

The 8th ERAHS

**Study on the income characteristics of farmers
in agricultural heritage areas
: Focusing on Gurye *Cornus officinalis* agriculture**

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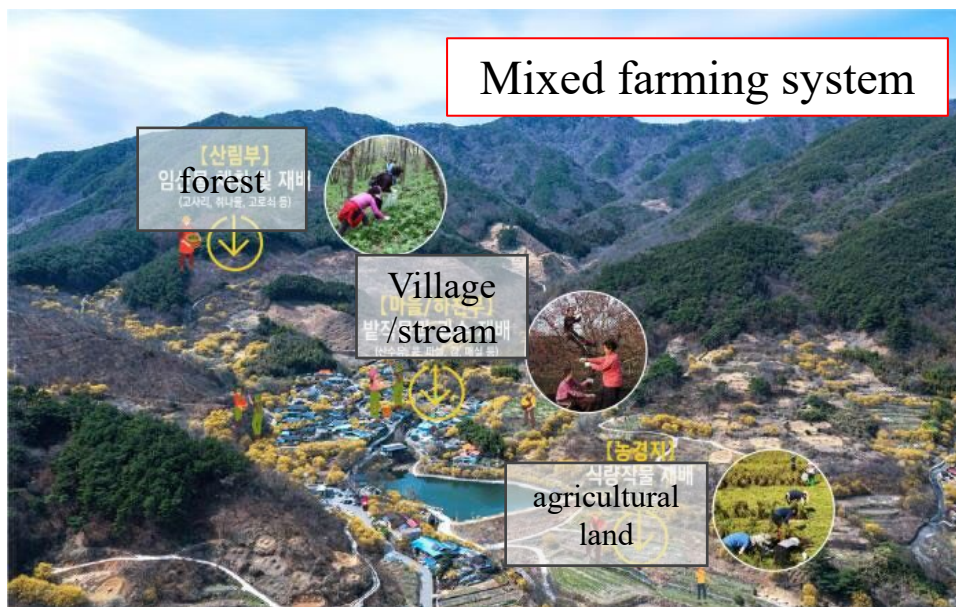
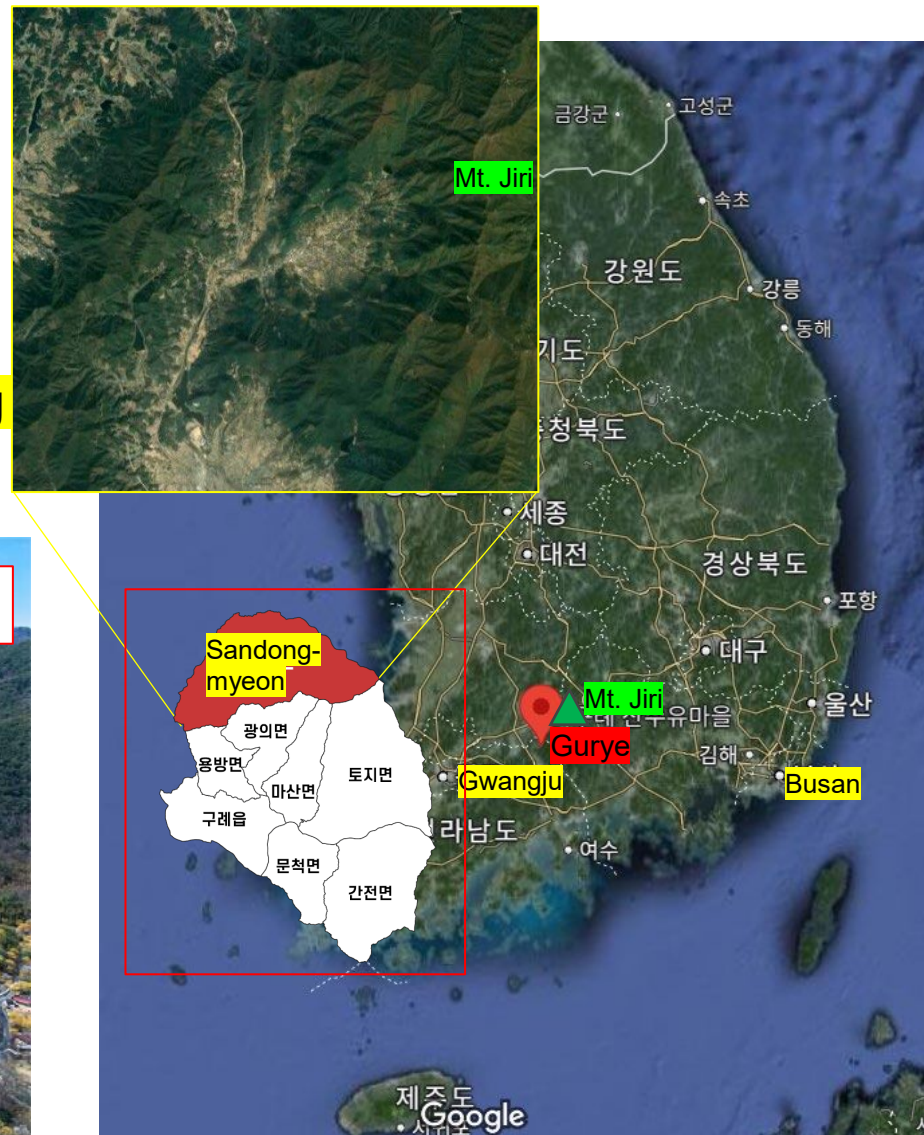


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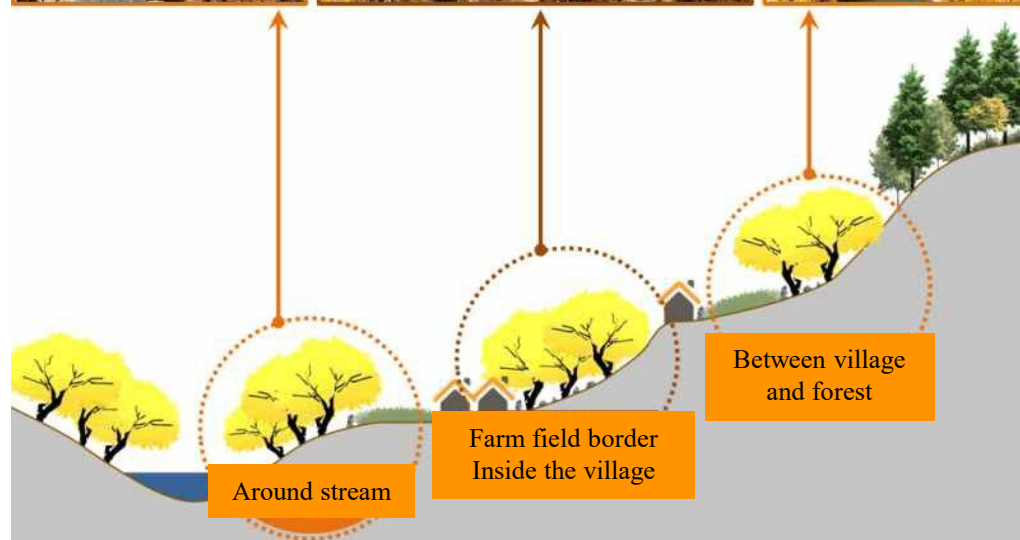
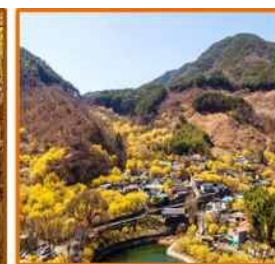
01 Introduction to Gurye *Cornus officinalis* agriculture

- Designated as Korea important agricultural heritage **No.3.**
- Location: Sandong-myeon, Gurye-gun, Jeollanam-do
- The area is located at **the foot of Mt.Jiri**
- **Cornus officinalis** is carried out according to topographical characteristics.



01 Introduction to Gurye *Cornus officinalis* agriculture

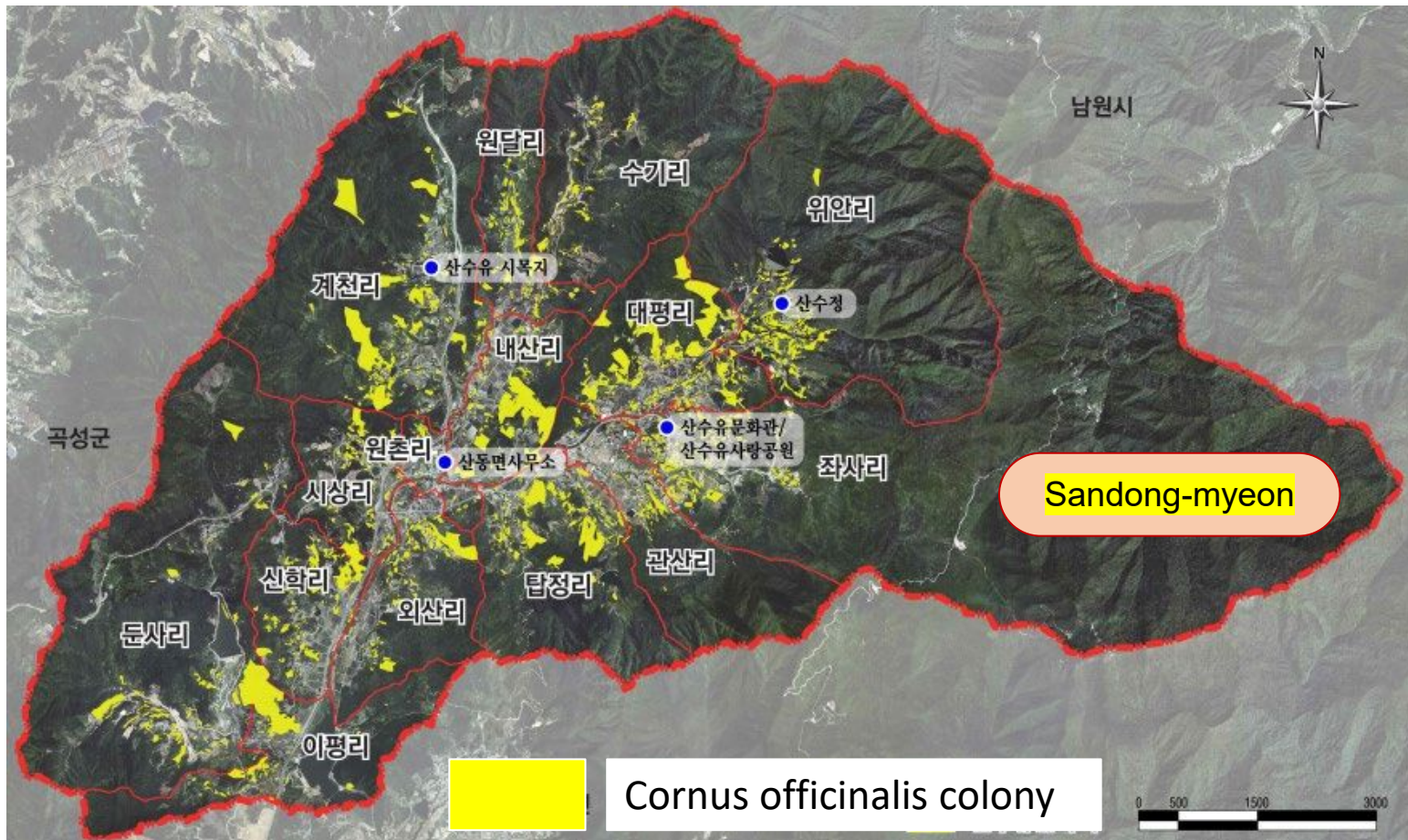
- As it is a mountainous area, **most farmland** that can be cultivated is used **for rice fields**.
- Use even small pieces of land to generate income.
- *Cornus officinalis* trees planted **around streams, inside villages, and under forest areas**.
- Now it has formed a **unique landscape**: Famous tourist destinations in Korea in spring



01 Introduction to Gurye Cornus officinalis agriculture



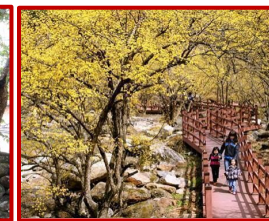
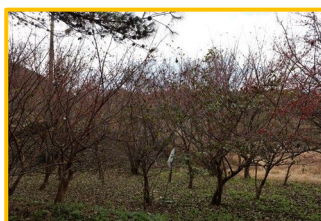
- 107,646 trees planted in Sandong-myeon. (2022 Cornus officinalis cultivation status survey)
- Influencing factors : Altitude(Temperatures), micro climatic factors(villages,streams), Soil



Source: Gurye Cornus officinalis Agricultural Comprehensive Plan (2015)

02 Characteristics of land use of *Cornus officinalis*

- *Cornus officinalis* is grown throughout the village.
- Old trees are distributed along farmland borders, around streams, and within villages.
- Young trees are distributed in areas that were previously used as rice fields.
- Recently, trees were planted along the roadside and parks for landscaping purposes.

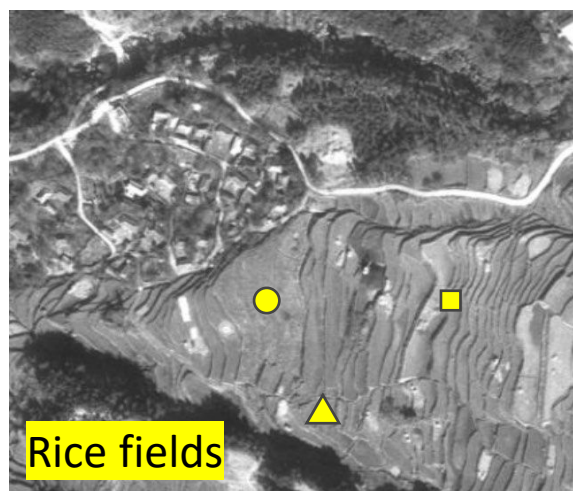


02 Characteristics of land use of *Cornus officinalis*

- Since the 1980s, Increased planting of *Cornus officinalis* trees.
- Rice fields → Vegetable and *Cornus officinalis* cultivation area
- *Cornus officinalis* still has high income value. Compared to other crops.

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> • High utilization of farmland (used as rice fields) • <i>Cornus officinalis</i> grown in non-farmland | ➔ | <ul style="list-style-type: none"> • Increased cultivation of fallow land and other crops • Expansion of <i>Cornus officinalis</i> planting |
|---|---|---|

(1985)



(2003)



(2023)



03 Characteristics of agricultural management and income

- **Farmers(household) less than 0.2 ha : 41.5%**. (*Agricultural business registration criteria)
- The proportion of farms of less than 0.2ha is increasing.
- **Farmers(household) less than less than 1.0 ha : 93.0%**.
- Because of the small farmland characteristics, **Most farmers are small-scale.**

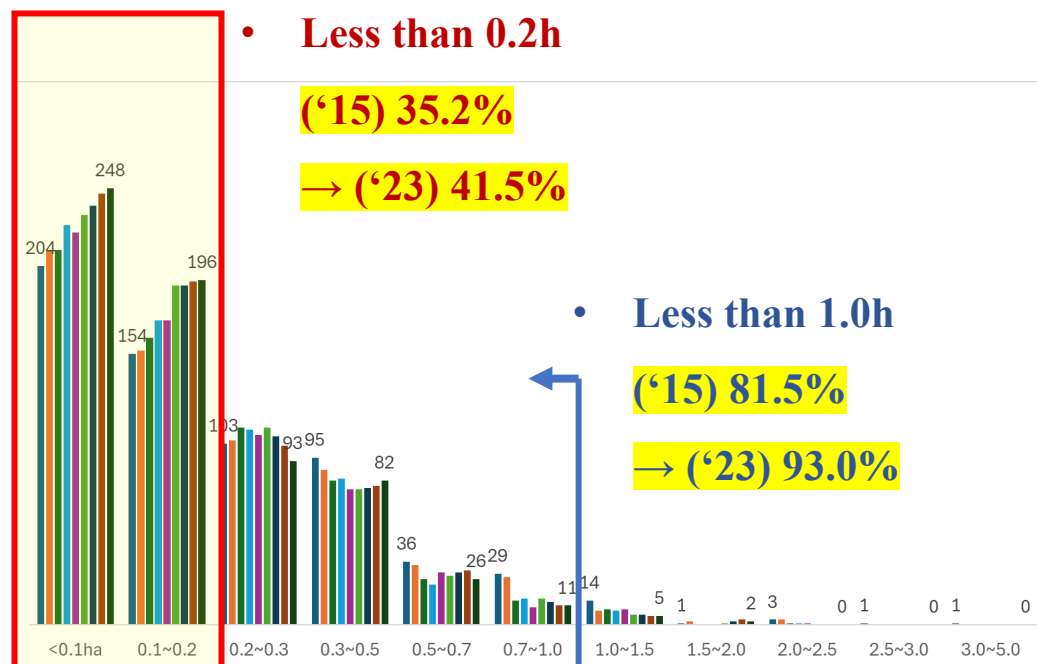
[Table] The number of farmers in Sandong-myeon

Year	Number of farmers (household)	Area (ha)	Area per farm (ha)
2015	641	169.0	0.26
2016	636	153.7	0.24
2017	620	131.1	0.21
2018	641	130.6	0.20
2019	631	128.2	0.20
2020	665	132.2	0.20
2021	667	131.9	0.20
2022	671	131.4	0.20
2023	663	126.5	0.19

Source: Agricultural Business Entity Registration Information (each year)

- The data relates to farmers' own and leased farmland.
- There is a difference from the actual *Cornus officinalis* cultivation area.
- The population of Sandong-myeon is approximately 2,899 (2022).
- The number of Total farmers(household) in Sandong-myeon is 977 (2023)

[Figure] Number of farmers by cultivated area



03 Characteristics of agricultural management and income

- Cornus officinalis has a **higher income rate than other crops** in the Gurye region.
- Cornus officinalis In Gurye region has **higher income than other regions**.
- Due to the environmental conditions, difficult to grow other crops, install greenhouses.

[Table] Comparison of income between crops*
*cultivated in the Gurye-gun region

Crop	Gross income	Operating cost	Income	Income rate (%)
Cornus(산수유)	1,645,152	711,234	933,918	56.8
Rice(벼)	562,366	295,231	267,135	47.5
Wheat(밀)	491,798	300,358	191,440	38.9
Perilla(들깨)	980,587	462,260	518,328	52.9
Corn(꽃옥수수)	1,748,101	890,037	858,064	49.1
Sweet potato(고구마)	3,235,406	1,893,799	1,341,607	41.5
Green onion(대파)	3,625,668	1,694,945	1,930,723	53.3
Shallot(쪽파)	5,286,603	2,639,349	2,647,255	50.1
Ginger(생강)	8,825,932	3,869,768	4,956,164	56.2
Persimmon(단감)	3,759,122	1,794,836	1,964,286	52.3

Source: Agricultural Products Income Survey (2022) / Forest Products Income Survey (2022)
*Average for all regions in Korea / *Standard for field grown crops
*Income : Gross income - Running cost , Income rate : Income/Gross income

[Table] Comparison of income between region

Region	Gross income	Operating cost	Income
Gurye-gun(A) Number of investigators:47	1,605,865	600,432	1,005,433
Others region (B) Number of investigators:10	1,467,900	611,738	856,162
A-B	137,965	-11,305	149,271

Source: Forest Products Income Survey (2022) research data
*Average of surveyed farms
*Other region : Icheon-si, Uiseong-gun, Gunwi-gun, Gokseong-gun

03 Characteristics of agricultural management and income

- Over the three years, Gross income have been almost at the same level.
- Operating cost increased by 28.9%. Income decreased by 22.6%.
 - Capital Goods costs (61.6%), Establishment costs increased (63.7%)
- Income rate decreased from 68.6% to 56.8%.

[Table] Cornus officinalis Income and Operating costs (per 10a)

	2020	2021	2022	('22/'20)
Gross income (1,000won/10a)	1,757,736	1,604,435	1,645,152	-6.4%
Operating cost (1,000won/10a)	551,618	641,610	711,234	28.9%
Income (1,000won/10a)	1,206,118	962,825	933,918	-22.6%
Income rate (%)	68.6	60.0	56.8	

Operating cost (1,000won/10a)	2020	2021	2022	'22/'20	
Establishment cost 조성비	105,750	153,129	173,071	63.7%	
Capital Goods cost 중간재비	Inorganic Fertilizer	70,998	55,946	69,765	-1.7%
	Organic Fertilizer	84,250	163,356	154,544	83.4%
	Agricultural Chemicals	3,808	5,189	5,307	39.4%
	Irrigation & Fuels ,Electricity	34,250	66,832	81,713	138.6%
	Materials	3,497	3,874	3,803	8.8%
	Tools	18,448	36,045	45,735	147.9%
	Machinery & Equipment Depreciation	82,290	80,687	115,806	40.7%
	Farm Buildings & Facilities Depreciation	3,511	9,027	11,730	234.1%
	Repair	1,261	24	-	
	Sub-Total	302,313	420,980	488,404	61.6%
Rent cost	383	1,202	10,179	2557.7%	
Hired Labor cost	142,171	66,299	39,581	-47.2%	
Total	551,618	641,610	711,234	28.9%	

Source : Forest product income survey(2020~2022). Korea Forest Service.



03 Characteristics of agricultural management and income

- Key influencing factors: **Establishment, Fertilizer, Machinery & Equipment cost**
- that account for the most costs in agricultural activities.
- Costs have risen over the years: It will continue in the future

[Table] Regression analysis results by detailed elements for management costs

Model			standardized Coef beta	t	Probability of significance	Collinearity statistic		
						Tolerance	VIF	
1	(Constant)	1.164E-10	0.003		0.000	1.000		
	Establishment cost	1.000	0.000	0.257	64058444.040	0.000	0.463	2.161
	Inorganic Fertilizer	1.000	0.000	0.115	30962847.933	0.000	0.537	1.862
	Organic Fertilizer	1.000	0.000	0.248	76068430.389	0.000	0.701	1.427
	Agricultural Chemicals	1.000	0.000	0.011	3337704.760	0.000	0.668	1.497
	Irrigation & Fuels ,Electricity	1.000	0.000	0.150	30929240.106	0.000	0.317	3.158
	Materials	1.000	0.000	0.008	2470023.387	0.000	0.687	1.455
	Tools	1.000	0.000	0.100	16139898.023	0.000	0.196	5.103
	Machinery & Equipment Depreciation	1.000	0.000	0.450	113762709.691	0.000	0.476	2.102
	Farm Buildings & Facilities Depreciation	1.000	0.000	0.047	10506301.931	0.000	0.368	2.721
	Repair	1.000	0.000	0.150	50838560.395	0.000	0.856	1.169
	Hired Labor cost (male)	1.000	0.000	0.148	35644348.929	0.000	0.431	2.321
	Hired Labor cost (female)	1.000	0.000	0.124	29525965.130	0.000	0.420	2.383

a. Dependent variable: operating cost per area

Source: Forest Products Income Survey (2022) research data / Analysis of 47 farms in Sandong-myeon



03 Characteristics of agricultural management and income

- For labor saving or work convenience, Most farmers own various equipment.
- Some equipment is only used for Cornus officinalis and has a short period of use.
- Increase in operating expenses related to equipments

[Table] Management input of major equipment

	Number of owned /47名	Average days of use	Minimum value	Maximum value
Cultivator 경운기	46	21.1	5.0	50.0
Weeder 휴대 예취기	47	5.5	1.5	20.0
Dryer 건조기	47	14.5	0.0	72.0
Stripper machine 탈피기	47	16.7	5.0	35.0
Harvest machine 수확기	47	16.9	0.0	40.0
Cold storage 저온저장고	47	40.2	13.8	120.0
Freezer 냉동고	2	11.3	4.5	18.0
Storage 일반창고	1	130.0	130.0	130.0

Source: Forest Products Income Survey (2022) research data / Analysis of 47 farms in Sandong-myeon

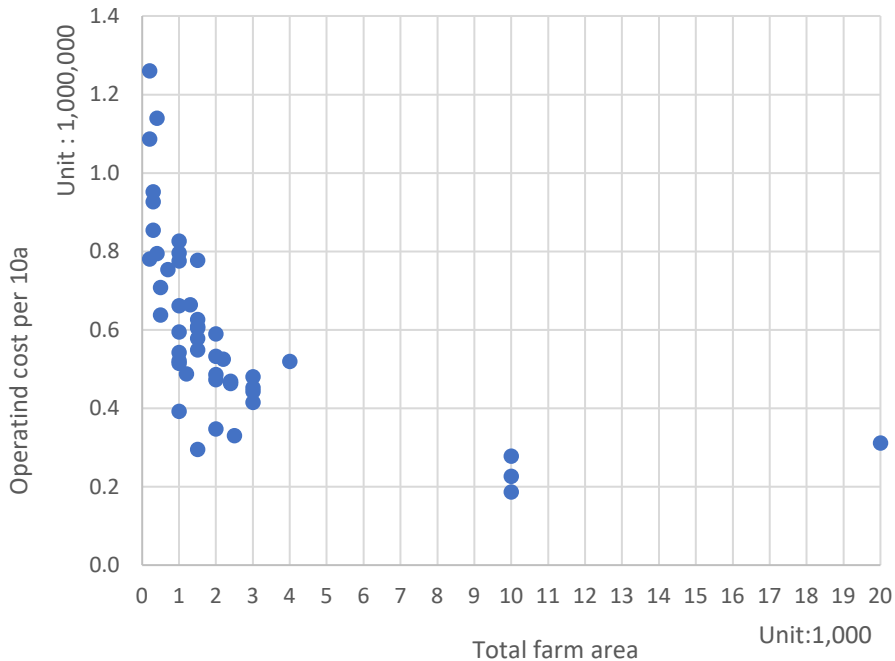




03 Characteristics of agricultural management and income

- Most of the farms have small areas, **smaller the area, the higher the cost per unit.**
- Upper group based on total area > 0.2ha, the income higher than low group.
- **Small-scale farms are disadvantaged in terms of income.**
- Average age of farmers: **70 years old** → **Expansion of business scale impossible**

[Figure] Total area and management cost per area



[Table] Management performance according to total area

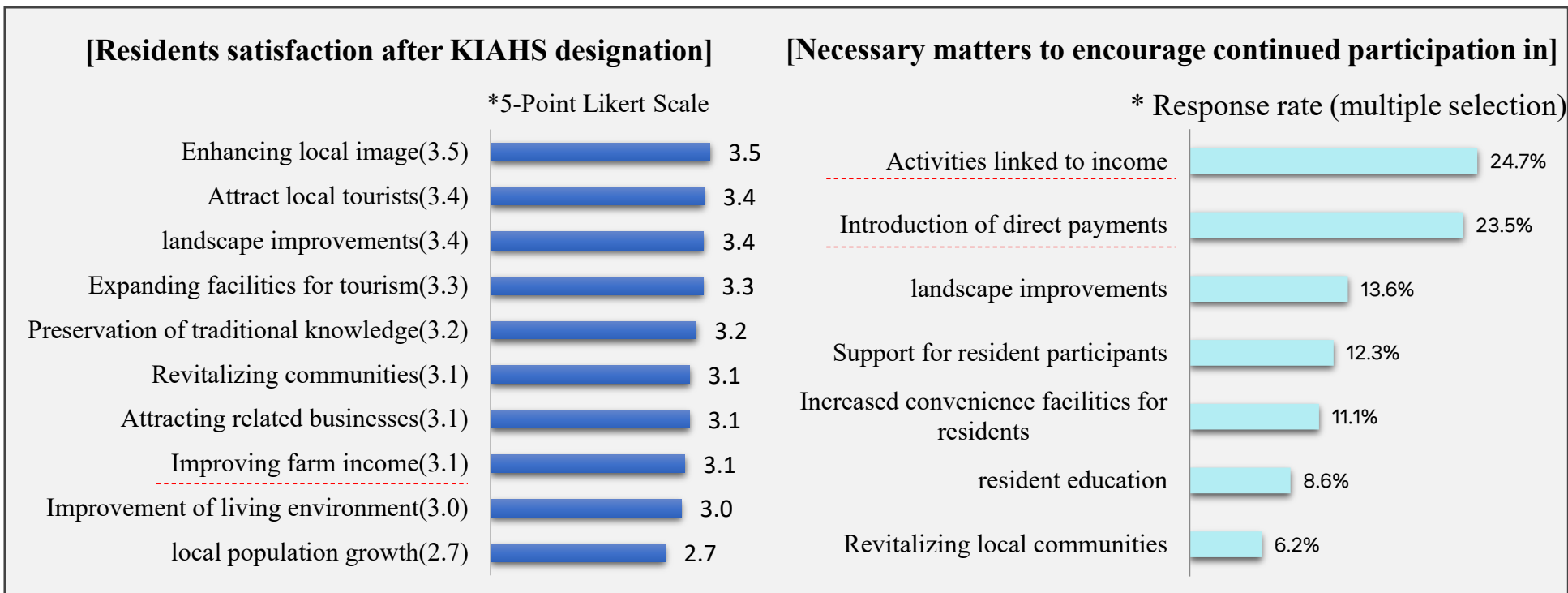
Business performance	≤0.2ha(A)	>0.2ha(B)	(B/A)
Output (kg/10a)	108	105	0.97
Gross income (1,000won/10a)	1,646,181	1,500,425	0.91
Operating cost (1,000won/10a)	680,115	392,033	0.58
Income (1,000won/10a)	966,066	1,108,392	1.15
Income rate (%)	56.90%	72.28%	1.27

* Independent sample t-test: Significant differences between groups in management expenses and income rate (probability of significance at .05 level)

04 Sustainable conservation plan for agricultural heritage

- Residents are **highly interested in Income issues** (Monitoring results in 2023)
- Most people who preserve agricultural heritage are small-scale farmers.
 - **Income support policies are needed** at the national and regional levels.
- There is **high interest in the direct payment system** promoted by the government.

[Figure] Resident survey results (2023)

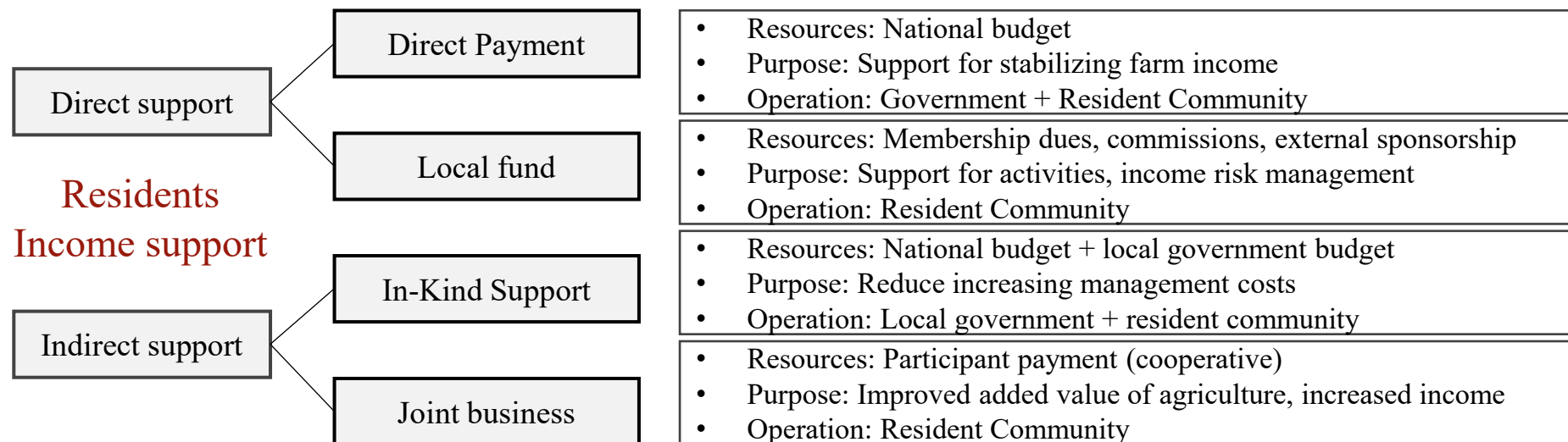


Source: Gurye Cornus officinalis traditional farming monitoring results report (2023)

04 Sustainable conservation plan for agricultural heritage

- **Goal** : Maintain agricultural activities by residents(farmers)
- Farm income needs to be guaranteed to prevent giving up on cultivation.
- There is needs for governments to introduce policies to guarantee basic income.
- **Strategy** : Direct and indirect support available
 - Direct Payment system and Local funds for Agricultural Heritage Participants
 - Agricultural materials and equipment support (* Examples of support from local government)
 - Joint business (Co-Promotion, processed products, Rural tourism, etc.)

[Figure] Number of farmers by cultivated area

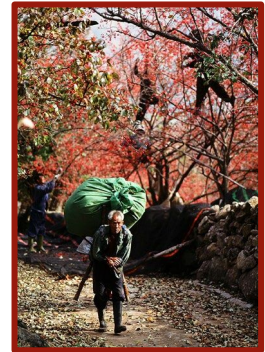


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Sustainability of agricultural heritage



Thank you!

