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The FarmForward Project: Sustainable and Transformative Strategies for Climate-Resilient Agriculture in VET

WP2

Needs Analysis National Report

Slovenia

Project Partners

QUALIFICATIONS AND VOCATIONAL EDUCATION AND TRAINING DEVELOPMENT CENTRE

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The FarmForward Project: Sustainable and Transformative Strategies for Climate-Resilient Farming in VET

(2024-1-LT01-KA220-VET-000248582)

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In Slovenia, three questionnaires were carried out – among teachers, students, and stakeholders in the agricultural sector – to analyze the current state of education and support for climate-resilient farming practices. The results show that all three groups recognize the importance of sustainable and climate-smart agriculture, but also point to several gaps.

Teachers already include climate change topics in their curricula, but note that these contents are often only partially integrated, with a lack of practical examples, quality teaching materials, and institutional support. Students express strong interest in climate-smart agriculture and new technologies, yet report insufficient practical experience and applied knowledge. Stakeholders (advisory services, research institutions, farming associations) confirm that climate change impacts on agriculture are already significant, while highlighting bureaucratic barriers, lack of funding, and limited farmer engagement in training.

All three groups share a clear need for more practice-oriented training, better teaching resources, stronger cooperation between schools, farmers, and research institutions, as well as systemic policy and financial support to enable more effective implementation of climate-resilient practices in Slovenian agriculture.

1 Analysis of the results of the questionnaires for educators for Slovenia

Slovenia has eight vocational education and training (VET) schools that offer programmes in the field of agriculture, either at the upper secondary level (ISCED 3) or within short-cycle higher vocational education (ISCED 5). Despite multiple follow-up requests, the response rate to the questionnaire remained low (20 answers). This is not unusual, as educational institutions often face significant time constraints and are frequently approached to participate in interviews, and surveys. The high volume of collaboration invitations makes it difficult for them to engage consistently across all initiatives.

Below are the answers from the Slovenian educators (No. 20)

1.1 What is your primary role in education?

All participants who replied to the questionnaire were teachers in VET programs or at universities.

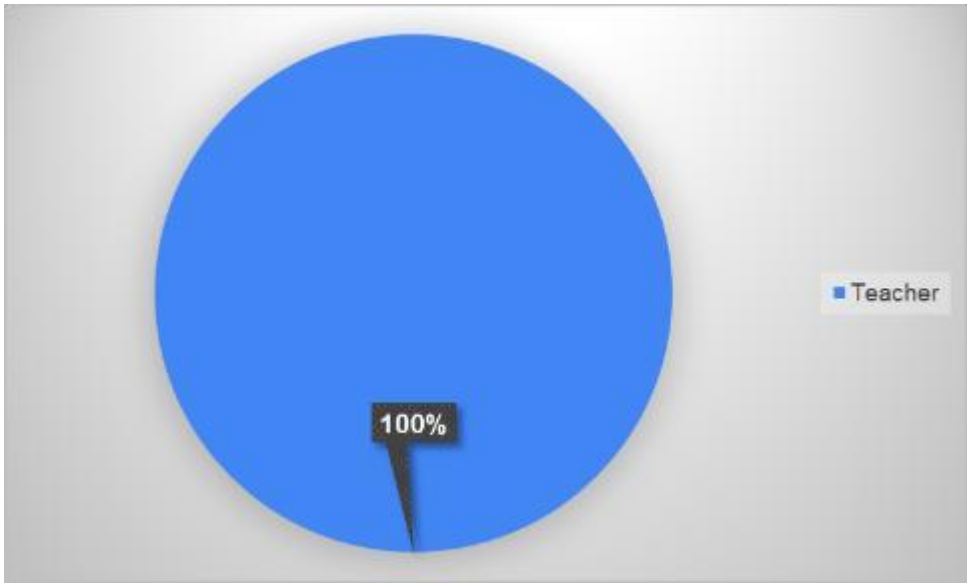

Figure 1: The role of the participants

1.2 How many years have you been involved in agricultural education/training?

The majority of teachers were employed in agricultural education between 11 and 20 years. A similar number was employed for more than 20 years. Only 15 % were teaching for less than 5 years.

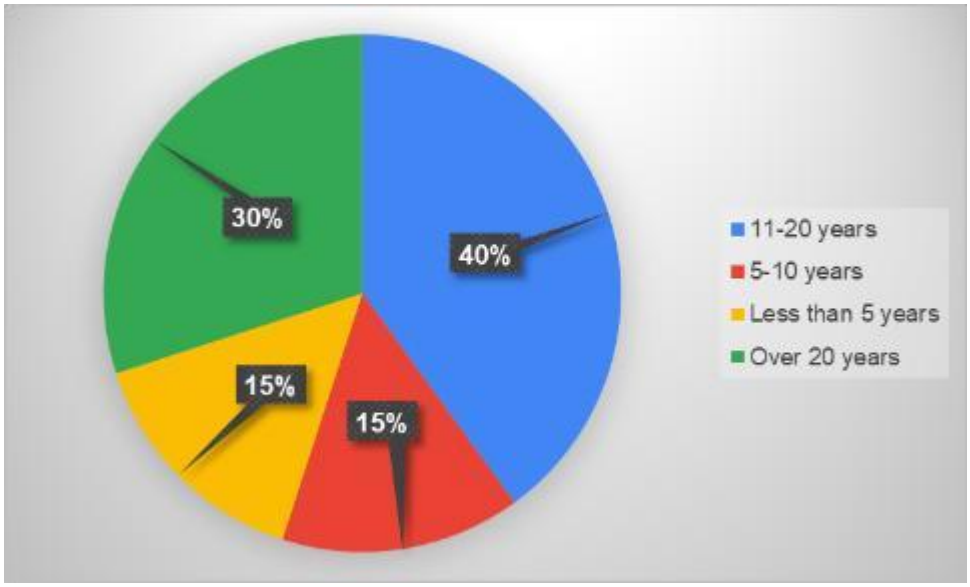

Figure 2: Years working in agricultural education

1.3 Have you received training in climate crisis adaptation/mitigation related to agriculture?

The majority of teachers claim that they received training on the topic of climate crisis adaptation/mitigation in agriculture.

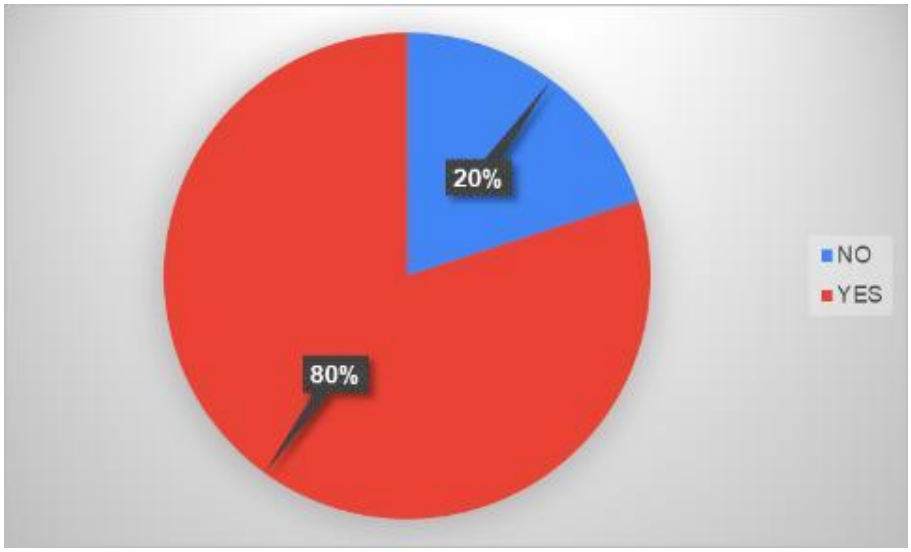

Figure 3: Did educators receive training in climate change adaptation

1.4 What type of educational institution do you work for?

Most of the teachers come from the VET schools, and 4 come from universities.

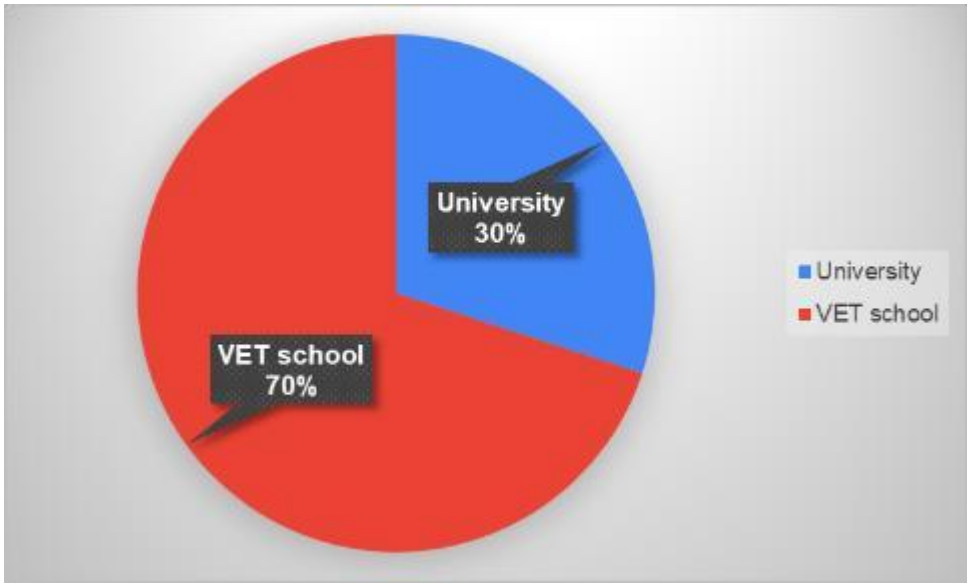

Figure 4: What type of educational institution do educators work for

1.5 Training format(s) you mostly use?

Almost all teachers who participated use a causal in person classroom-based form of teaching. 55 % of them take their students to field demonstrations and farm visits, only 2 use just online courses, and 4 use blended learning.

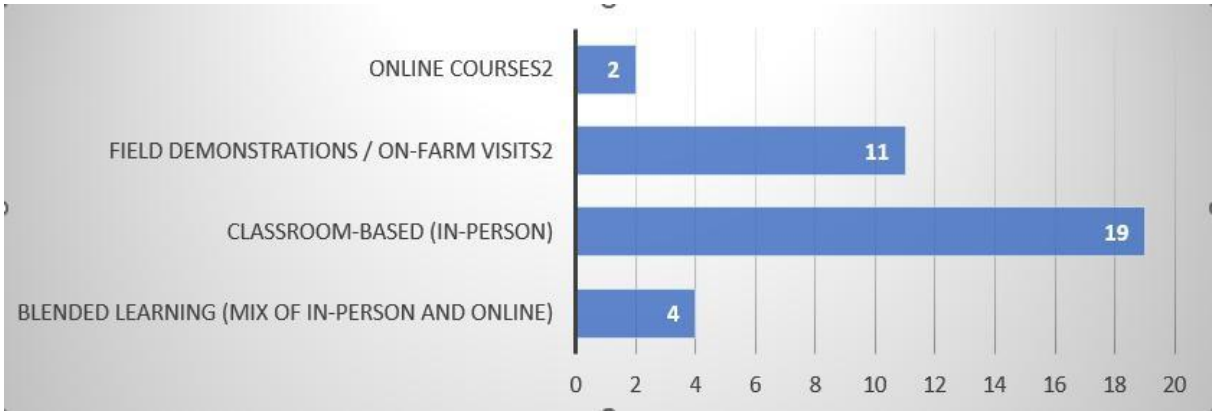

Figure 5: Mostly used training fromat

1.6 Agricultural training programs adequately cover sustainable farming practices and address climate resilience

There is a general sense that sustainable and climate-resilient practices are somewhat covered in agricultural training, but the responses reflect moderate satisfaction at best. With only 10 % expressing full agreement, this suggests a clear need to strengthen the integration of sustainability and resilience into agricultural curricula. Many educators feel these topics are introduced but not deeply embedded in the programs.

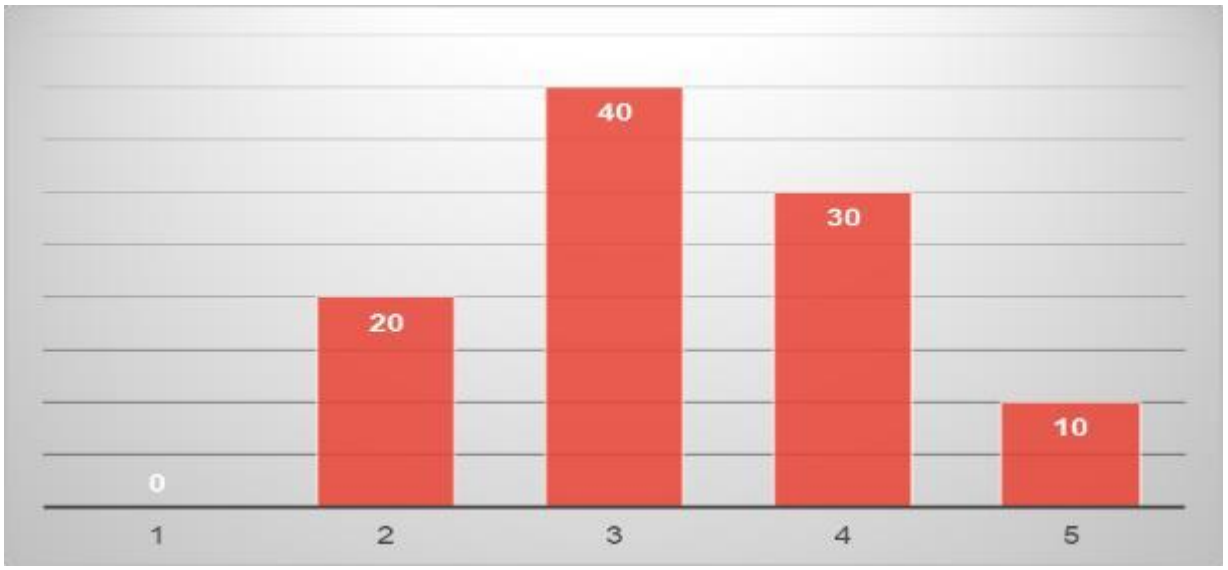

Figure 6: Do you agree that agricultural training programs adequately cover sustainable farming practices and address climate resilience?

1.7 Climate crisis education is a key part of my curriculum/training programs.

While climate education is present in most programs, it's often not considered a central or defining element. The fact that 75% gave ratings of 3 or 4 shows moderate inclusion of climate crisis education in their curriculum, but there's room to increase institutional commitment to making climate topics core components of agricultural training.

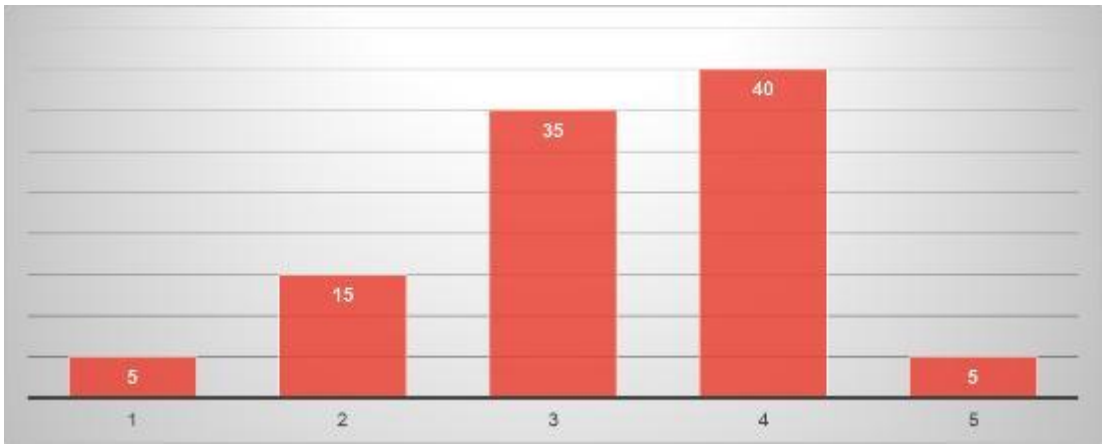

Figure 7: Climate crisis education is a key part of my curriculum/training programs

1.8 I feel confident in teaching about climate crisis and its impact on agriculture.

Educators appear relatively confident, though not overwhelmingly so. Most feel prepared to address the subject, but few feel fully equipped. This suggests potential for professional development opportunities, peer-learning, and training modules specifically designed to build teaching confidence in this area.

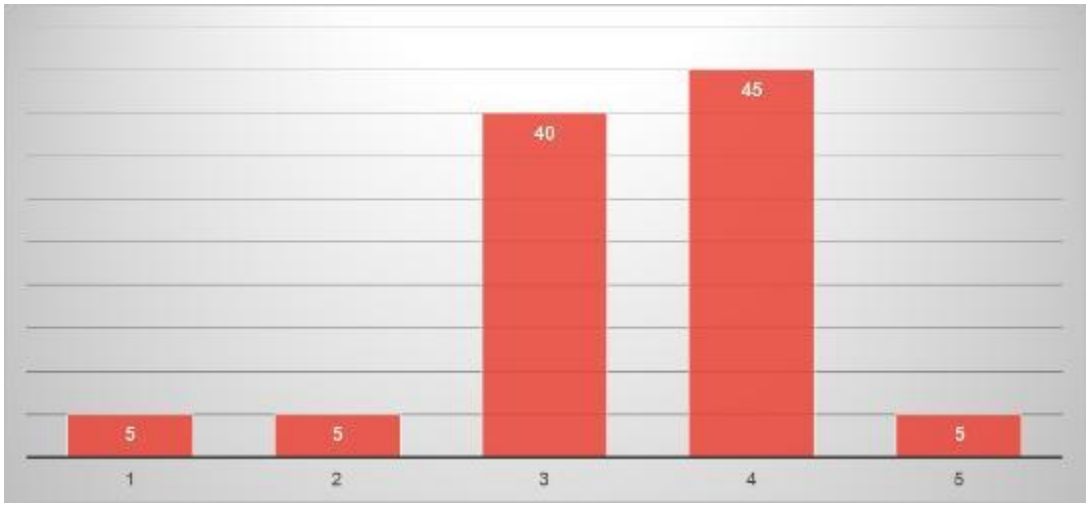

Figure 8: I feel confident in teaching about climate crisis and its impact on agriculture

1.9 There are sufficient teaching materials available to support climate education in agriculture.

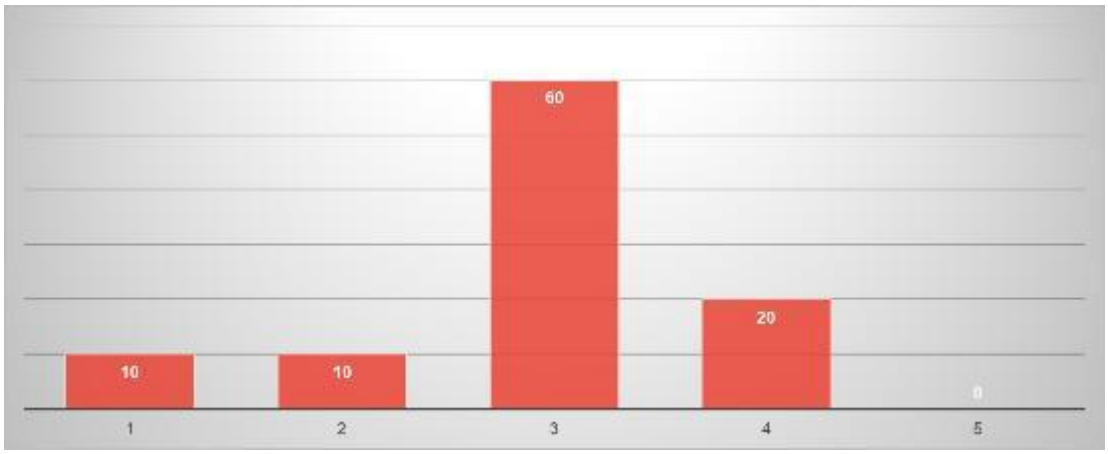

Figure 9: Opinion on sufficiency of available teaching material

The lack of top scores and a high concentration in the middle suggests that materials are available but are perceived as limited in scope, quality, or usability. Teachers may be forced to adapt general content or create their own resources. There's a clear call for better, more tailored teaching materials related to climate-smart agriculture.

1.10 I collaborate with farmers and industry stakeholders to understand real-world agricultural challenges.

Stakeholder engagement is relatively strong. Over half the respondents actively collaborate with the agricultural community. This collaboration is essential for keeping content relevant and grounded in real-world experience.

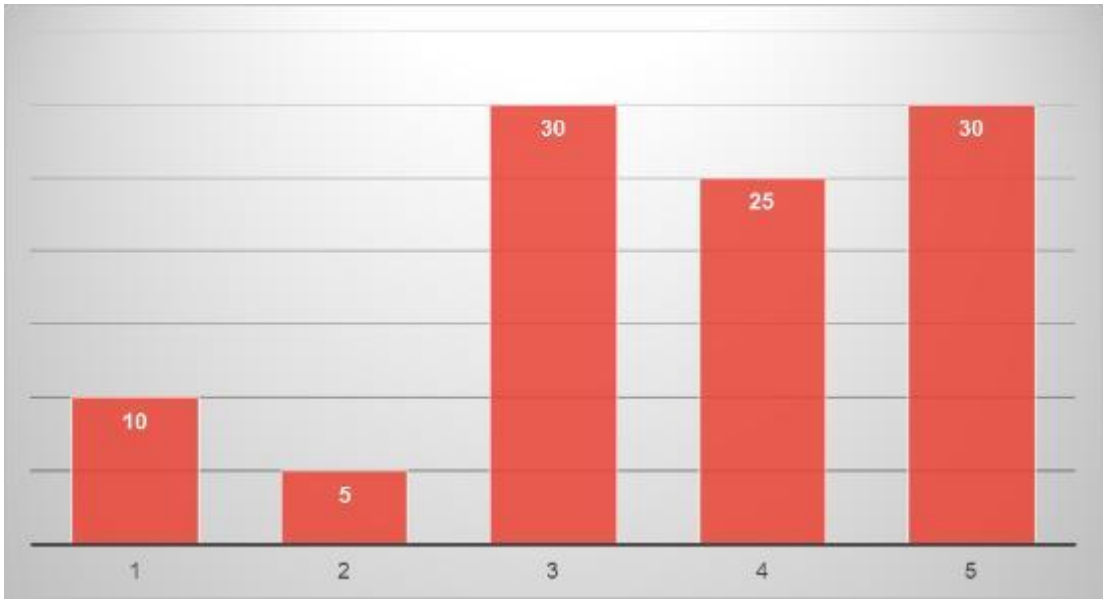

Figure 10: Collaboration with other stakeholders

1.11 My institution provides adequate support for professional development on climate-related topics.

Support from educational institutions is seen as moderate and uneven. Many educators feel they are working on climate topics without sufficient structural or institutional backing. This could include lack of funding, recognition, or administrative support. Greater institutional commitment would likely enhance the effectiveness of climate education.

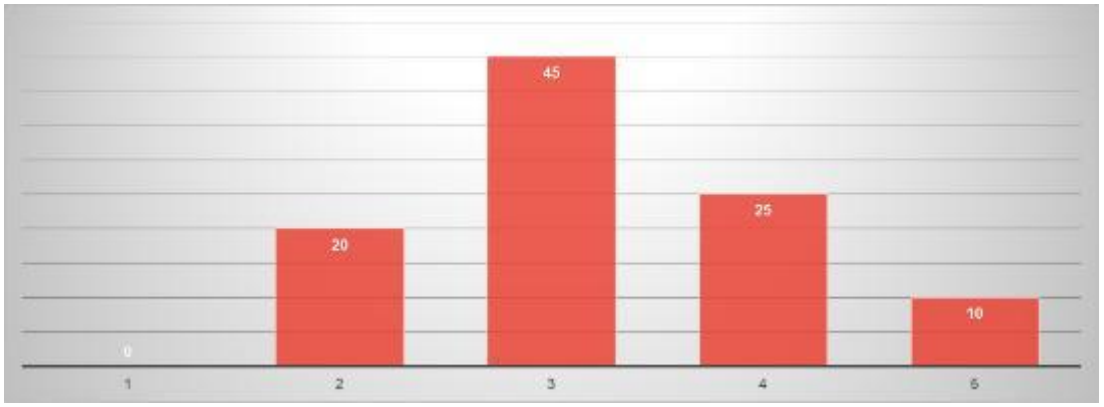

Figure 11: My institution provides adequate support for professional development on climate-related topics.

1.12 Learners show a strong interest in sustainable farming and climate resilience

Most learners engage with climate topics at a moderate level, but there is clearly limited enthusiasm or curiosity. This signals a need for more engaging, real-world examples, perhaps via fieldwork, storytelling, or immersive digital tools to boost motivation and relevance for younger audiences.

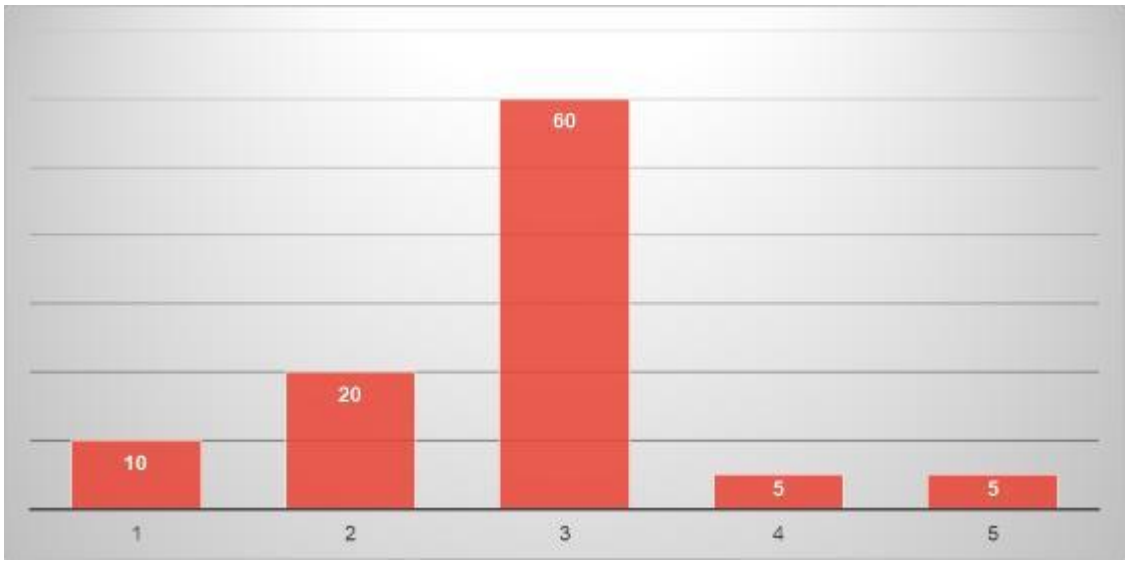

Figure 12: Learners show a strong interest in sustainable farming and climate change

1.13 Government policies support the integration of climate crisis topics into agricultural education

Respondents generally see some support from government policy, but the spread indicates inconsistency and limited clarity. There's moderate alignment, but also a sizable group that sees little to no institutional backing.

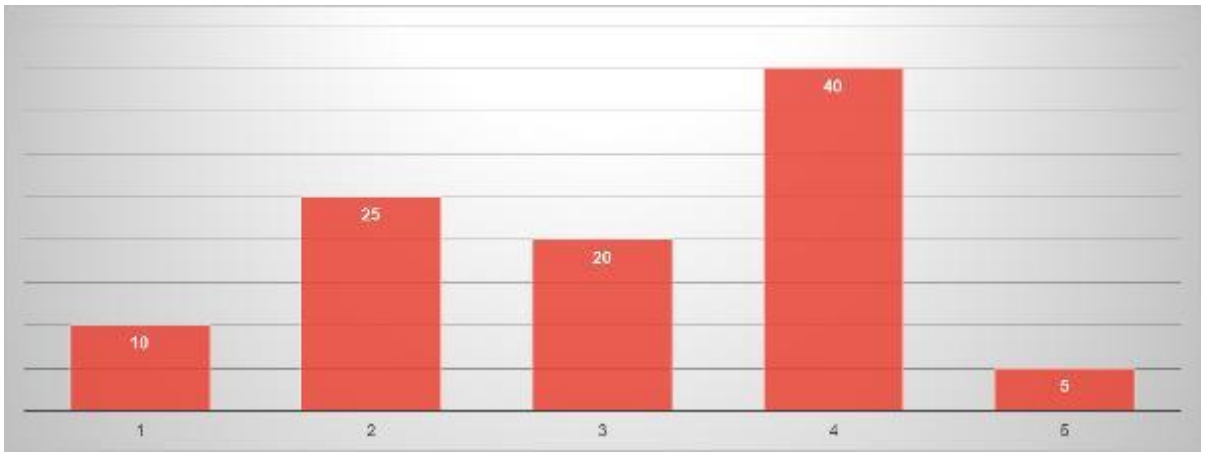

Figure 13: Government policies support the integration of climate crisis topics into agricultural education

1.14 There is enough practical, hands-on training to teach effective climate adaptation strategies

A clear majority do not feel there is sufficient practical training. Field-based, hands-on experience appears to be a major gap, suggesting a need to scale up demonstration sites and real-world learning environments.

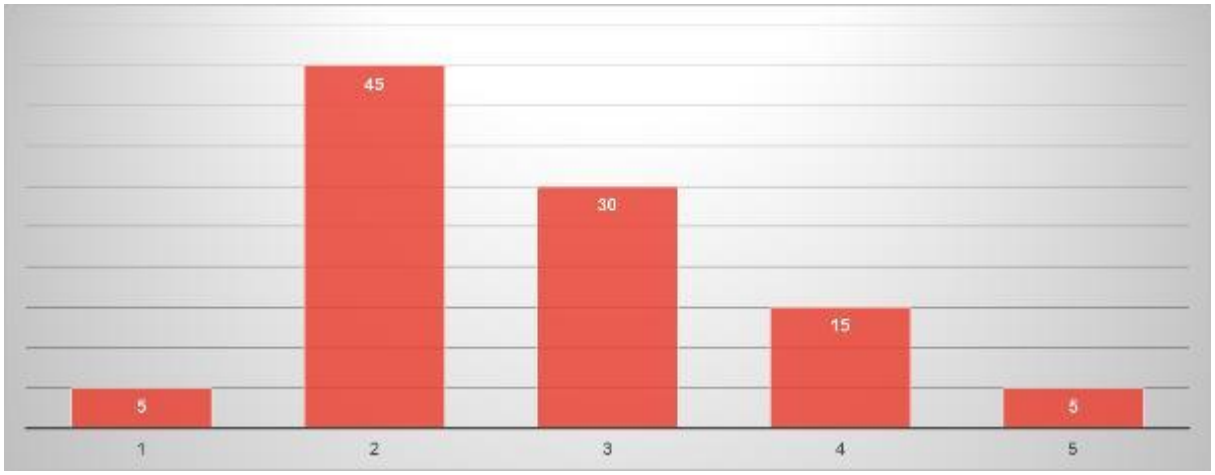

Figure 14: There is enough practical, hands-on training to teach effective climate adaptation strategies

1.15 On-farm demonstrations or field visits to showcase climate-smart practices are an important part of my training

This question shows high variability. While some educators have access to field visits, others clearly do not or teach subjects that do not require field visits. The disparity could reflect regional differences or institutional support levels.

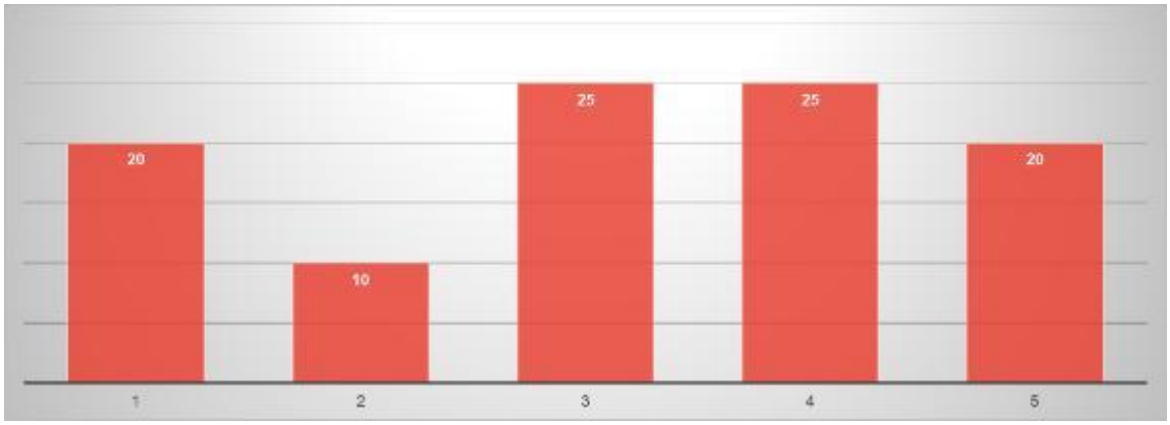

Figure 15: On-farm demonstrations or field visits to showcase climate-smart practices are an important part of my training

1.16 I assess participants' understanding of climate crisis and sustainable practices before designing my training modules

While many educators conduct some level of assessment, this is not systematic. There is room to strengthen needs assessments to better tailor training to learners' prior knowledge.

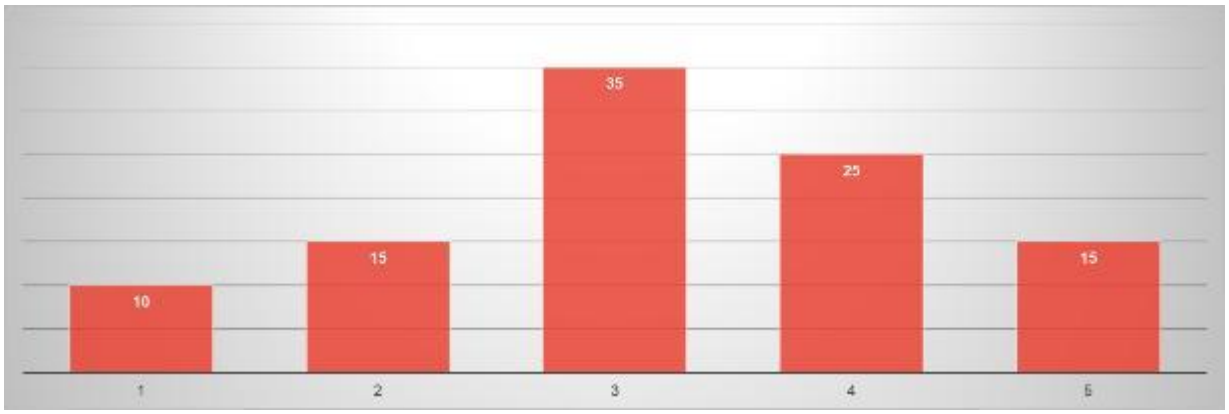

Figure 16: I assess participants' understanding of climate crisis and sustainable practices before designing my training modules

1.17 I frequently engage with local, national or international agricultural bodies to update my training content on climate resilience

A majority are engaged, particularly at the national/local level, but engagement isn't universal. Encouraging networking and collaboration with agricultural institutions could improve this further.

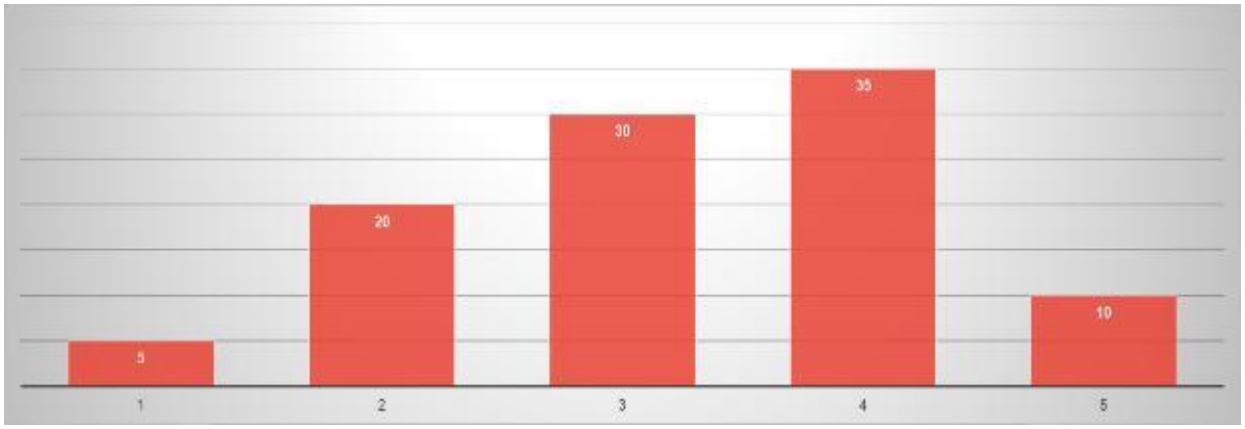

Figure 17: Educators frequently engage with local, national or international agricultural bodies to update my training content on climate resilience.

1.18 I use digital platforms or technologies (e.g., satellite data, precision farming apps) to illustrate climate crisis impacts or adaptation strategies.

Digital tools are used by many, but not extensively. Some educators may lack the tools, training, or access needed to integrate these platforms meaningfully. Support in this area could modernise and improve teaching approaches.

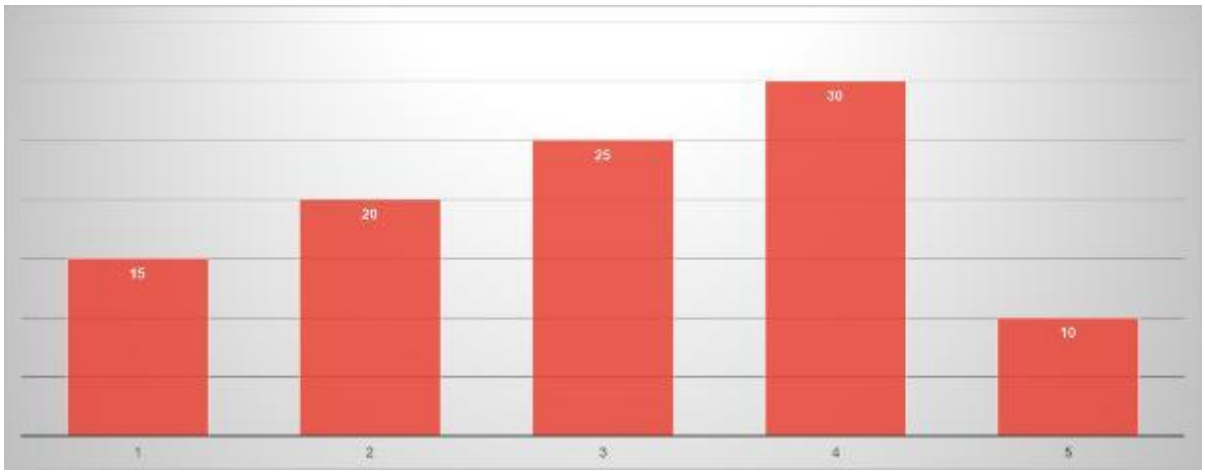

Figure 18: Educators use digital platforms or technologies to illustrate climate crisis impacts or adaptation strategies.

1.19 I am aware of policy incentives or grants that encourage farmers to adopt climate-smart practices

Half of the participants are aware of most of the policy incentives or grants that encourage farmers to adopt climate-smart practices. However, a quarter of respondents are still not well-informed (ratings 1 or 2), indicating the need for better communication of available support schemes.

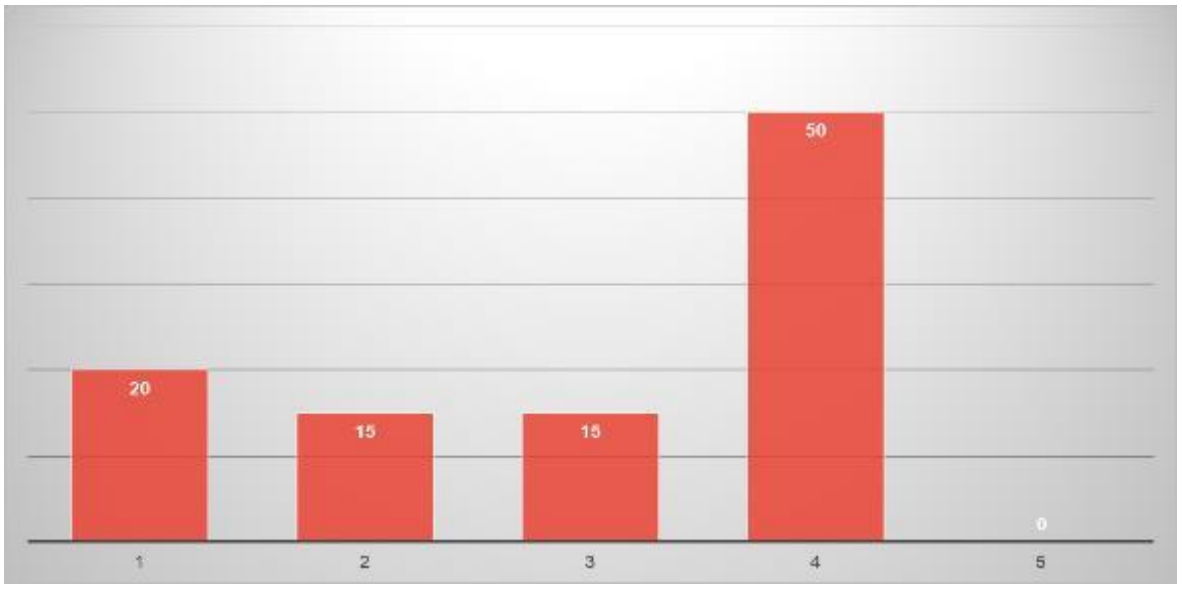

Figure 19: I am aware of policy incentives or grants that encourage farmers to adopt climate-smart practices

1.20 What are the most important aspects that need to be addressed more closely when it comes to climate-resilient agriculture with less negative environmental impacts?

The most important aspects that need to be addressed more closely are resilient crop varieties and genetic diversity, efficient nutrient and fertiliser use, climate-smart livestock management and soil health and regenerative practices.

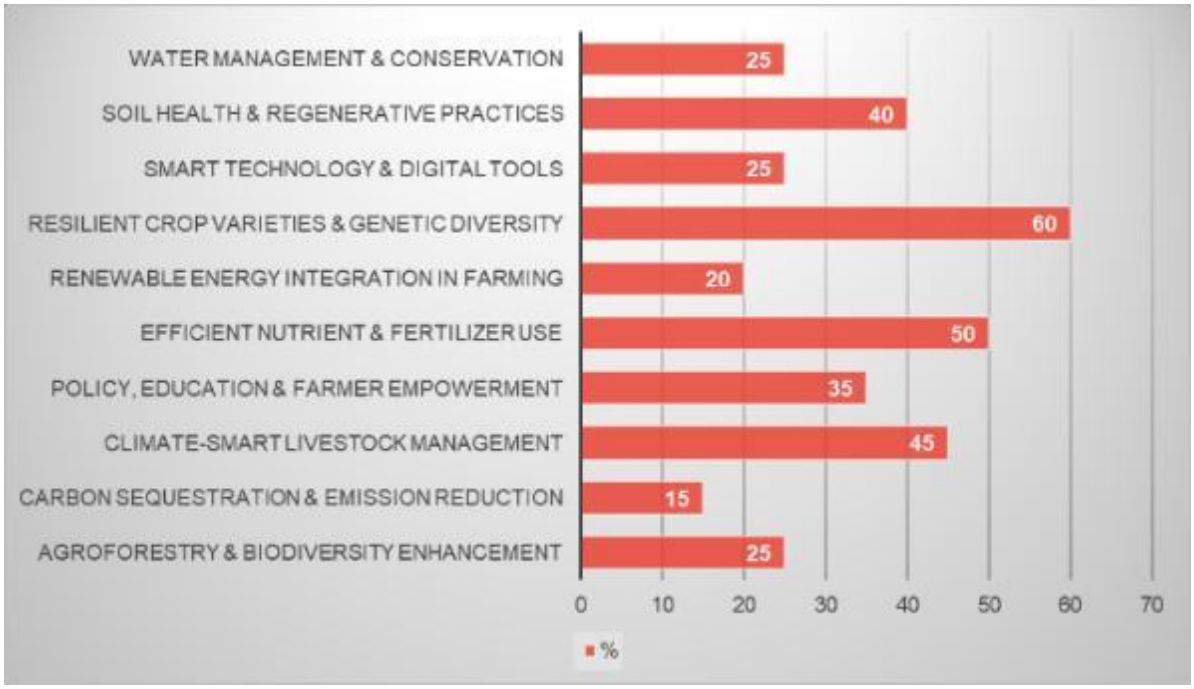

Figure 20: The most important aspects that need to be addressed more closely when it comes to climate-resilient agriculture

1.21 Which of the following areas would you like more in-depth training on?

There is strong interest in climate-resilient crops and digital/precision methods, nature-based practices and livestock innovation.

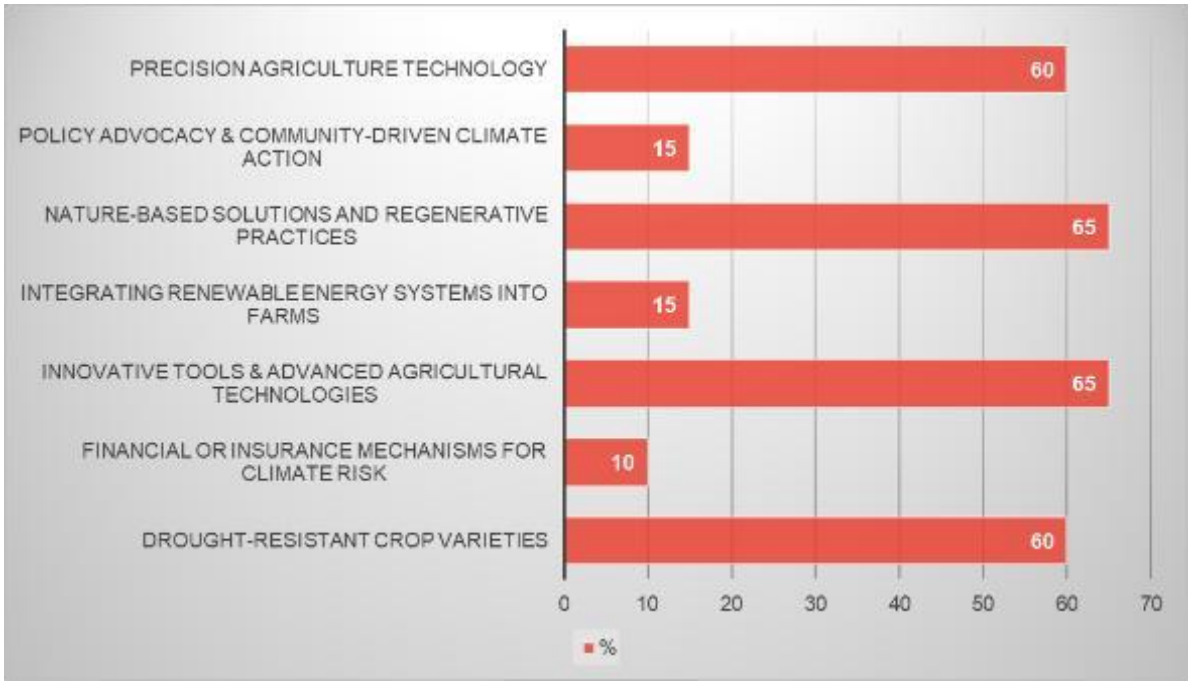

Figure 21: Which of the following areas would educators like more in-depth training on

1.22 What additional resources would most enhance your ability to teach climate-smart agriculture?

Again, the need for hands-on resources and expert input dominates. Respondents also value digital tools and financial support for training material, showing a preference for tangible, applicable content. Half of them still wish for booklets or guides.

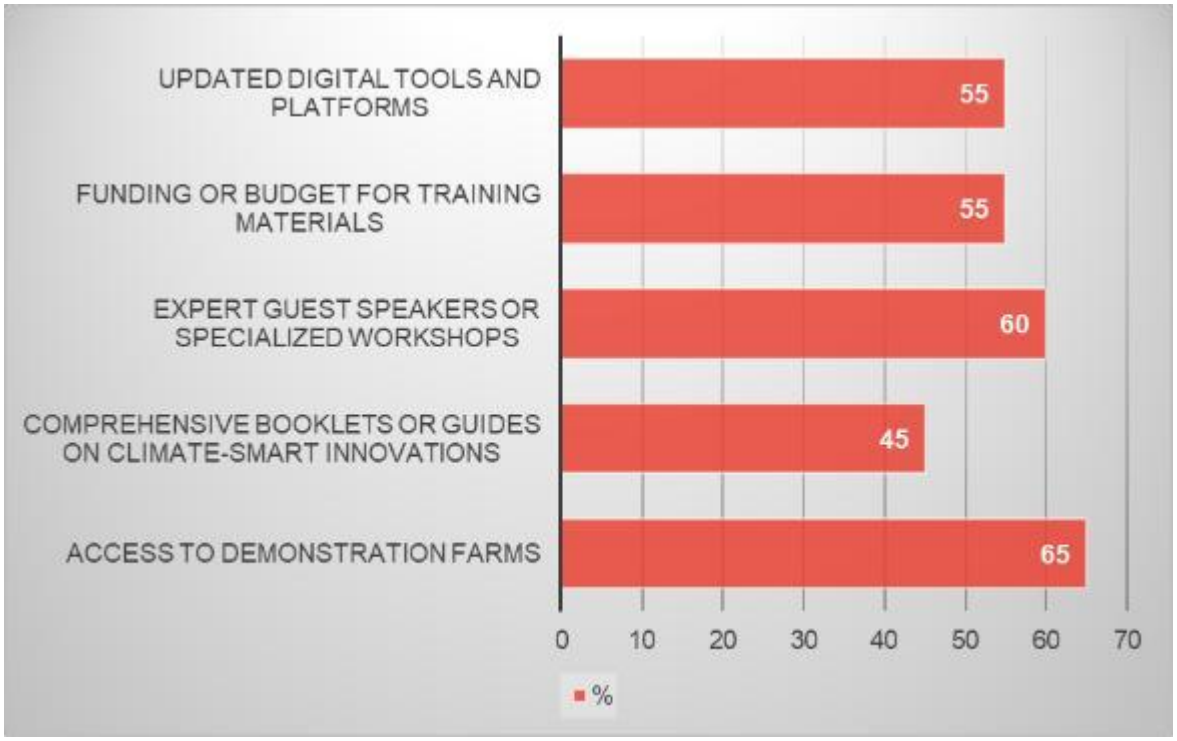

Figure 22: What additional resources would most enhance your ability to teach climate-smart agriculture?

1.23 What are the main challenges you face in teaching climate crisis and resilience farming practices, and what resources would help?

Educators face several key challenges when teaching about climate change and resilient agricultural practices. The most frequently mentioned barrier is the lack of interactive and engaging teaching materials, particularly those that clearly illustrate mechanisms and impacts relevant to agriculture. Teachers also report a shortage of practical examples and good practices, as well as a general lack of accurate and up-to-date information or data.

Some respondents noted that current literature unfairly places blame on agriculture, especially livestock, as the primary driver of climate change, which complicates discussions. Others identified a lack of practical experience, difficulties in demonstrating solutions, and inadequate monitoring tools as obstacles.

Time constraints due to administrative duties and the absence of institutional support limit opportunities for deeper engagement with students, farmers, and the community. Additionally, educators observe that students often show low interest, as they do not yet feel the direct effects of climate change. This leads to low motivation, and even impactful content (e.g. shocking visuals) may only have short-term influence.

To improve climate education in agriculture, respondents suggest developing tailored materials, using videos and animated visualizations, providing more practical demonstrations, and ensuring better support from policymakers. These resources should make the issue more relatable and urgent, especially for young audiences.

1.24 What do you see as the biggest barrier preventing farmers from adopting climate-resilient techniques, and how might training address this?

Farmers face numerous challenges in adopting climate-resilient farming practices. The most frequently mentioned barrier is limited access to financial resources, including the high cost of new technologies and the difficulty in obtaining funding or understanding available financial support mechanisms.

Another significant obstacle is a lack of awareness, knowledge, and training, especially in relation to the benefits, costs, and environmental impact of climate-resilient solutions. Many farmers are unfamiliar with new technologies, and distrust their effectiveness or necessity. Additionally, attachment to traditional methods and a general resistance to change—fueled by fear, uncertainty, or distrust in institutions—was highlighted as a major concern.

Respondents also pointed out the bureaucratic and top-down nature of policy proposals, which often leave farmers without flexibility to adapt to real on-farm conditions. There's a clear need for practical, tailored solutions, communicated in a way that empowers rather than restricts.

Training can help address these challenges by:

- Raising awareness of the real impacts of climate change through visual and illustrative tools.
- Providing knowledge about sustainable practices, their economic benefits, and how to implement them effectively.
- Encouraging peer learning, cooperation among farmers, and adaptation to local conditions.
- Promoting trust in innovation by linking it to practical outcomes and gradually shifting perspectives through repeated exposure and support.

However, some respondents stressed that training alone cannot solve structural issues like lack of funding or technology access. These require systemic support and policy reforms in parallel with educational efforts.

1.25 Looking ahead 10 years, what new or emerging climate challenges do you anticipate needing to address in agricultural training?

Looking ahead, educators and stakeholders anticipate a broad range of climate-related challenges that will need to be addressed in agricultural training. A recurring theme is the intensification of extreme weather events, including droughts, floods, and sudden temperature changes, which are expected to significantly disrupt current farming systems.

Respondents also identified the need to address heat stress in plants and animals, and to promote new crop varieties and resilient species. This may require the introduction

of cultivation under protective systems (e.g. agroforestry, alley cropping, or greenhouses) to buffer against climatic extremes.

Water-related challenges—such as supply shortages, storm damage, or prolonged dry/wet periods—are expected to become increasingly critical. There is also a clear expectation that plant protection, pest pressure, and new disease outbreaks will intensify, requiring more adaptable and sustainable strategies.

The role of soil health was emphasised as foundational. High-quality, resilient soils are seen as a core defence mechanism for maintaining long-term productivity under changing conditions.

Several responses highlighted a need for:

- Smart and precision farming tools,
- Farm restructuring and shifts in production types,
- Training on how to farm in dry areas and respond to natural disasters.

Lastly, a few respondents called for localized knowledge systems that can tailor solutions to specific farm orientations, sizes, and conditions, emphasizing the importance of feasibility and cost-effectiveness in future training.

2 Analysis of the results of the questionnaires for learners for Slovenia

2.1 What is your current level of study or training?

The vast majority of respondents (nearly 91%) are enrolled in vocational education and training (VET) programs, indicating that the survey sample primarily represents practical, skill-oriented learners in agriculture.

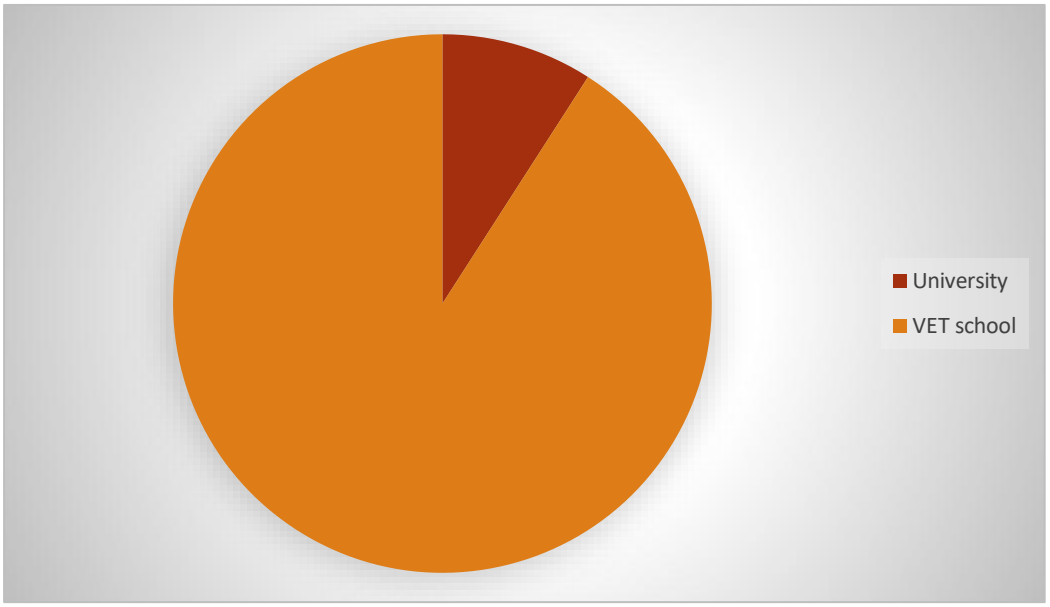

Figure 23: Current level of study or training of student participants

2.2 What is your main field of study or interest in agriculture?

Most common: Agribusiness (22.7%), Crop Production (18.2%), Livestock Farming (13.6%), Mixed Farming and Heavy Equipment Technician also represented. Learners are distributed across various fields in agriculture, but agribusiness and crop production dominate. This reflects a strong interest in the economic and practical sides of agricultural management and production.

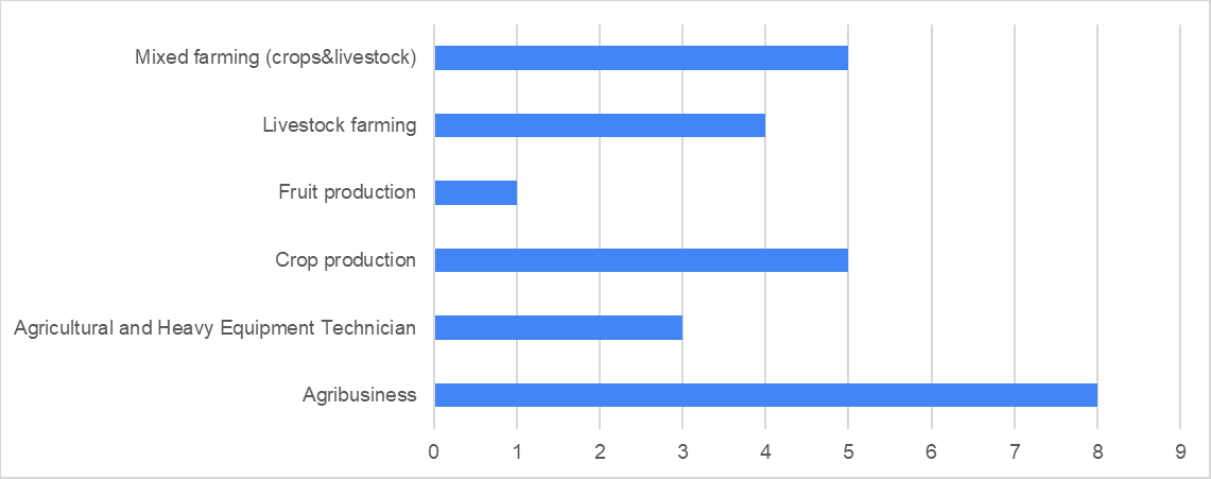

Figure 24: Main field of study

2.3 Have you had any prior education about the climate crisis and its impact on agriculture?

A majority of respondents (59%) report they have not received any formal education on climate-related agricultural issues, suggesting a knowledge gap that could be addressed in training programs.

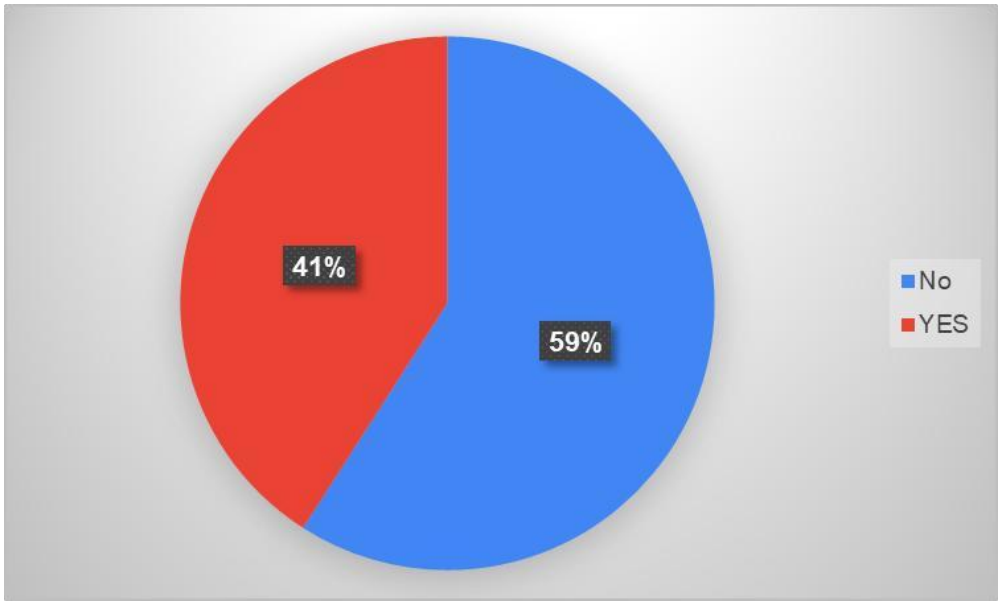

Figure 25: Students having prior education about the climate crisis

2.4 Do you plan to work in the agriculture sector after your studies?

- **Yes**: 54.5 %
- **Not sure**: 36.4 %
- **No**: 9.1 %

More than half of the learners intend to remain in the agricultural sector, but over a third are undecided, indicating uncertainty about future career paths. Strengthening career guidance and relevance of climate-smart agriculture may support clearer professional.

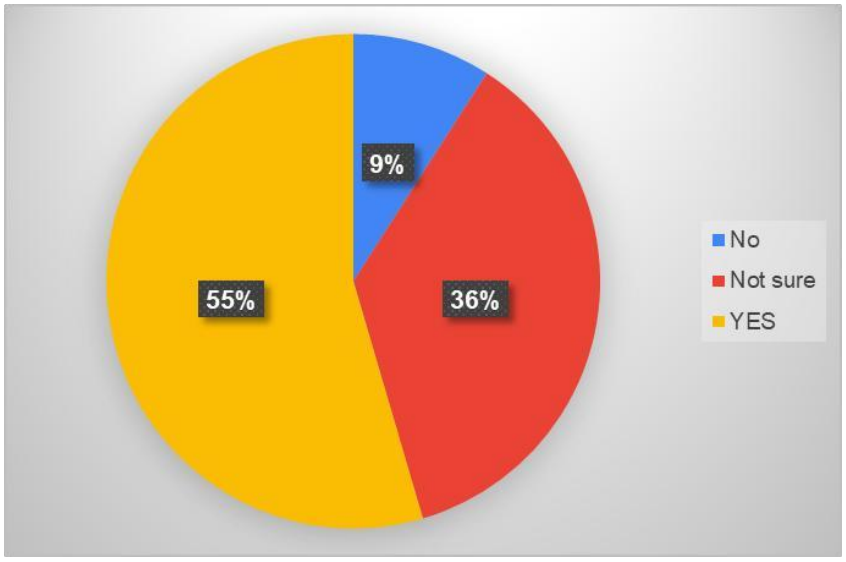

Figure 26: The percent of students planning to work in agriculture

2.5 How aware are you about emerging climate threats?

- **3 (neutral)**: 45.5 %
- **4**: 31.8 %
- **2**: 18.2 %
- **5 (very aware)**: 4.5 %

Most respondents are moderately aware (centered around 3–4) of climate-related risks. However, few express very high awareness, suggesting room for further education and awareness-building.

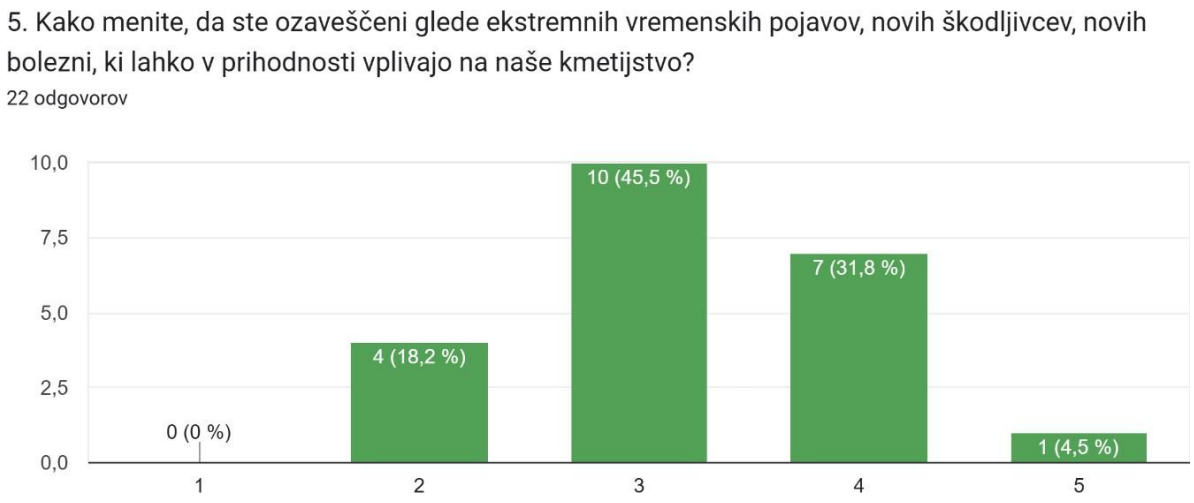

Figure 27: How aware are you about emerging climate threats

2.6 My training provides me with a strong understanding of climate crisis impacts on agriculture.

- **Score 3**: 36.4 %
- **Score 4**: 31.8 %
- **Score 5**: 22.7 %

- **Score 2**: 9.1 %

While a majority (around 91%) rate their understanding between moderate and strong (scores 3–5), only 22.7% strongly agree. This suggests that training programs provide a foundation, but not yet deep or comprehensive knowledge for most.

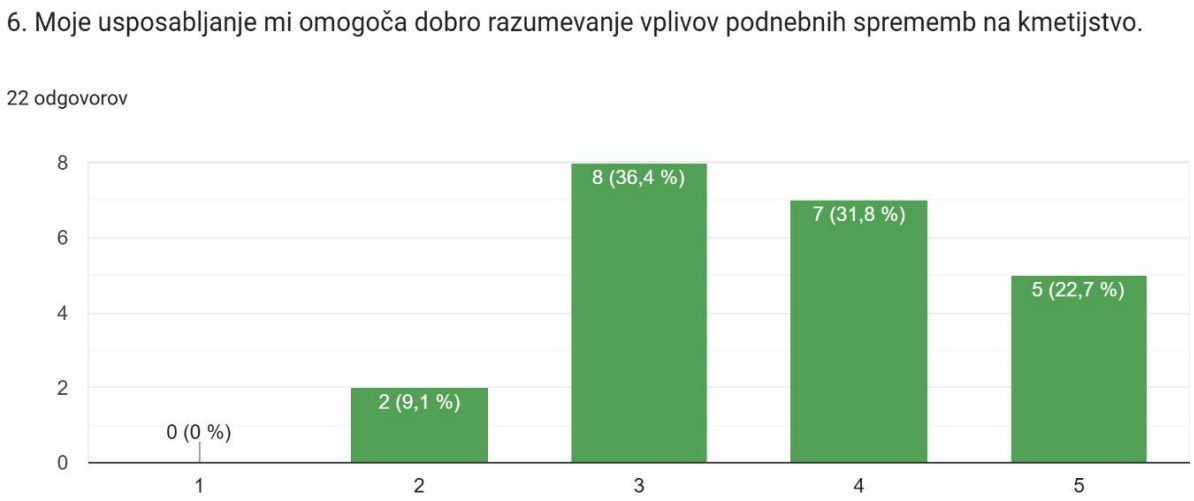

Figure 28: My training provides me with a strong understanding of climate crisis impacts on agriculture

2.7 My training includes practical skills to help address climate challenges in farming

- Score 4: 40.9 %
- Score 3: 27.3 %
- Score 5: 18.2 %
- Score 2: 9.1 %
- Score 1 (Strongly Disagree): 4.5%

Most respondents feel that practical skills are somewhat present in their training (scores 3–4), though fewer (18.2%) feel their training is fully adequate. Practical implementation seems underdeveloped for some.

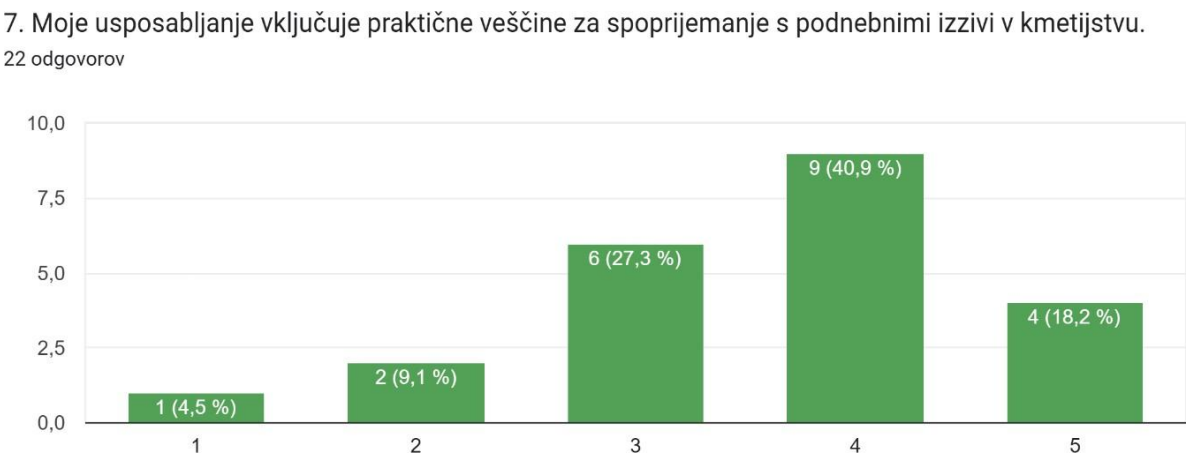

Figure 29: My training includes practical skills to help address climate challenges in farming

2.8 I am interested in learning more about climate-resilient farming techniques

- Score 5 (Strongly Agree): 50.0 %
- Score 4: 36.4 %
- Score 3: 9.1 %
- Score 2: 4.5 %

There is very high motivation among learners, with 86.4% selecting the top two levels of agreement. This is a clear indicator that learners are eager to explore more about climate-resilient agriculture.

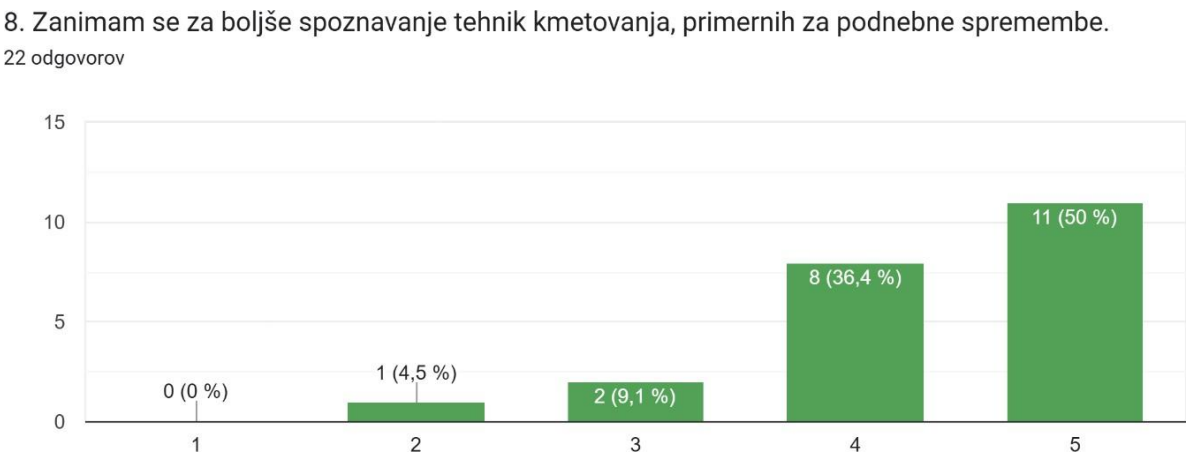

Figure 30: Students stated interest in learning more about climate-resilient farming techniques

2.9 There is sufficient focus on sustainable and climate-smart agriculture in my training.

- Score 5 (Strongly Agree): 36.4 %
- Score 4: 27.3 %
- Score 2: 22.7 %
- Score 3 (Neutral): 13.6 %

A majority (63.7%) feel there is a good level of focus on sustainable practices. However, about 23% feel there is insufficient attention (score 2), suggesting inconsistencies in how different programs or instructors address the topic.

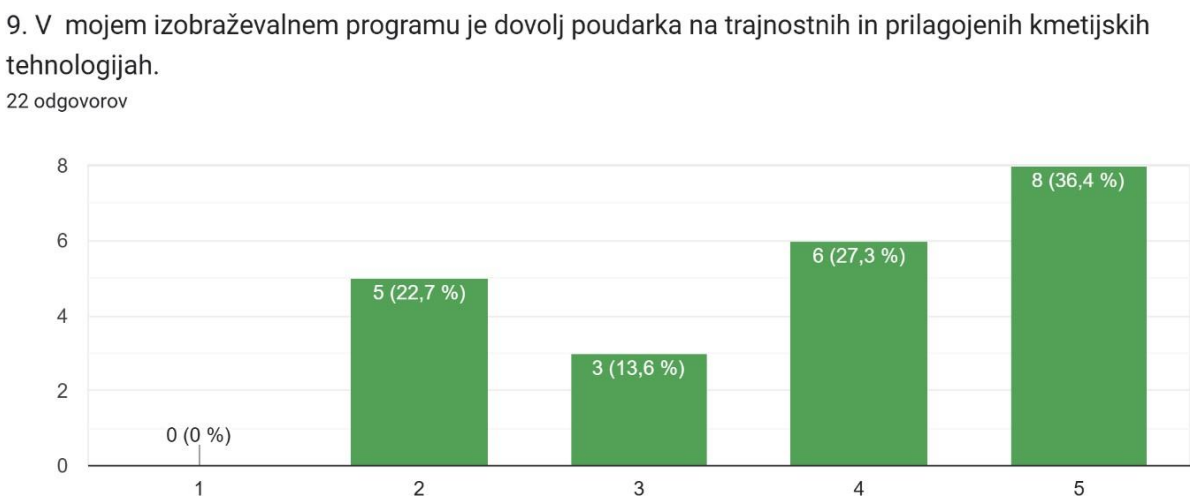

Figure 31: Sufficient focus on sustainable and climate-smart agriculture in my training

2.10 My instructors/trainers are well-equipped to teach about climate-resilient agriculture.

- Score 5: 36.4 %
- Score 4: 31.8 %
- Score 3: 18.2 %
- Score 2: 13.6 %

Most respondents (over 68%) view their instructors as competent in this field. Still, 13.6% rated this low, indicating that more professional development or standardized content may be needed for instructors.

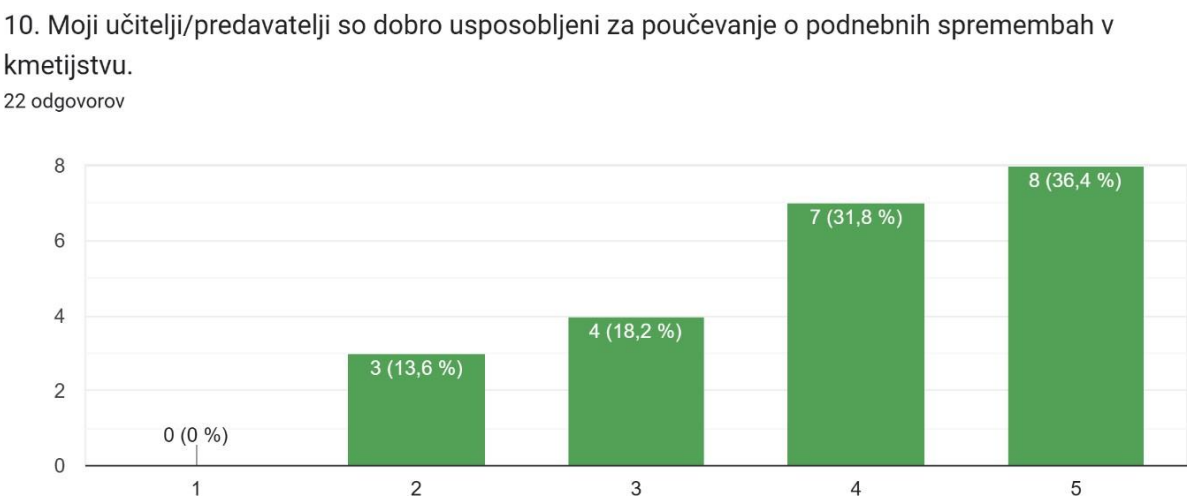

Figure 32: My instructors/trainers are well-equipped to teach about climate-resilient agriculture

2.11 I believe that agricultural education includes enough practical experiences related to climate-smart farming.

- Score 5: 9.1 %
- Score 4: 31.8 %
- Score 3: 27.3 %
- Score 2: 31.8 %

Responses are mixed, with no clear majority leaning toward either agreement or disagreement. While around 41% are somewhat satisfied (scores 4–5), an equal percentage believe there is a lack of practical content (score 2). This highlights a potential gap between theoretical and practical aspects of training.

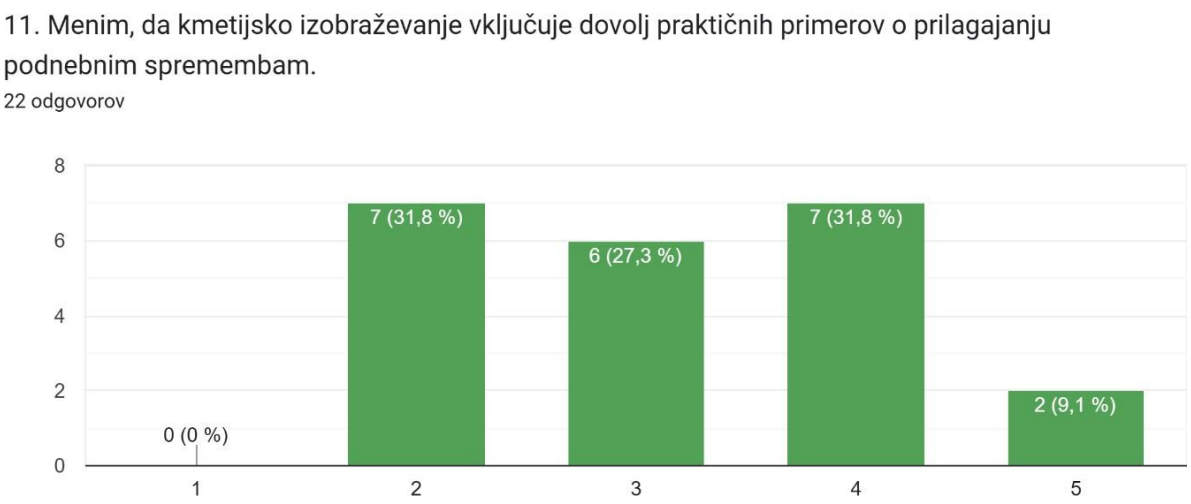

Figure 33: I believe that agricultural education includes enough practical experiences related to climate-smart farming.

2.12 I am confident that my education has prepared me to implement sustainable farming practices.

- Score 4: 31.8 %
- Score 5: 27.3 %
- Score 2: 22.7 %
- Score 3: 18.2 %

Confidence levels are generally positive (59.1% chose scores 4–5), but a significant number still feel underprepared (especially at score 2). While some feel ready, there's a strong case for further strengthening real-world application in the curriculum.

Figure 34: I am confident that my education has prepared me to implement sustainable farming practices

2.13 I would participate in additional training programs focused on climate resilience in agriculture

Half of the students answered that there is a small chance they would participate in additional training programs on climate resilience (score1 and 2). Only 18 % stated they are very interested in participating in additional training.

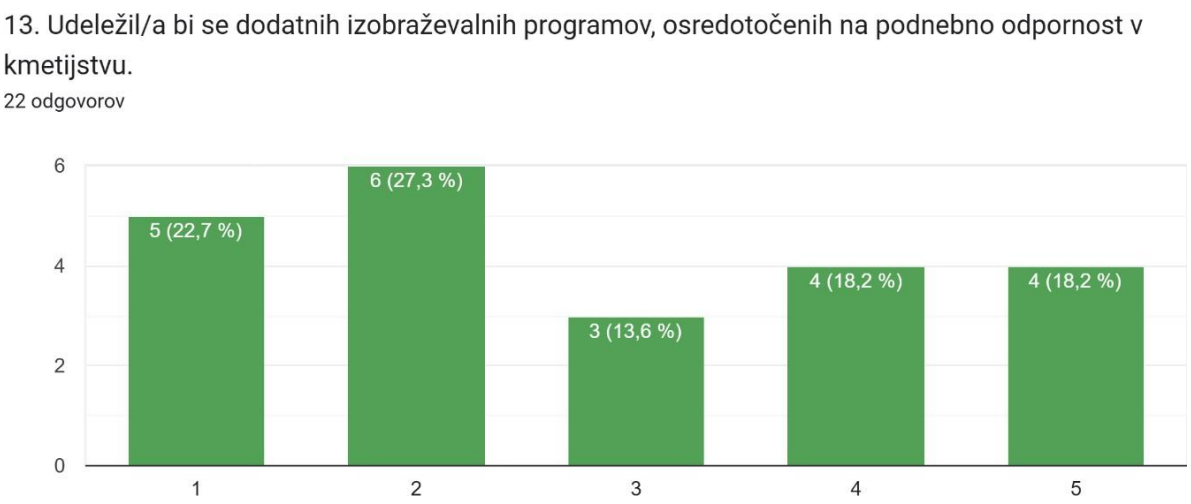

Figure 35: Interest to participate in additional training programs focused on climate resilience in agriculture

2.14 What are the most important aspects that need to be addressed more closely when it comes to climate-resilient agriculture with less negative environmental impacts?

Top Priorities

1. Agroforestry & Biodiversity Enhancement (59.1 %)
   Indicates strong interest in ecologically diverse systems to build farm resilience and reduce environmental harm.

2. Efficient Nutrient & Fertilizer Use (54.6%)
   Respondents emphasize the need for more efficient input management, aligning with sustainable intensification goals.

3. Resilient Crop Varieties & Genetic Diversity (54.6%)
   Learners recognize the importance of adaptive crops in managing climate risks.

4. Soil Health & Regenerative Practices (50.0%)
   Half the respondents see soil-centered management as essential, reflecting awareness of regenerative agriculture concepts.

Mid-Tier Priorities (~30%)

- Smart Technology & Digital Tools (31.8%)
- Renewable Energy Integration (31.8%)
- Policy, Education & Farmer Empowerment (31.8%)
  This combined category—now correctly counted—shows moderate recognition of institutional and educational needs. It ranks below agroecological and input-related practices in perceived urgency.

Lower Priorities (< 30%)

- Climate-Smart Livestock Management (27.3%)
- Water Management & Conservation (22.7%)
- Carbon Sequestration & Emission Reduction (18.19% total, two variants)
  Despite global emphasis on emissions, carbon-related practices received the least attention, suggesting a knowledge or relevance gap at the learner level.

Participants most frequently emphasized nature-based and agronomic solutions over digital innovations or policy mechanisms. While technological and institutional strategies were acknowledged, the results highlight that students may feel more directly connected to practical, on-farm ecological interventions than abstract or policy-level frameworks.

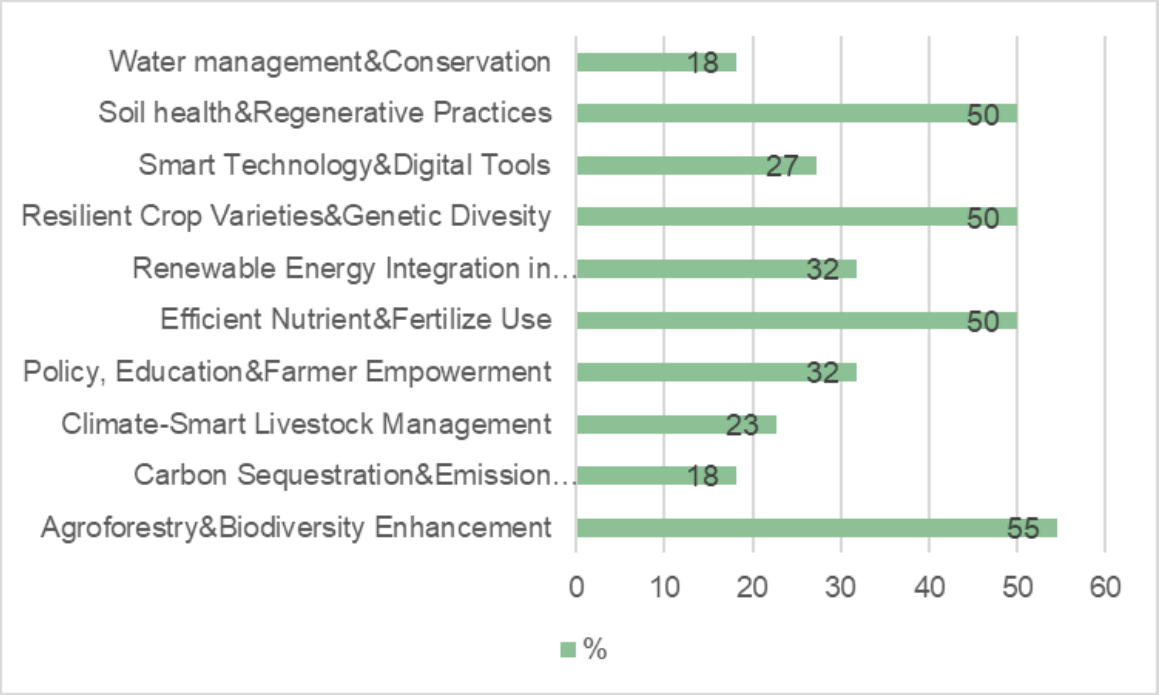

Figure 35: What are the most important aspects that need to be addressed more closely when it comes to climate-resilient agriculture

2.15 Which formats do you find most effective for learning about climate-smart agriculture?

Hands-on workshops or field visits are overwhelmingly preferred, selected by over 91 % of respondents. This underscores learners' strong preference for experiential, practical methods that simulate real-world agricultural conditions.

Traditional classroom settings still hold value for half of the group, likely due to familiarity and structure.

Self-paced digital platforms are moderately popular, suggesting that flexibility and technology are appreciated but not dominant.

Webinars and online modules, often seen as scalable solutions, were least favored—possibly due to lower engagement or limited interactivity compared to field-based learning.

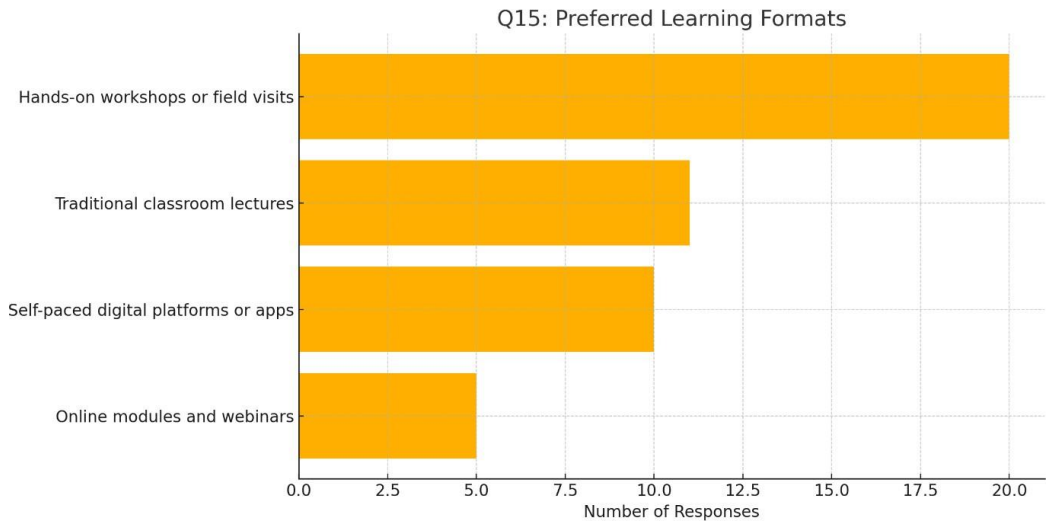

Figure 36: Preferred formats for learning about climate-smart agriculture

Practical, immersive learning is considered far more effective than purely digital or remote formats. These insights can inform training program design by emphasizing on-site, experience-driven education.

2.16 Which of the following areas would you like more in-depth training on

- The top priority for in-depth training is Precision agriculture & smart technologies (63.64%), confirming a strong interest in data-driven, modern farm tools (e.g., sensors, automation, decision-support systems).
- Climate adaptation strategies and regenerative farming also rank highly, with over 50% of respondents each. This shows that learners are equally focused on climate resilience through agronomic and ecological approaches.

- Less interest was shown in renewable energy and policy engagement, which may indicate either lower familiarity with these topics or a perception that they are less relevant to day-to-day farm decisions.

Respondents seek training that balances technological innovation with ecological and adaptive practices. Programs aiming to address these priorities should focus on hands-on experience with smart tools, adaptive crop management, and nature-based solutions, while gradually integrating energy and policy literacy into the curriculum.

- Learners are deeply motivated by practical, nature-based, and technological solutions to climate challenges. They want to see how theory works on the ground.
- Training programs should emphasize field-based experiences combined with smart tech and regenerative techniques.
- Curriculum gaps appear in systems thinking (e.g., policy, energy integration), which may require more context or real-world relevance to gain traction.
- Educational institutions should prioritize modular and experiential learning formats, supported by digital content—not led by it.

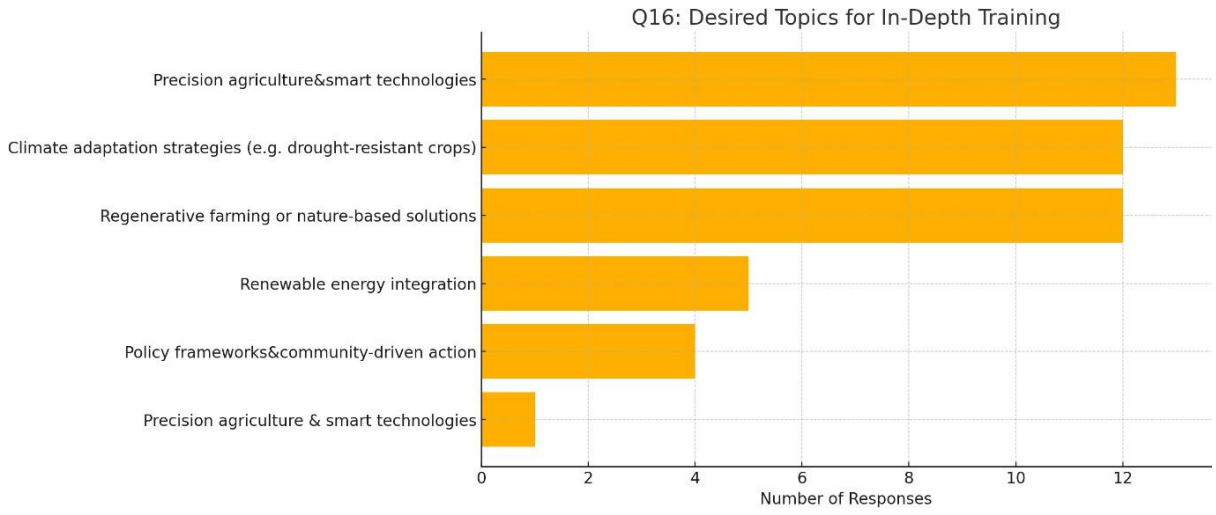

Figure 37: Which of the following areas would you like more in-depth training on

2.17 What skills or knowledge do you think are missing in your training that would better prepare you for climate-resilient agriculture?

A notable number of learners highlighted the need for **more practical training**, specifically mentioning hands-on experiences such as **field practice** and **workshops**.

Regarding the topics they would need knowledge and skills at, they mentioned frost protection, irrigation, plant varieties, holistic approaches, precision farming and general knowledge regarding climate resilient agriculture.

There were three answers where students indicated that they do not lack skills or that they do not know what they need.

2.18 In your experience, what are the biggest obstacles to learning or adopting climate-smart farming techniques?

Students answered that the lack of practical knowledge and hand on education affects learning and adopting climate smart techniques. Some think there is still a lack of interest for this topic.

Because such practices often bring benefits only in the long term, they are hard to evaluate or implement without risk. Information about climate-smart practices is often scattered and not adapted to local conditions. The obstacle is also that we can never adapt in time to the changes, as they happen very fast.

2.19 What suggestions do you have for your institution or training program to improve climate-related agricultural education?

There were several students answering that they do not have any suggestions to improve climate related education. Most of other answers again pointed out they would like more practical lessons, workshops and farm visits on the topic. One interesting answer was the use of simulations and comparative studies that allow analysis of the effects of different practices under different climate scenarios. One student suggested adding awareness-raising about various climate-related calls and how to make the best use of them to the curriculum and one would be interested in the impact of agricultural and industrial machinery in terms of their pollution factors.

These answers suggest that learners would like to see the curriculum expanded with practical tools like simulations, more exposure to real-life farming environments, and policy-oriented content such as subsidies and projects.

2.20 Where do you see yourself in 5-10 years regarding climate-smart agriculture? (e.g., working on a sustainable farm, pursuing advanced research, being an advocate for regenerative practices, etc.)

Most learners envision their future careers in agriculture, with a clear emphasis on sustainable farming. 41 % would like to be farmers, 9 % advisors/consultants and 18 % mechanics of heavy machinery. Some also expressed interest in tourism-related farming or forestry, reflecting a multifaceted view of rural livelihoods. Overall, the answers highlight a strong orientation toward practical, environmentally conscious, and locally rooted professions.

3 Analysis of the results of the questionnaires for stakeholders for Slovenia

3.1 Type of organisation which participated in the survey

The data shows that the most represented organizations in the survey were Farming associations or unions and Research institutions, each accounting for 30.8% of responses. These were followed closely by Public Agricultural Advisory Services at 26.9%. Other types of organizations, such as industry representatives, governmental agencies, and environmental NGOs, were much less common, each contributing 3.8% of the total responses. This indicates a strong representation from both practical and academic sectors in the stakeholder feedback.

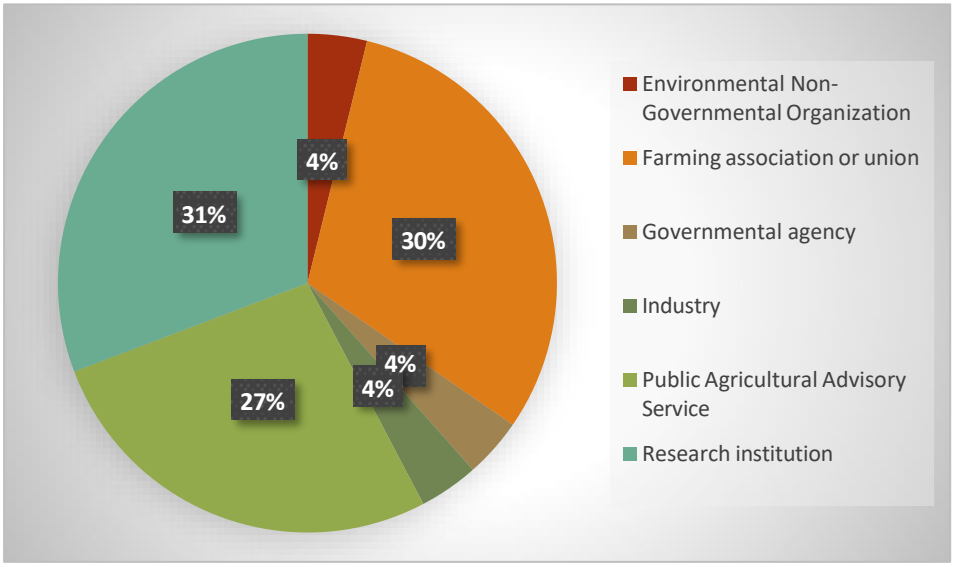

Figure 38: Type of organisation which participated in the survey

3.2 Years Active in the Agricultural or Environmental Field

The majority of respondents 80%, reported that their organizations have been active in the agricultural or environmental sector for **over 20 years**. Only 8 % of organizations indicated an experience range of **11–20 years**. This suggests that most participating

organizations have a long-standing presence and likely bring significant experience and historical perspective to climate-related changes in agriculture.

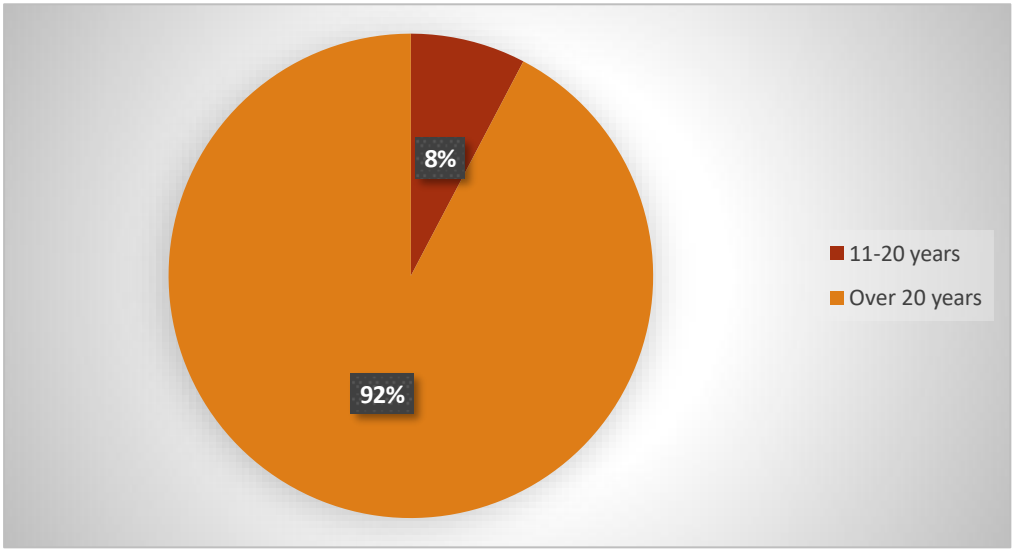

Figure 39: Years Active in the Agricultural or Environmental Field

3.3 Engagement in Climate-Related Training

An overwhelming majority of respondents, **92 %**, indicated that their organization **does offer or engage in training** related to the climate crisis and resilient agriculture. Only **8 %** reported that they do not participate in such training activities. This result highlights a strong commitment among stakeholders to build knowledge and skills to address climate challenges within the agricultural sector.

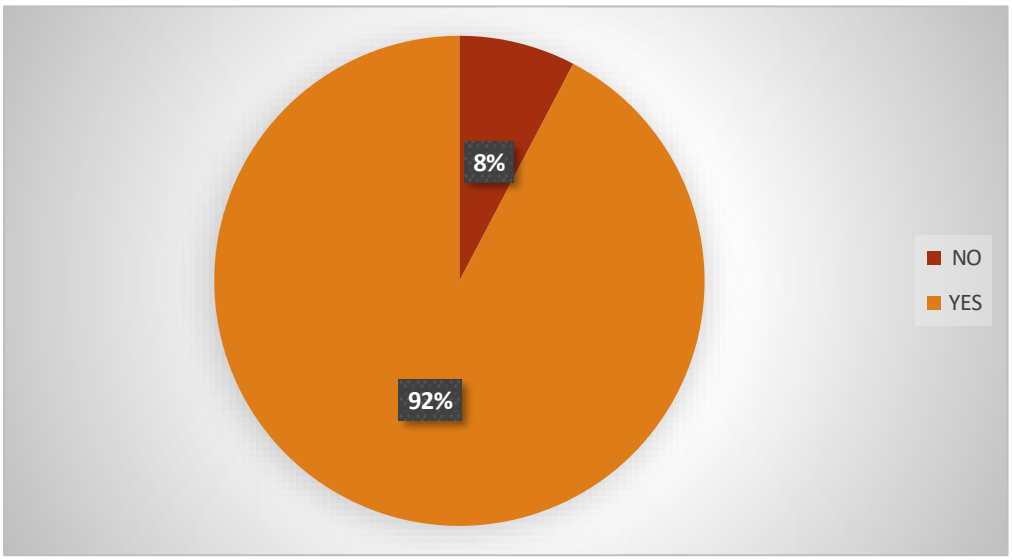

Figure 40: Engagement in Climate-Related Training

3.4 Perceived Impact of Climate Crisis on Agricultural Productivity

Most respondents agreed that the climate crisis has significantly impacted agricultural productivity, with 42.3% rating the impact as a 4 on a 5-point scale, and an additional 26.9% selecting the highest rating of 5. Another 30.8% chose a neutral score of 3, indicating moderate agreement.

These responses suggest a strong consensus that climate change is already affecting productivity in the areas where these organizations operate, though with some variation in perceived severity.

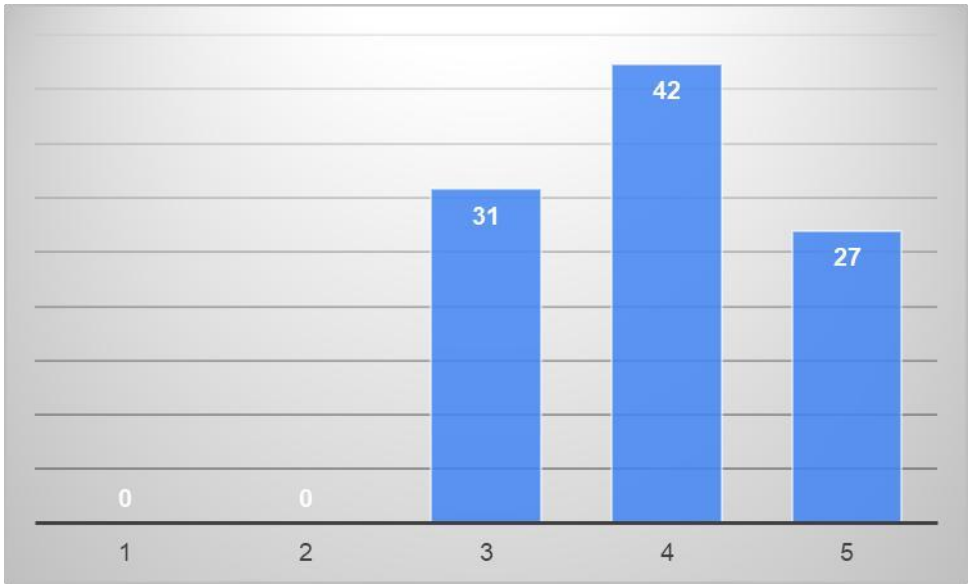

Figure 41: Opinion of the stakeholders on the climate crisis significantly impacting agricultural productivity in the regions they work in

3.5 Organizational Knowledge on Climate Crisis

A substantial majority of respondents rated their organization as well-informed on this issue. Specifically, **42 %** gave the highest score of 5, and 31 **%** selected the score **4**, suggesting strong internal awareness and understanding of the climate crisis and its implications for agriculture.

A smaller portion rated their knowledge more moderately, with **15 %** choosing **3** and **12 %** selecting **2**. There were no ratings of 1, which indicates no respondent considered their organization poorly informed.

This reflects a generally high level of climate-related knowledge among the surveyed organizations, which is important for effective action and decision-making in the sector.

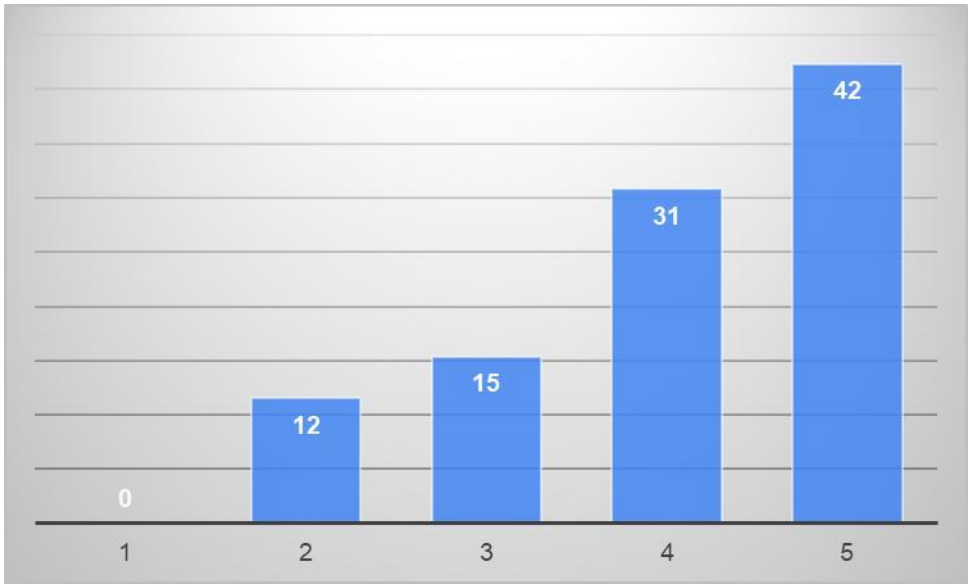

Figure 42: Organizational Knowledge on Climate Crisis

3.6 We actively support or implement climate adaptation strategies in agricultural systems

Most respondents agree with this statement: **42.3 %** selected rating **5** (strong agreement) and **26.9%** chose **4**, while only a few rated 3 or lower. This indicates a high level of direct involvement in implementing adaptation measures.

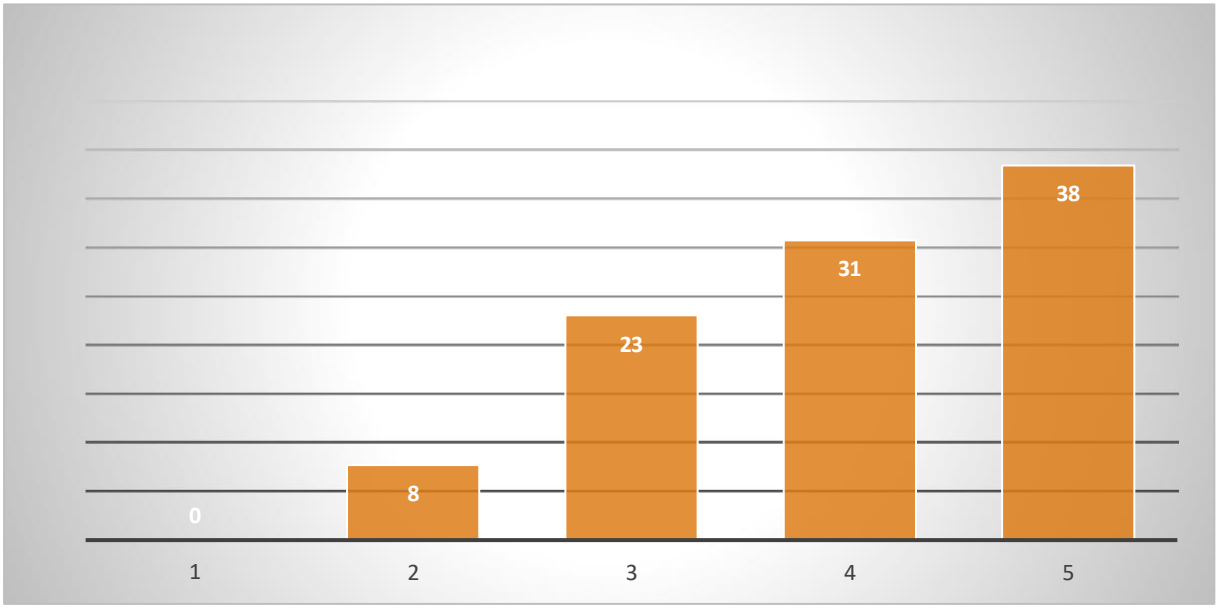

Figure 43: Most of the stakholders actively support or implement climate adaptation strategies in agricultural systems

3.7 We have access to or provide sufficient resources and training to support resilience in farming communities

Responses are more varied here. The most common rating was **4 (46 %)**, followed by **3 (27 %)** and **5 (12 %).** Lower ratings (1 and 2) were selected by about **15%.** This suggests that while some organizations feel reasonably resourced, many still perceive limitations in support capacity.

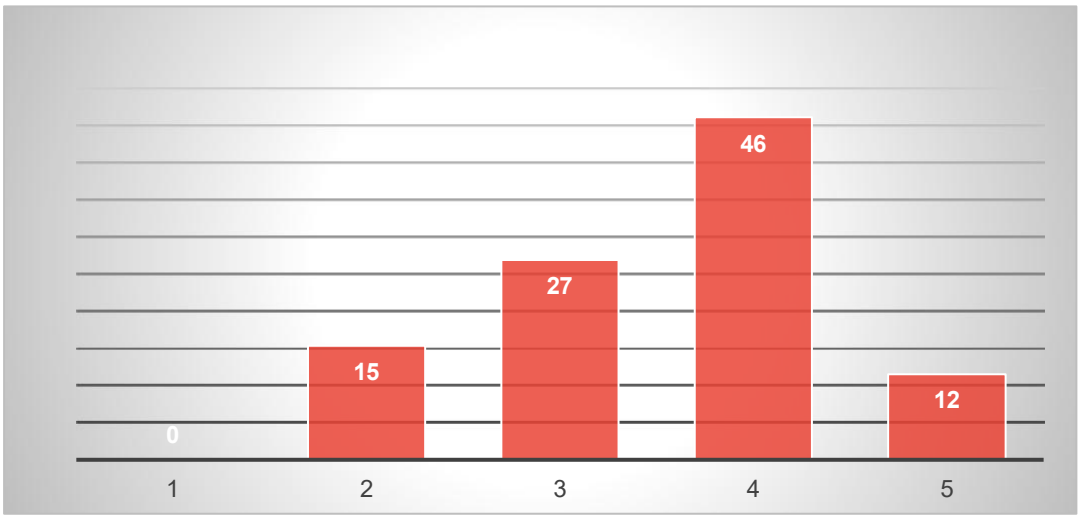

Figure 44: Possibilities to provide sufficient resources and training to support resilience in farming communities

3.8 Current government policies and support systems are adequate to help farmers face climate challenges

Perceptions are generally negative. The most common responses were **2 (38.6%)** and **3 (26,9 %)**, indicating some dissatisfaction with the government policies. Zero **%** rated adequacy as a **5. T**his suggests a clear concern over the effectiveness of existing government measures.

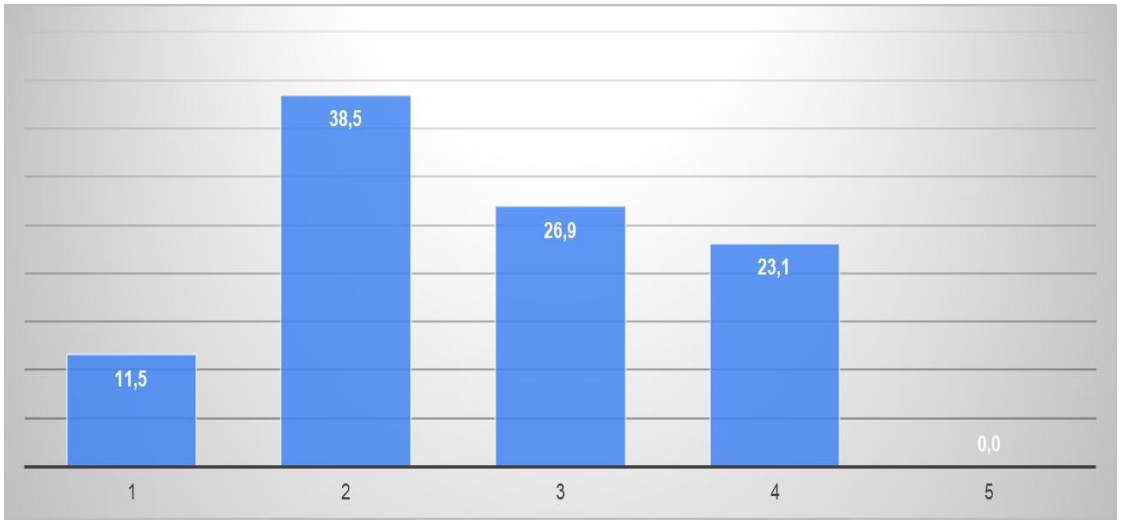

Figure 45: Current government policies and support systems are perceived not to be adequate to help farmers face climate challenges

3.9 We observe increasing stress on crop/animal health due to climate crisis

A majority **(69.2%)** agreed moderately or strongly (ratings 4 and 5) that they observe increasing stress on crop and animal health. This confirms that many stakeholders are already witnessing climate-related biological stress in plant and animal species.

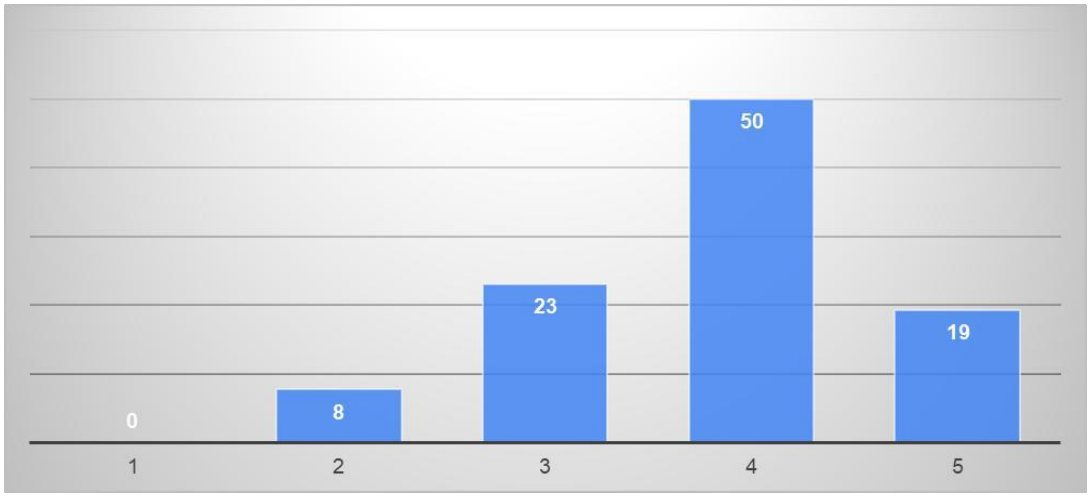

Figure 46: Perception increasing stress on crop/animal health due to the climate crisis

3.10 Our organization advocates for or assists in adopting innovative farming techniques to mitigate climate impacts

More than 65 % of respondents rated this a **4 or 5**, indicating good advocacy activity. However, **35 %** rated it as less than **3**, showing potential for stronger engagement

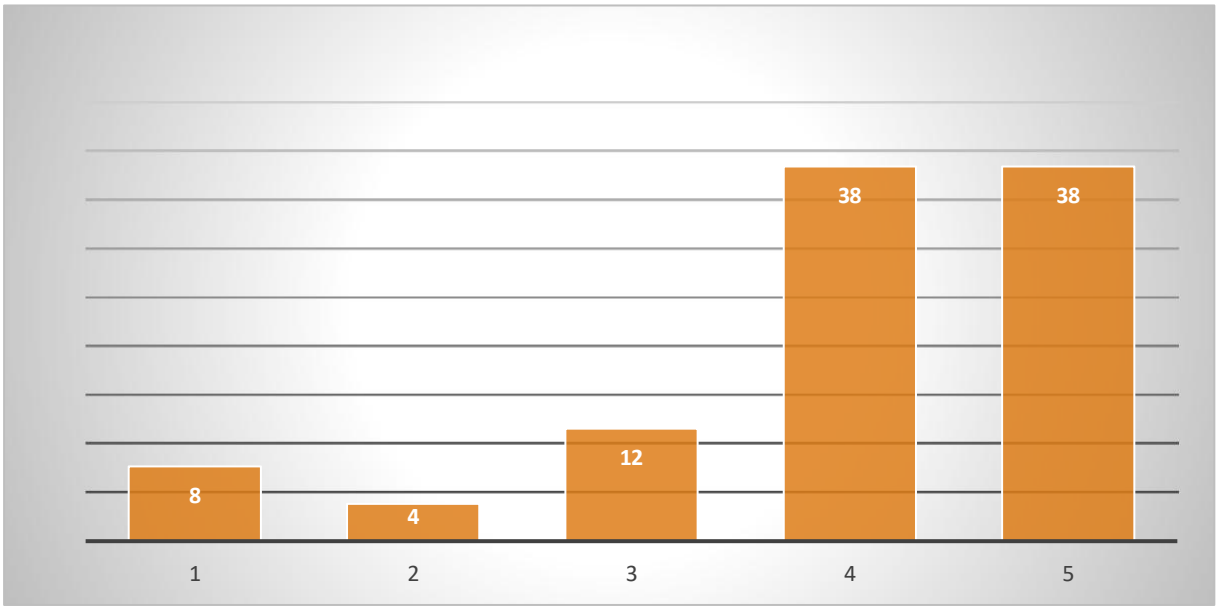

Figure 47: Stakeholder's organization advocates for or assists in adopting innovative farming techniques to mitigate climate impacts

3.11 We promote or use digital tools (e.g., remote sensing, monitoring apps, early warning systems) for climate adaptation

Responses were somewhat split: **81%** rated it a **4 or 5.** A 20 **%** selected **2**, indicating a gap in digital adoption among some organizations

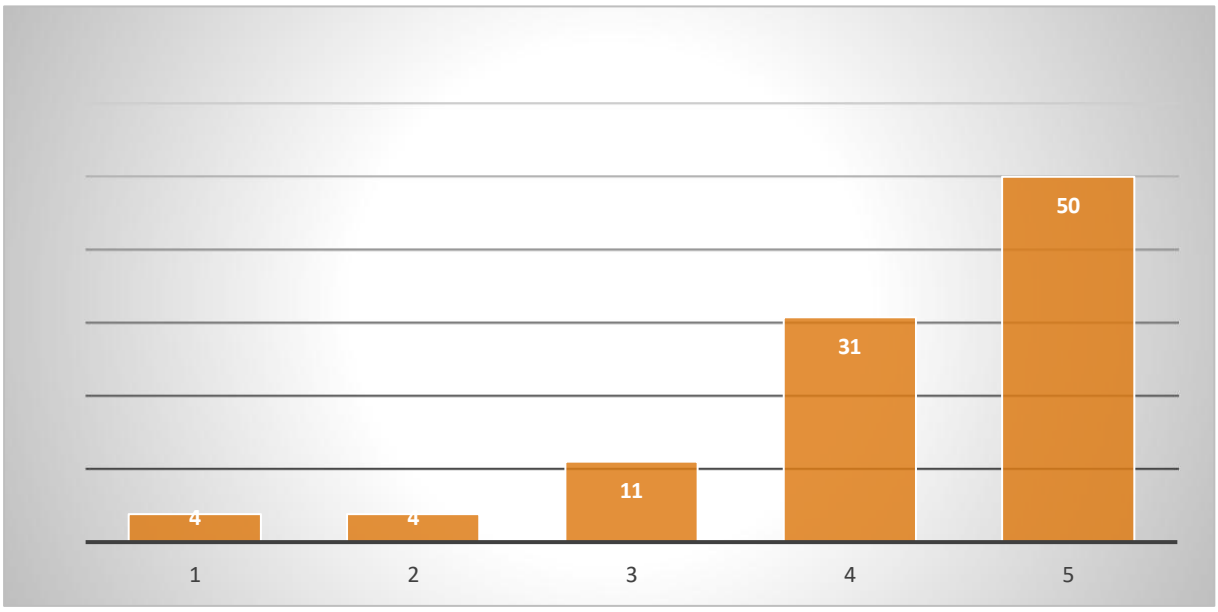

Figure 48: Perception how stakeholders promote or use digital tools

3.12 Collaboration between farmers, researchers, policymakers, and civil society is essential to address climate change in agriculture

Strong consensus: 77 **%** of participants selected **5**, and **12 %** selected **4.** Only 12 % of respondents rated this lower than 3. This confirms widespread belief in the importance of cross-sector collaboration.

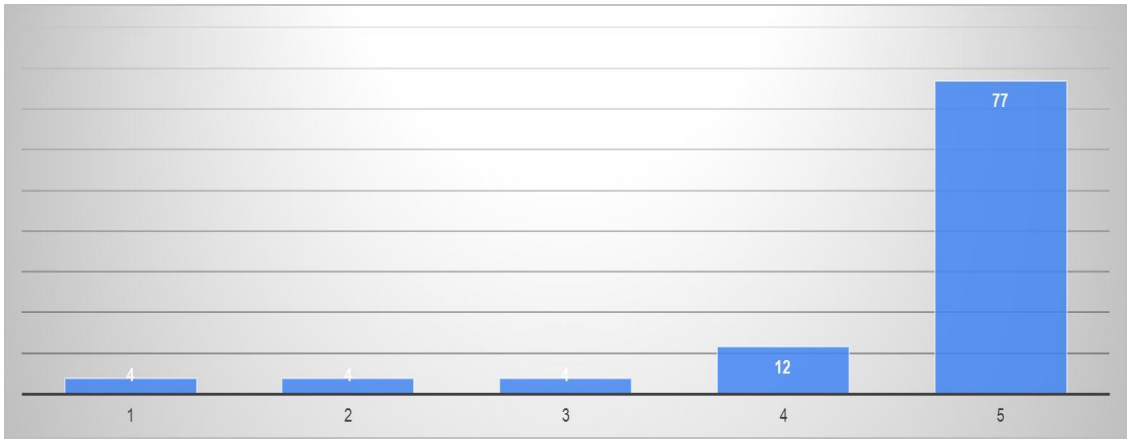

Figure 49: Stakeholders expressed the importance of cross-sector collaboration.

3.13 What aspects need more attention to promote climate-resilient, environmentally sustainable agriculture?

Most frequent selections included Policy, Education & Farmer Empowerment (58 % of stakeholders), followed by Water management and conservation and Efficient nutrient and fertilizer use (38 %), and Resilient Cropping Systems (35 %) and Soil health and regenerative practices (31 %).

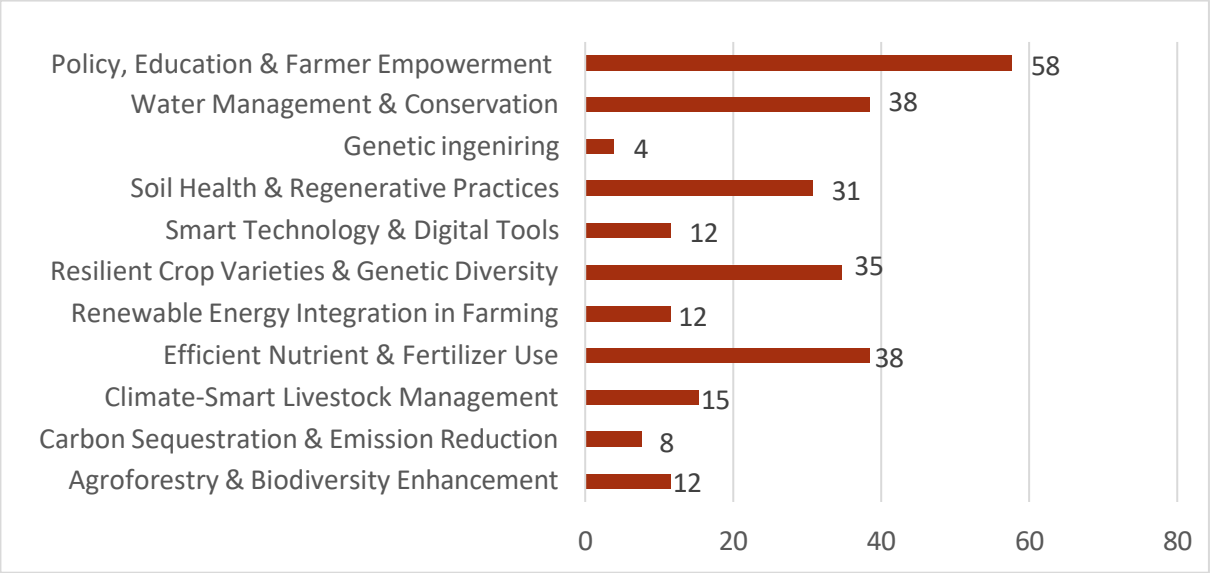

Figure 50: The most frequent selections among stakeholders regarding the aspects that need more attention to promote climate-resilient, environmentally sustainable agriculture?

3.14 In which areas should more stakeholder capacity building or farmer training be offered?

Top areas selected: Nature-based solutions & regenerative practices, Drought-resistant crop varieties and Precision agriculture tools. This suggests strong demand for technical and nature-based training approaches.

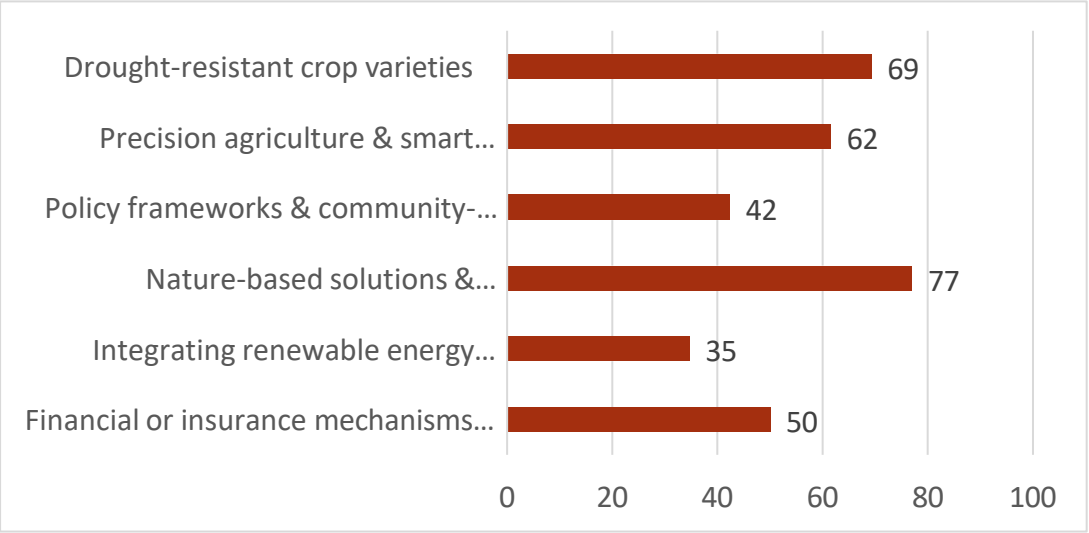

Figure 51: In which areas stakeholders need more training

3.15 Preferred training formats for outreach or collaboration

The most popular training formats were: Workshops or short in-person courses

On-farm demonstrations / field visits and Online webinars. This reflects a preference for interactive, practical, and accessible formats. People do not have time to read.

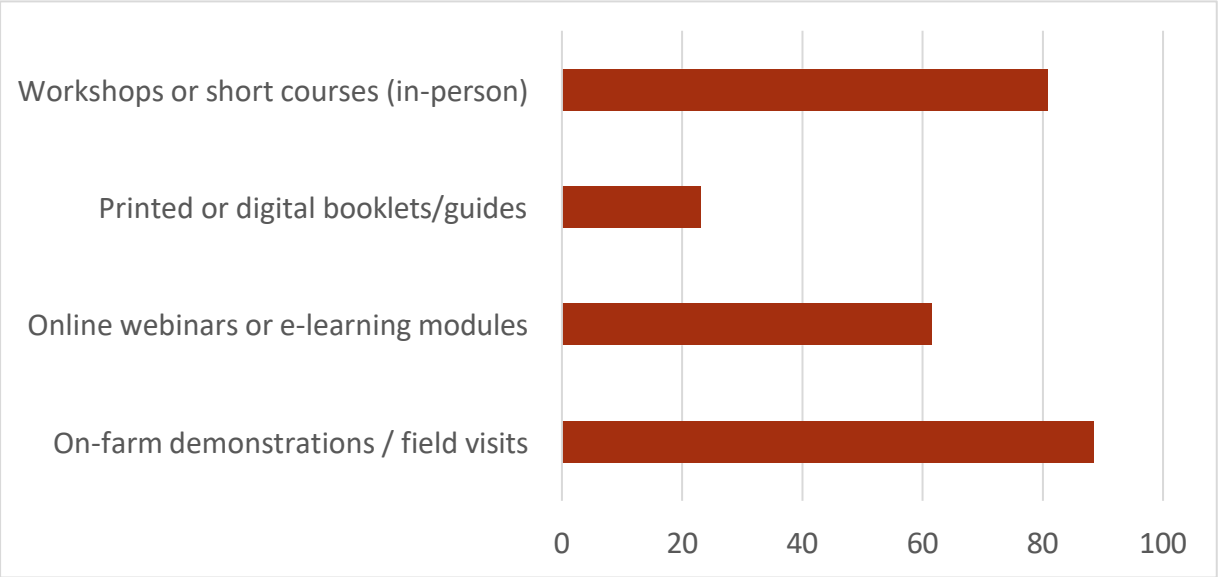

Figure 52: Preferred training formats for outreach or collaboration

3.16 Which support resources would enhance climate resilience across farming systems?

Most commonly mentioned: Funding or subsidies for climate-smart practices, Access to digital tools and expert guest speakers or specialised workshops. Financial and technical support are seen as critical for resilience building.

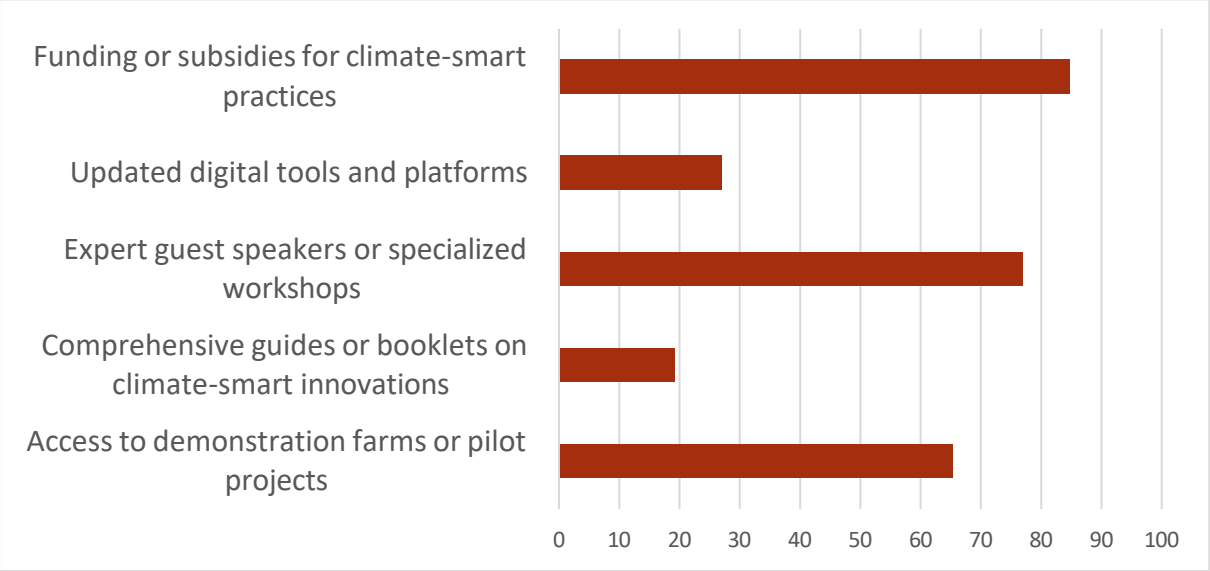

Figure 53: Which support resources would enhance climate resilience across farming systems?

3.17 What are the biggest challenges your organization sees in helping farmers adapt to climate change?

Challenges are both institutional (e.g., red tape, lack of trust) and practical (e.g., unpredictable climate effects, poor participation). This suggests a need for better outreach, simplified administrative processes, and tailored engagement strategies.

Highlights:

- **Low engagement from farmers**: Several respondents noted limited participation in educational events and workshops.
- **Systemic issues**: Bureaucracy, irresponsible implementation, and lack of trust in institutions were commonly cited.
- **Economic and production risks**: Issues like mycotoxins, seasonal variability, and volatility in crop yields due to climate extremes were noted.
- **Disconnect from farming realities**: Some organisations indicated they are

indirectly involved and thus have limited influence.

3.18 What types of support or collaboration would help address these challenges?

Stakeholders call for less bureaucracy, targeted funding, and education-based solutions. There is a recognition that climate change mitigation needs to be financially and logistically accessible.

Key suggestions:

- More inclusive and practical training programs, ideally embedded in regular education or advisory systems.
- Simplified funding mechanisms for smaller farms or vulnerable groups.
- Dedicated subsidies and educational support focused on climate adaptation.
- Some stakeholders called for policy reform, though specifics were limited.

3.19 Has your organization supported or observed any successful adaptation methods or technologies?

Practical, farm-level technological adaptations (irrigation, tillage, varieties) are seen as effective, though not universally applicable. The lack of experience among some stakeholders highlights the need for more collaborative pilot testing and demonstration sites.

Examples mentioned:

- Minimum tillage and conservation farming – with mixed results but seen as promising.
- Sprinkler and irrigation systems – for drought resilience.
- Resistant crop varieties and mechanical adaptation – practical, scalable options.

- Others reported no direct involvement or results.

3.20 Looking ahead, what new climate-related risks or opportunities do you foresee in agriculture over the next 5–10 years?

Stakeholders foresee significant and accelerating climate risks, with a strong emphasis on biological threats and extreme weather. There is also cautious recognition of emerging technologies and breeding methods (e.g., GMOs) as potential future tools, though their acceptance remains contested.

Risks anticipated:

- New pests and diseases
- Increased frequency of extreme weather events (droughts, floods, storms)
- Pressure to introduce GMOs
- Continued natural disasters and erratic seasons

Opportunities mentioned:

- Need for adaptation tools and practices
- Shift toward resilient cropping systems
- Potential for more advanced technological integration