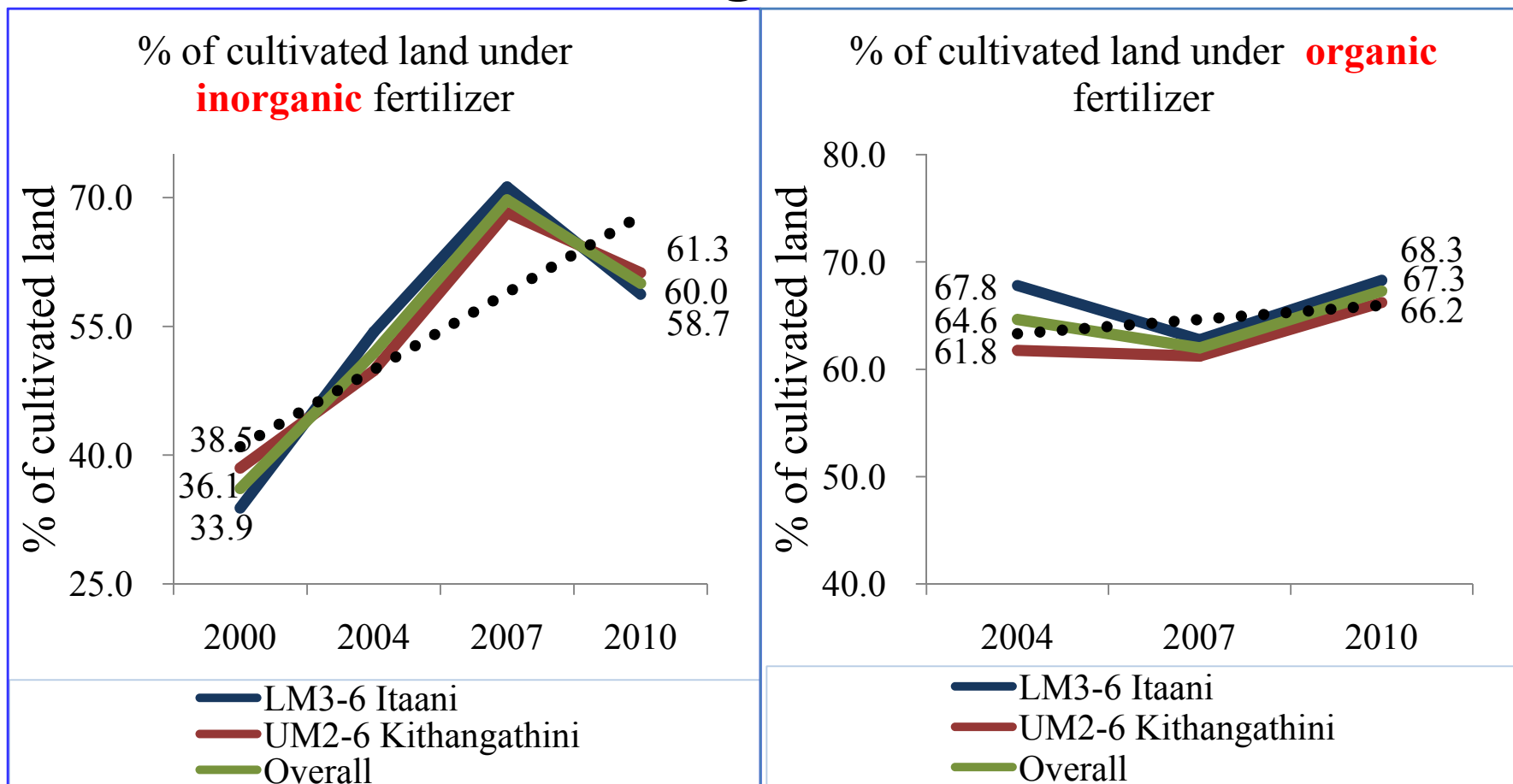
- Overall increase in % of using inorganic fertilizer over time
- Decline in % using organic fertilizer; but remained high - >90%

Percent of households using Fertilizer - by Income Group



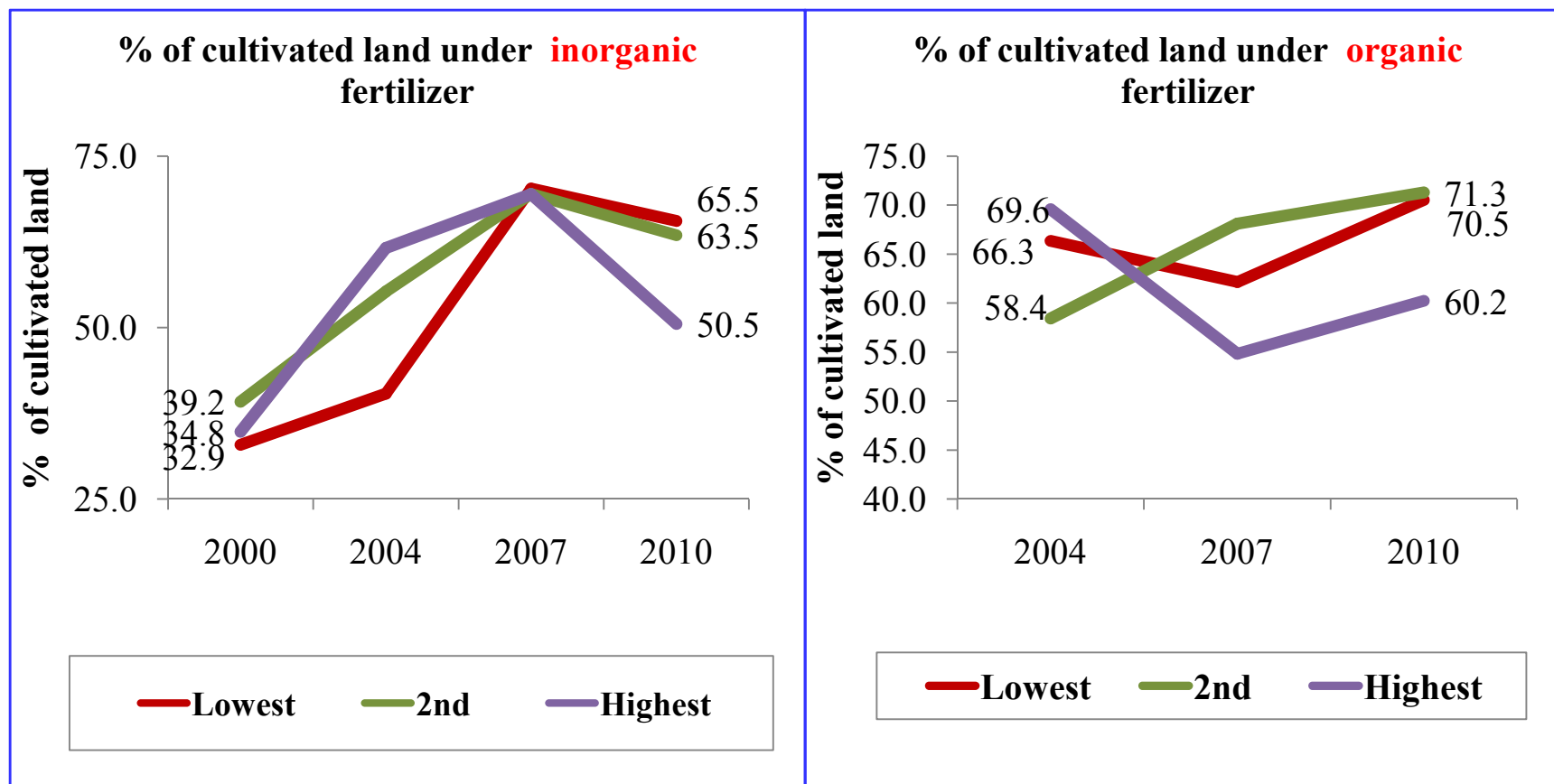
- % using inorganic fertilizer increased and is high for all groups; remarkable for lowest income group
- % using organic fertilizer is >90% for all groups; increased and highest (96%) for highest income group

Percent of Cultivated Land Under Fertilizer – by region



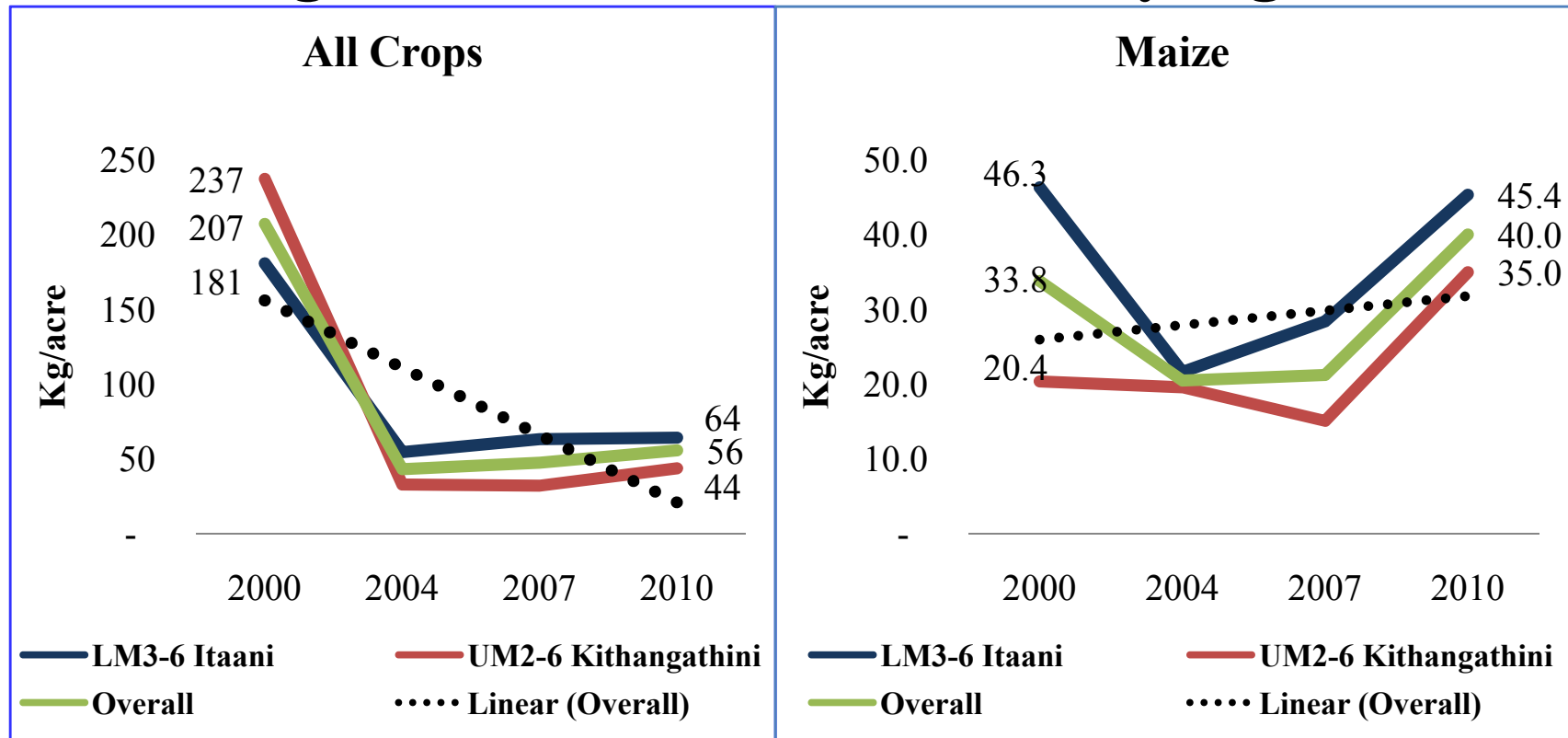
- Overall increase in % of land under inorganic fertilizer
- % of land under organic fertilizer slightly increased over time

Percent of Cultivated Land Under Fertilizer – Income Level



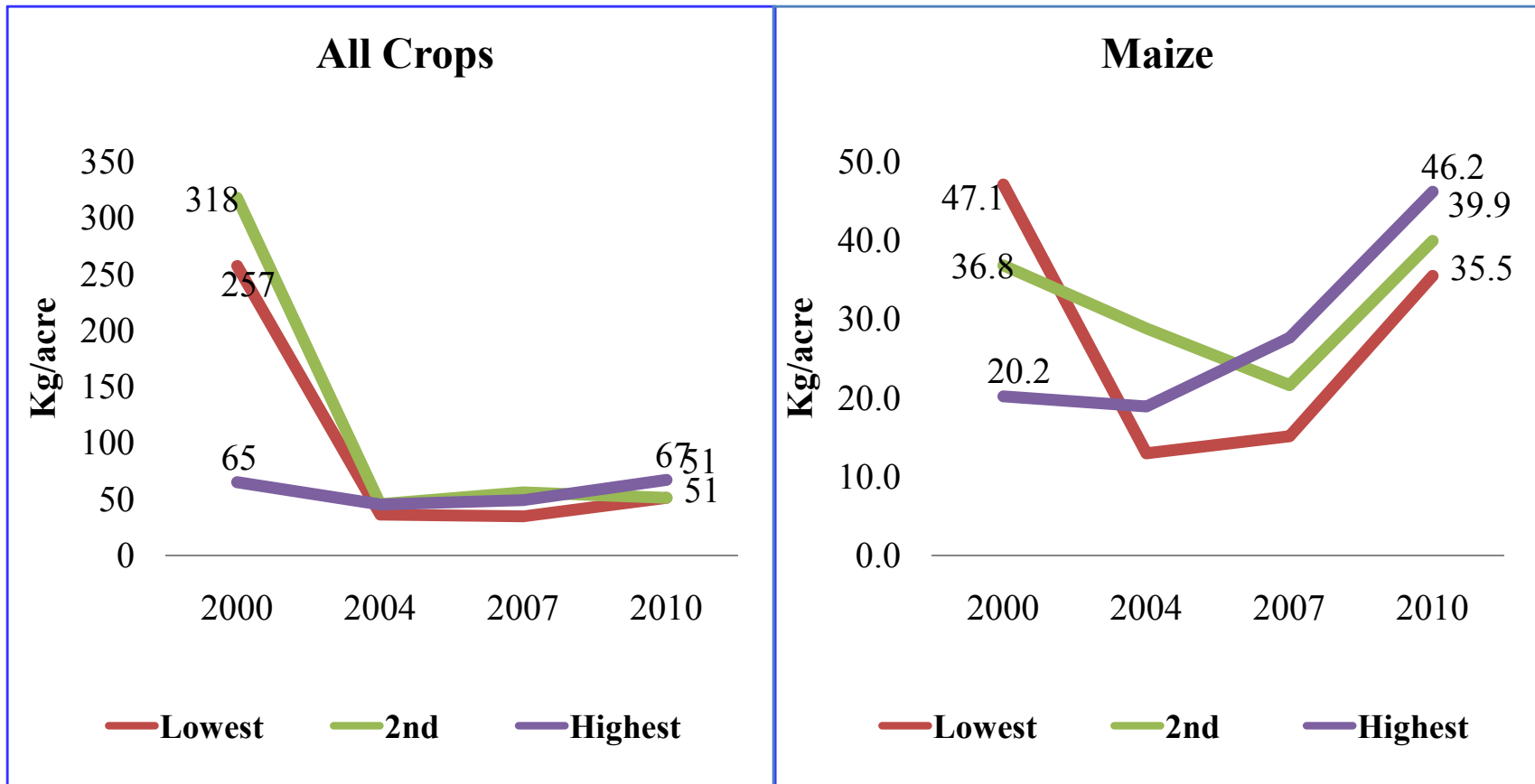
- Remarkable increase in % of land under inorganic fertilizer for the lowest income group
- % of land under both fertilizers highest for the lower income groups

Inorganic Fertilizer Dose rate – by region



- Significant drop in fertilizer dose rate (on all crops combined) across the years; attributed to problems in coffee sector in early 2000s
- Dose rate on maize declined in 2004, then increased in later years, resulting in modest overall increase

Inorganic Fertilizer Dose rate – by Income Group

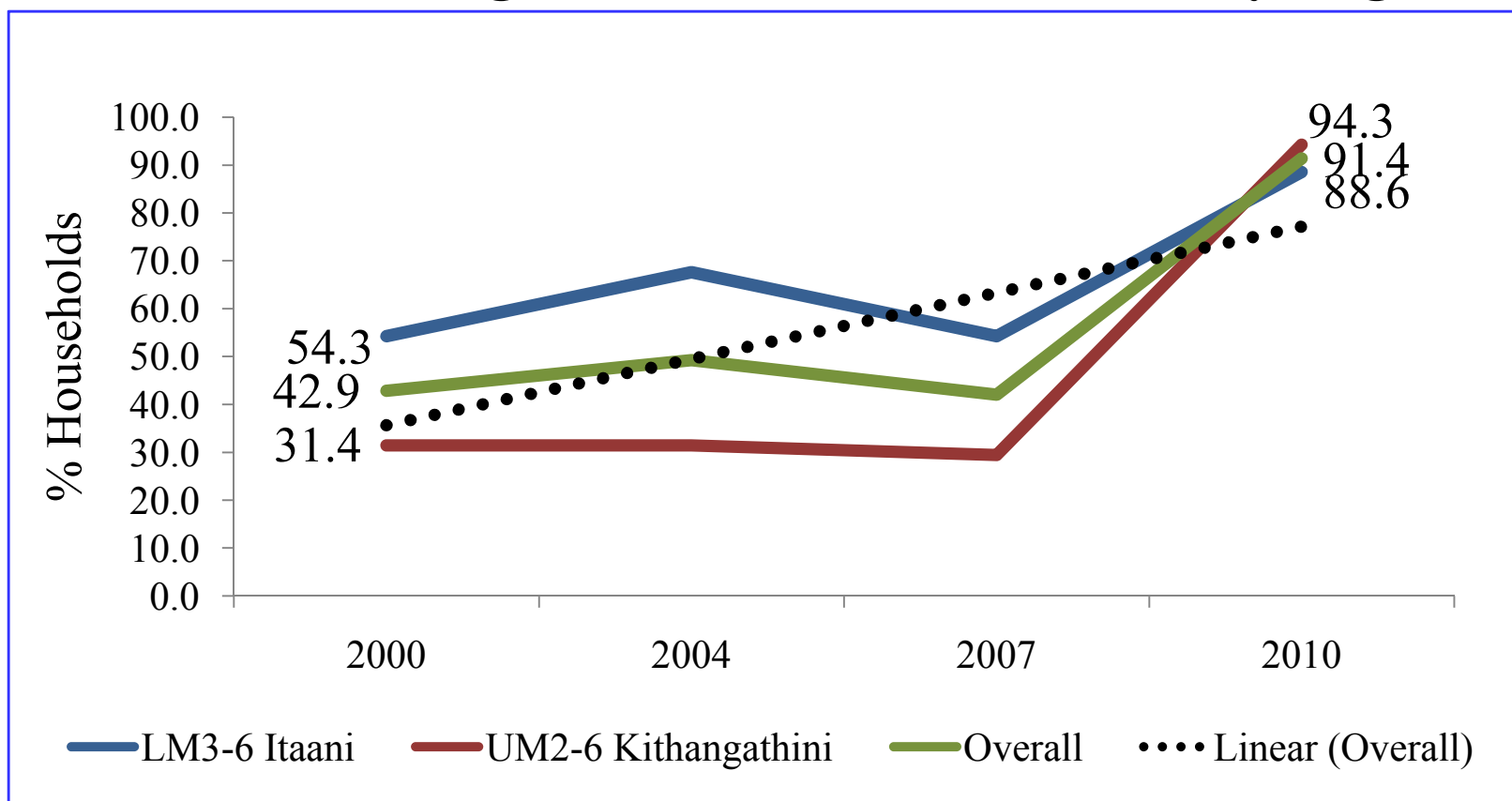


- Dose rate on all crops declined for lower income groups
- Dose rate on maize increased and is highest for highest income group but declined for lowest income group



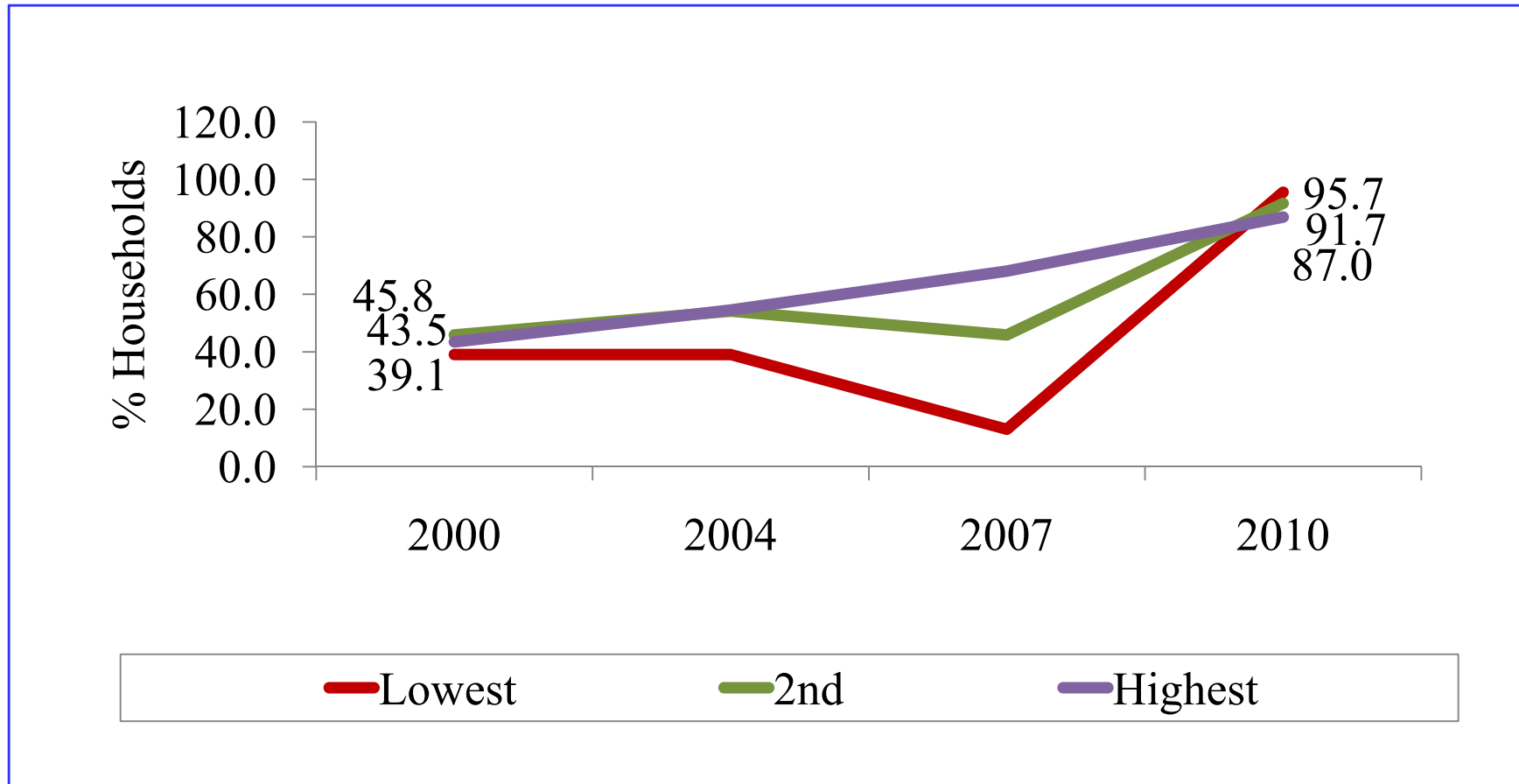
Certified Maize Seed

House Holds Using Certified Seed on Maize – By Region



- % planting certified maize seed more than doubled
- Only 8% of households received seed relief from the government in 2009

House Holds Using Certified Seed on Maize – By income Group

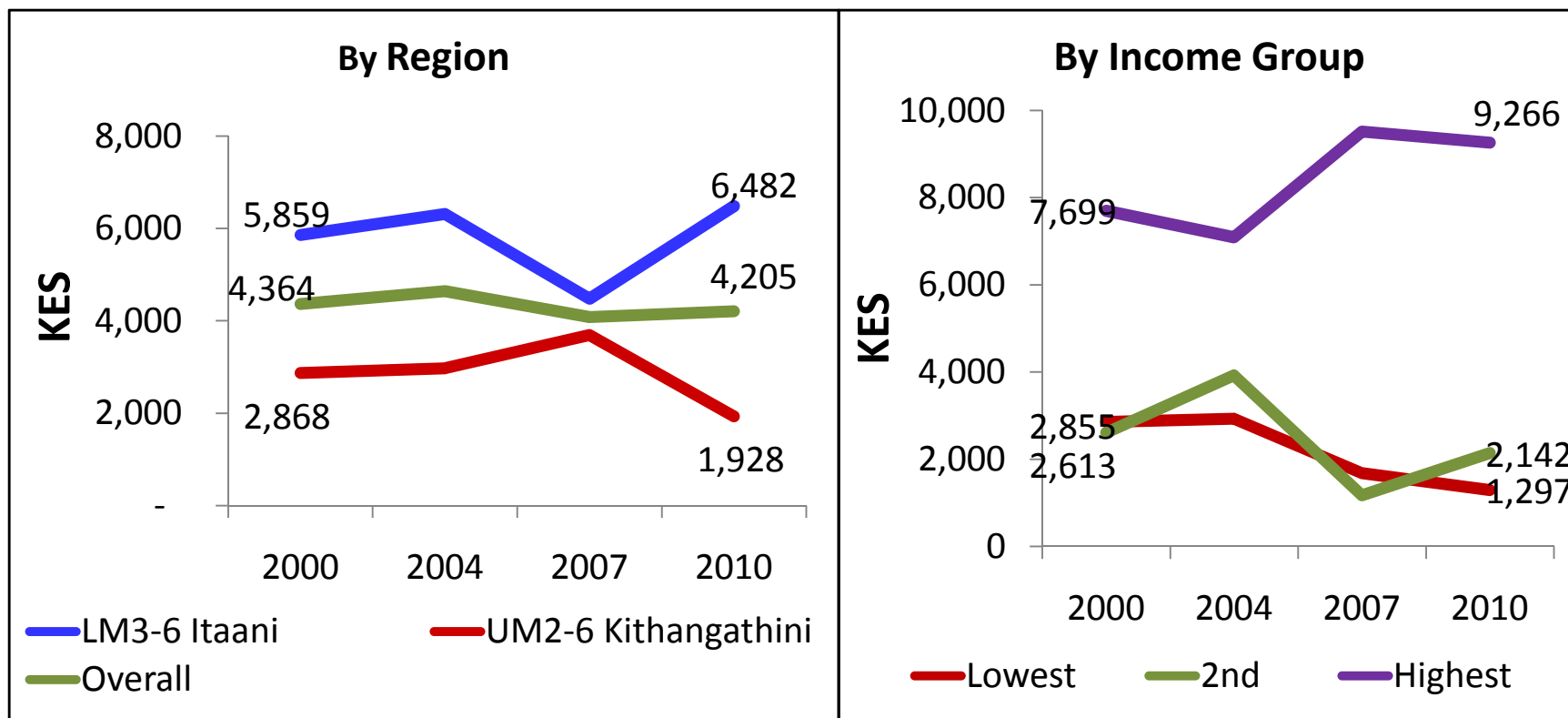


- General increase observed for all income groups
- Lowest income group had a decline up to 2007, then shot up



Livestock Inputs (Expenditure)

Annual Expenditure on Livestock Input



- Increase in expenditure on livestock inputs (feeds, veterinary services, hired labour) observed in Itaani; declined in Kithangathini
- Expenditure highest and increased for the highest income group – spent more on hired labour; declined for lower income group



Key Findings

Key Findings

Socio-economic characteristics

- Number of female headed households increased
- Household size declined
- Land size remained the same
- Real value of assets increased – households acquired assets
- Chicken most widely kept of all livestock; but number kept declined
- % of hh keeping improved cattle and number kept remained same over the 10-year period

Key Findings (cont...)

Productivity

- Overall milk productivity did not change; but increase in both was observed in Itaani
- Maize yield increased by only 2 bags over the 10-year period; yield severely affected in 2004 due to depressed and erratic rainfall
- Overall beans production and yield remained the same over time
- Coffee production and yield generally increased overtime (with a decline in 2004 due to bad weather). But, yield still very low (less than 2kg/tree); way below the potential of at least 20kg/tree
- Overall increase in % of households using inorganic fertilizer over time, but fertilizer dose rates generally declined. Dose rate on maize in 2010 was only 40kg; only 6kg more than in 2000

Key Findings (cont...)

Input use

- Overall, increase in number of households using inorganic fertilizer over time, but fertilizer dose rates generally declined. Dose rate on maize in 2010 was only 40kg; only 6kg more than in 2000
- Number of households planting certified maize seeds increased, even among the lowest income group; increase highest between 2007 and 2010 due, in part, to government seed subsidy in 2009
- Overall, expenditure on livestock inputs (feeds, veterinary services, hired labour) remained the same over time. But, increase observed in Itaani while it declined in Kithangathini – can be linked to higher milk productivity in Itaani
- Highest income group spent more on livestock inputs than lower income groups



Ahsanteni!

Ni Muvea Muno!