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REPORT OF THE NORTHWEST ZONAL POLICY DISCOURSE ON CLIMATE SMART AGRICULTURE (CSA) TECHNOLOGIES, INNOVATIONS AND MANAGEMENT PRACTICES (TIMPs)

Date: 11th February, 2021

Venue: Conference Hall, DevCom. Centre, ABU, Zaria.

Executive Summary

A policy discourse on the state of Climate-Smart Agriculture (CSA) Technologies, Innovations and Management Practices (TIMPs) in North-West Zone, Nigeria was held at Conference Hall, DevCom. Centre, ABU, Zaria, Nigeria on Thursday, 11th February, 2021 drawing 58 participants. Major stakeholders in climate issues were drawn to participate in the discourse. They include farmers, farmers' association, media, agricultural research institutes, Ministry of Environment, Ministry of Agriculture, State Agricultural Development Programs in the Zone (Kaduna, Kano, Sokoto, Jigawa, Katsina and Zamfara), Nigerian Meteorological Agency (NIMET), NAIC, TOHFAN, Faculty of Agriculture, ABU, Zaria, input agencies. The technical session of the discourse was anchored by Dr F. O. Issa (of NAERLS) and Dr A. O Iyiola-Tunji (of NAERLS/ABU, Zaria).

The following resolutions were drawn from all the groups: (i) That a limited number of farmers are gradually aware and adopting indigenous knowledge such as adjusting planting date, diversification in production sites, changing crop type and adoption of improved varieties, (ii) Poor/wrong perception on CSA TIMPs and the adaptation strategies are very low among farmers, and (iii) Farmers are serious and open to objective and workable recommendation.

Challenges to CSA TIMPs Uptake and Integration into Policy in Northwest Zone identified include (i) Politicians are hijacking the efforts of sensitization on CSA in some areas (ii) Lack of adoption of research findings and innovations on CSA, (iii) Lack of finance in adoption of new innovations, (iv) Poor administration of our forest of and illegal license to deforestation, (v) Inadequate funding for research, extension services and outreach, (vi) Poor knowledge and access to improved technologies and practices, (vii) Farmers attitude and resistance to improved technologies and practices, and (viii) Policy inconsistency and lack of political will from government.

Policy and Practices that have Integrated CSA Issues in Northwest Zone were (i) Use of improved varieties by some farmers, (ii) Use of local/organic manure in farming, (iii) Planting of vetiver grass and moringa tree as a border line to control flooding, (vi) Integration of leguminous and cereal crops and crop rotations, (v) Adjusting of planting dates, (vi) Afforestation policy in few areas, (vii) Waste recycling especially in some integrated farms, (viii) Homestead/backyard farming. Others include Irrigation to reduce crop stress during dry spell, Agricultural insurance to cushion the effects of climate change, Adoption of agro-forestry practices using indigenous trees like *Gao* in Hausa, Research and development of resilient crop varieties and animal breeds.

Actionable recommendations proffered by the participants include creation of shelter bed, Afforestation/Tree planting campaign and license of firewood and charcoal business owners use of improved seed/livestock, Robust sensitization on effect of climate change and CSA demonstration ranching, prevention of open grazing and continuous sensitization for cattle as a business venture rather than tradition or/or prestige, policy consistency on accelerated passage of draft policy on extension for Nigeria and national policy on tree-cutting, Input quality assurance, capacity building of extension personnel and increased budgetary allocation.

1.0 Introduction

In many regions, agricultural production is already being adversely affected by climate change. Higher temperatures, less reliable supplies of water and more frequent droughts and floods are likely to reduce yields in many areas. Changes in climate affect the water demand of crops grown in both irrigated and rain-fed systems. An increase in temperature triggers a higher demand of water for evapotranspiration by crops and natural vegetation, which leads to more rapid depletion of soil moisture. This scenario, combined with changes in rainfall patterns may lead to more frequent crop failures. It is in view of this that NIFAAS organized policy discourse on Climate-Smart Agriculture in Nigeria across the zones to strengthening Climate Smart Agriculture (CSA) Technologies, Innovations and Management Practices (TIMPs) knowledge and uptake to influence policy and practice through enhanced partnership among key stakeholders. The Nigerian forum for Agricultural Extension and Advisory Services (NIFAAS) is an umbrella organization of agricultural advisory services (AAS) providers, and stakeholders in Nigeria including the Agricultural Extension Society of Nigeria (AESON).

The aim of the policy discourse was to bring stakeholders on Climate Smart Agriculture (CSA) together to interact, deliberate and come up with policy options that could be suggested for inclusion in the national/zonal policy. The policy discourse was held at the conference hall of the Devcom. Center, Ahmadu Bello University, Zaria on the 11th of February, 2021.

2.0 Programme Description

The programme begins with the arrival and registration of the participants. A welcome address was thereafter delivered by the president of NIFAAS, who was represented by Prof. C.K Daudu from NAERLS, ABU, Zaria. He joyfully welcomed and appreciate all the participants who graced the event despite other tight schedule and short notice. He informed participants that despite glaring impact of climate change particularly on smallholder farmers' productivity and livelihood, little or nothing is done to create awareness and mitigate the impacts. This according to him, informed the need for this policy discourse in order to bring stakeholders together and tap from their wealth of experiences which will further culminate into an informed national

policy roadmap for Climate Smart Agriculture in Nigeria. NIFAAS therefore welcome facts and figures driven from climate activities that will not only create awareness among rural farmers but also transformed into workable solutions and mitigating practices to climate change impact on our farmers in Nigeria.

While declaring the discourse open, the Executive Director, NAERLS, Prof. Emmanuel Ikani, represented by the Deputy Director of the Institute, Prof Y.A Sani enjoined participants to join NIFAAS to promote quality extension advisory services that will improve the productivity of our farmers. He wished for fruitful deliberation and journey mercy to various destination. In his remark, the information communication and knowledge manager of the forum, Dr. Godfrey Onagwa drew the participants to the memory lane on how the forum was formed through an umbrella of extension fora, from national (NIFAAS) to continental forum (AFAAS) and Global forum (GFRAS) to achieve a broad range of goals targeted at smallholder farmers. According to him, it is important to enlighten farmers on the current climate change which has effect on them and the need to change our farming techniques, research and technologies to cushion the effects of climate change on our food production.

Dr. Issa F. O. who is the Northwest coordinator of the programme presented an overview of the programme and expectations from the programme. He emphasis that this is not an academic lecture and so every good idea that will bring out fruitful output will be acknowledged and highly appreciated. He enjoined participants to feel free and share their experiences, ask questions or comments where necessary. Goodwill messages were delivered first by the Director of Agricultural Extension Services of Kaduna Agricultural Development Agency (KADA), Alh. Ya’u Kasimu. He said the policy discourse is timely considering the increase impact viz-a-viz poor knowledge from farmers and promised that his agency will take the outcome of the meeting to the farmers through their extension activities. Other goodwill messages were delivered by representative of Premier Seed and the Chairman rice farmers association of Nigeria, Giwa LGA branch.

The technical session of the discourse titled: *“What is CSA Technologies, Innovations and Management Practices”* and *“The State of CSA Technologies, Innovations and Management Practices (TIMPs) and Uptake in the Zone: Challenges and Prospects with Practical Examples”* were delivered by Dr. Issa F.O and Dr. Iyiola-Tunji A.O respectively. The participants afterward broke into four (4) panel groups and the output were summarized under the following headings:

3.0 State of the CSA TIMPs Knowledge and Uptake in Northwest Zone. The following resolutions were drawn from all the groups.

1. That a limited number of farmers are gradually aware and adopting indigenous knowledge such as adjusting planting date, diversification in production sites, changing crop type and adoption of improved varieties.
2. Poor/wrong perception on CSA TIMPs and the adaptation strategies are very low among farmers.
3. Farmers are serious and open to objective and workable recommendation.

4.0 Challenges to CSA TIMPs Uptake and Integration into Policy in Northwest Zone

1. Politicians are hijacking the efforts of sensitization on CSA in some areas.
2. Lack of adoption of research findings and innovations on CSA.
3. Lack of finance in adoption of new innovations.
4. Poor administration of our forest of and illegal license to deforestation.
5. Inadequate funding for research, extension services and outreach.
6. Poor knowledge and access to improved technologies and practices.
7. Farmers attitude and resistance to improved technologies and practices.
8. Policy inconsistency and lack of political will from government.

5.0 Policy and Practices that have Integrated CSA Issues in Northwest Zone

1. Use of improved varieties by some farmers.
2. Use of local/organic manure in farming.
3. Planting of vetiver grass and moringa tree as a border line to control flooding.
4. Integration of leguminous and cereal crops and crop rotations.
5. Adjusting of planting dates.
6. Afforestation policy in few areas.
7. Waste recycling especially in some integrated farms.
8. Homestead/backyard farming.
9. Irrigation to reduce crop stress during dry spell.
10. Agricultural insurance to cushion the effects of climate change.
11. Adoption of agro-forestry practices using indigenous trees like *Gao* in Hausa.
12. Research and development of resilient crop varieties and animal breeds.

6.0 Actionable Roadmap to Increase CSA Uptake and Integrating into Policy and Practices in Northwest Zone

S/N	Recommendation	Implementing Body	Resources to use	Implementation Timeline
1.	Creation of shelter bed	-FRIN -STME	-Seedlings -Personnel -Fencing materials	2 – 5 years
2.	Afforestation/Tree planting campaign and	-FRIN	-Personnel -Seeds/Seedlings	2 – 5 years

	license of firewood and charcoal business owners	-Extension Services -NGOs -FG/States		
3.	Use of improved Seed/Livestock	-NASC -ADPs -Research Institute	-Improved Seed	2 – 5 years
4.	Good soil conservation practices	-NAERLS -ADPs -FRIN	-Personnel	2 – 5 years
5.	Robust sensitization on effect of climate change and CSA	-ADPs -NAERLS -Community-based association -NIFAAS -IAR	-Extension personnel -Funding	1 – 5 years
6.	Government policies on industrialization and urbanization	-Government	-Data -Enforcement agencies	Continuous
7.	Viable agro-climate cooperative	-NGOs -MoA -ADPs	-EAs -Researchers -Input dealers	Continuous
8.	Demonstration ranching, prevention of open grazing and continuous sensitization for cattle as a business venture rather than tradition or/or prestige	-State MoA -FG -Private sector	-Land -Herders Group -Pasture	5 years
9.	Stakeholders collaboration to harmonize efforts	-Relevant Ministries -NGOs -Research Institutes	-Personnel	Continuous
10.	Policy consistency on accelerated passage of draft policy on extension for Nigeria and national policy on tree-cutting	-FG -States -LGAs	-Act/ Constitution -Media advocacy	Continuous
11.	Input quality assurance	-NASC	-Laboratory -Enforcement team	Continuous
12.	Capacity building of extension personnel	-FDAE -ADPs -NAERLS -NIFAAS	-Personnel -Funding	10 months
13.	Increased budgetary allocation	-FGN -States	-Funding	Continuous
14.	Crop livestock integration	-Extension agents -Farmers	-Improved and affordable crop varieties	2 years

			-Improved and affordable livestock breeds	
15.	Orphan-legumes integration	-Farmers -Extension agents	Indigenous orphan legumes	2 years

6.1 Questions/Observations

Question 1: What is FRIN doing to collaborate with the state ADPs and Ministry of environment on the issues concerning agroforestry in order to mitigate the effect of climate change.

Question 2: What is FRIN doing in terms of multiplying the existing neem (*Azadirachta indica*) trees especially found in Katsina state.

Question 3: Do we stick to orchard development or just trees?

Answer: FRIN just partnered with ABU for a joint venture that was financed by the National Agency for the Great Green wall (NAGGN) for the establishment of shelterbelt (350ha) in katsina state in year 2020. More of this is coming up this year.

Again, orchard should be encouraged but certain indigenous forest tree species should be planted and established on a plantation basis. An example is (*Pterocarpus erinacens*) locally known as Madobia or Madrid which is a very expensive tree species that is being exploited by the Chinese in Nigeria especially in Taraba state.

Question 4: will there be continuation of this workshop like in subsequent time?

Answer: Yes, there will be continuous policy discourse on this subject until actions are taken.

6.2 Further Contributions

1. Adoption of carbon-free financing
2. The use of acid-based fertilizers on irrigated areas should be regulated or banned as it causes a lot of acidification to the soils.
3. Also, NPK 15:15:15 has been discouraged and banned by the Nigerian Institute of soil science. According to the institute, based on the results of various soil analysis, the fertilizer is not compatible with Nigerian soils. Also banned include some brands of agro-chemicals like paraquat, Glyphosate and Pendimethalin, all are capable of damaging our soils and ultimately contribute to climate change. Furthermore, the excess and uncontrol use of pesticides has done a lot harm to agriculture production than deforestation, especially biodiversity disruption and erosion. Most of these chemicals are acidic in nature, they kill microorganisms than helps in production of nitrogen. It also increases the formation of acidic rain which affect the ozone layer. Therefore, policy should be put in place to

checkmate the types of chemicals brought into the country and awareness should be made on the negative effect of some of these chemicals and advocate for organic farming.

4. Crop-livestock integration and agroforestry from the farmers level and keeping only the number of animals you can carter for. The danger of climate change must be brought to the understanding and knowledge of the farmers so that they will appreciate the suggested interventions meant to mitigate the effect of climate change
5. Advocate the use of indigenous underutilized legumes such as Bambara, groundnut, African yam, etc. which have a sizeable population in the northwest Nigeria and could support CSA.

7.0 Results: Zonal Policy Discourse Survey (Northwest Zone)

A pre-discourse as well as post-discourse rapid evaluation were conducted during the NIFAAS CSA TIMPs in Northwest zone and the results were presented in the following infographics. With respect to gender, the pre-discourse survey on CSA TIMPs (Figure 1) revealed that majority of the participants were Male (81%) and are between the age bracket of 41-50 years (Figure 2). This is understandable in view of the fact that an experienced and active age is required to champion the course of changing climate impacts on our agriculture production. The result in Figure 3 showed that participants of the CSA in the Northwest Zone were experienced relevant stakeholders in the field of agriculture, drawn from research institute (26%), Ministries of Agriculture (26%), Extension agency (ADP) (15%), farmers organizations (19%), academics (7%), related private agencies (4%) and media (4%). Regarding the awareness on CSA (Figure 4), an overwhelming majority (96%) of the participants in the Northwest policy discourse affirmed that they have heard of CSA before now with average rating knowledge of 67% (Figure 5). Furthermore, Figure 6 revealed that 93% of the participant said they are not aware of any CSA policy operational in the Northwest zone, however, those aware (7%) reported existence of afforestation programme and enforcement of law against deforestation (Figure 7) in some states as the only policy in place. This shows that there is either no public awareness or little policy intervention on CSA in the North-western states. Responding on whether they are aware of any CSA TIMPs (Figure 8), 85% of the participants indicated they are aware of various TIMPs in the zone to include use of improved crop varieties (70%), Mixed farming (65%), pests and diseases management strategies (65%), Soil management practices (57%), water conservation strategies (57%) and Crop management practices (52%) (Figure 9). Other practices were agroforestry (39%), weed management strategies (35%), controlled grazing (35%), ranching (13%) and grassland intensification (9%). The results further revealed that the training provided by NIFAAS was the first training ever attended by 67% of participants on CSA TIMPs (Figure 10). This is highly commendable

considering the timeliness and importance of the discourse to our farmers. Participants' expectation at the end of the discourse (Figure 11) therefore, was to take home some skills in the area of mitigation strategies and solution that will overcome the problem of climate change for food security (26%), suggests policies that will help farmers mitigate the challenges of climate change (22%), increase their knowledge of recent agricultural innovations (15%) and exposure to practical approach to CSA as it affects farmers, researchers and other relevant stakeholders (11%). Other expectations according to the participants include building skills in policy formulation, better understanding of CSA TIMPs and its application in the area of livestock production, learn from other experiences and design technologies from locally sourced materials and enforced policy against the use of conventional agricultural practices which affects climate.

Result of post-discourse evaluation (Figure 12) indicates that all the participants (100%) reported that the training was helpful in improving their knowledge on CSA and more than half (54%) of the participants said they are highly satisfied with the discourse platform provided (Figure 13). Result in Figure 14 suggests that about 77% of the participants felt that CSA is not well captured in policies in Nigeria and apparently all (100%) have agreed that there is the need to include CSA in Nigerian policy (Figure 15). Furthermore, all the participants (100%) agreed they have a role to play in integrating CSA TIMPs into policy in the Northwest zone as depicted in Figure 16. Among the prominent roles they promised to play as seen in Figure 17 include; sensitization on CSA and ensure farmers are practicing (38%), create awareness on the effects of climate change (15%), mitigation and adoption strategies through extension information dissemination (4%), include it in their budget (4%), land and nutrient management and agriculture waste recycling (4%), organize a stepdown training to the locals I represent (4%), revegetation of degraded grazing land (4%), development of improved seeds that are resistance to climate change (4%) and regulates pesticides application which leads to erosion (4%) among others. On whether they envisage a challenge in playing these roles, 69% of the participants agreed that challenges exist for effective implementation of CSA in the Northwest zone (Figure 18). Prominent among these challenges as shown in Figure 19 are; Farmers attitude and resistance to change (33%), lack of funding for research by the government (22%), policy inconsistencies and lack of implementation by the government (22%), inadequate information on CSA and extension services (17%) and inadequate financial support to farmers (11%). Adulteration of improved seeds, shortage of extension staff, low level of education of some farmers, political interest and low level of advocacy were the other bottlenecks feared by the participants. All participants (100%) however, are willing to participate in future discourse on CSA in Nigeria (Figure 20). Based on this, we can

conveniently say that stakeholders at the NIFAAS CSA TIMPs in the Northwest zone did not only gained knowledge on CSA but also are committed to spread the gospel while ensuring practical implementation by stakeholders.

A. Pre-Discourse Evaluation Results

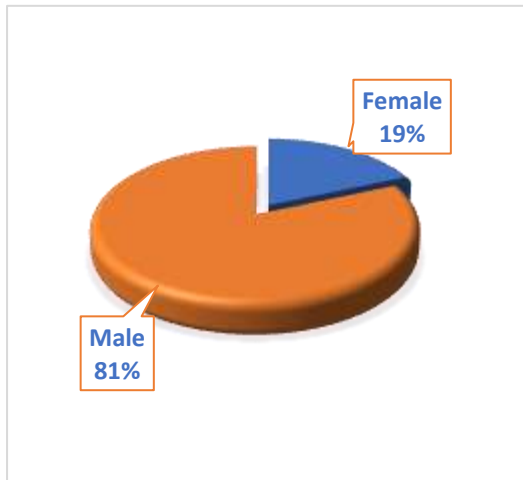


Fig. 1. Gender of Participants.

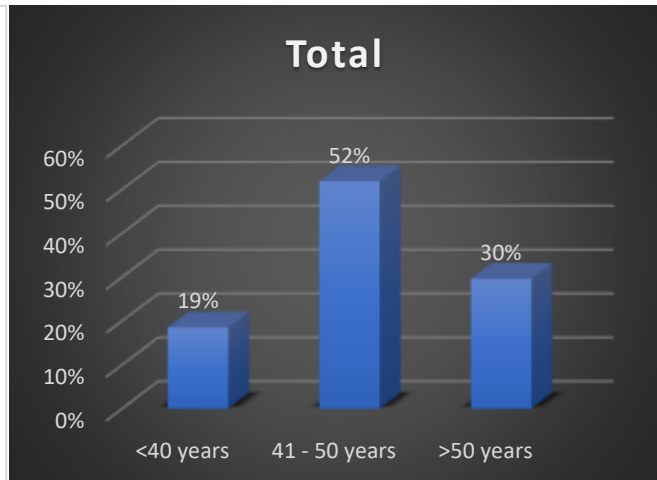


Fig. 2. Age Group of the Participants



Fig. 3. Main Occupation of Participants.

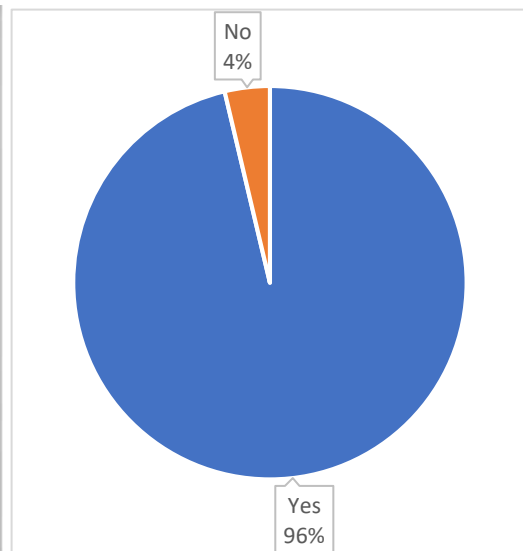


Fig. 4. Aware on CSA in the Northwest Zone

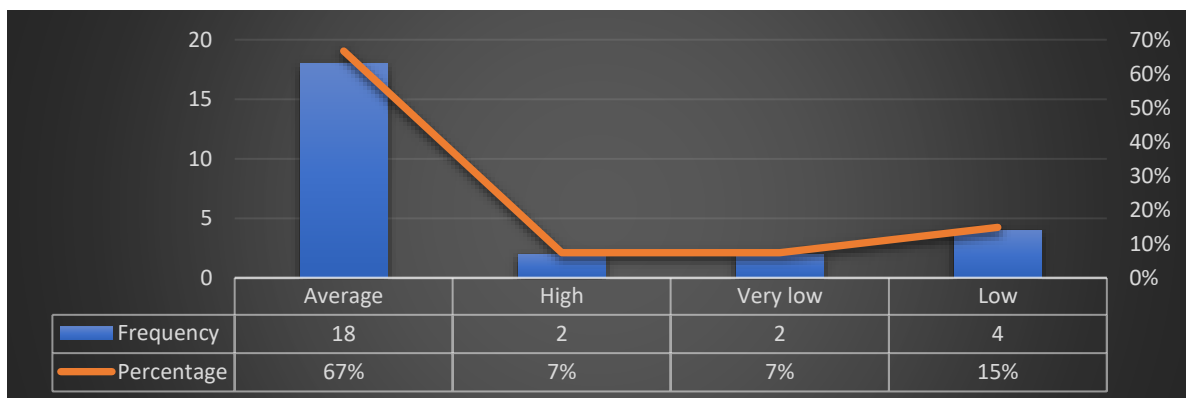


Fig. 5. Rating of Participants on their awareness on CSA

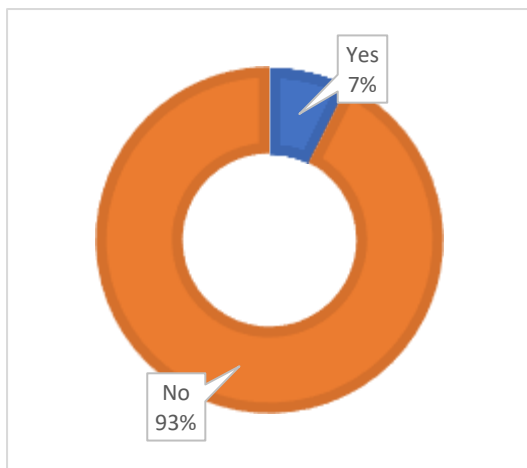


Fig. 6. Awareness of Participants on any CSA Policy in the Northwest Zone

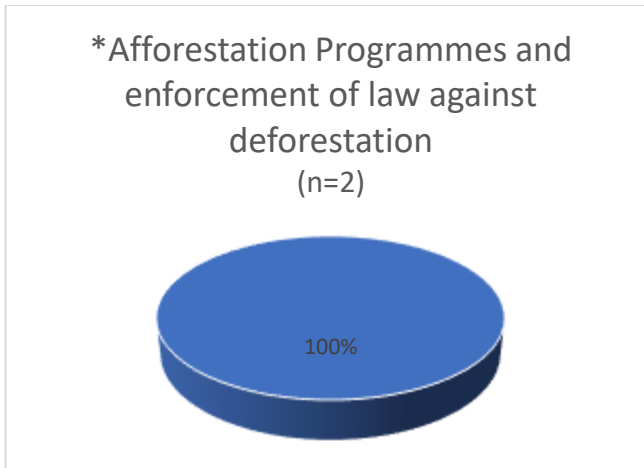


Fig. 7. List of CSA Policy Aware in Northwest Zone

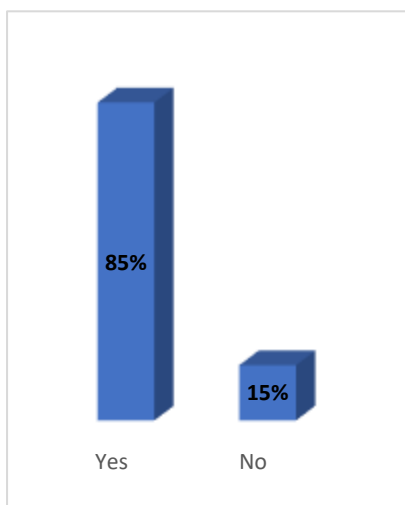


Fig. 8. Awareness on CSA TIM Practices

CSA TIMPs	Frequency (n-23)	Percentage
Soil management practices	13	56.52
Crop management practices	12	52.17
Used of improved crop varieties	16	69.57
Water conservation strategies	13	56.52
Pests and diseases management strategies	15	65.22
Weed management strategies	8	34.78
Mixed farming	15	65.22
Agroforestry	9	39.13
Ranching	3	13.04
Grassland Intensification	2	8.70
Controlled grazing	8	34.78
Others	1	4.35

Fig. 9. List of TIMPs in Northwest Zone in the Northwest Zone

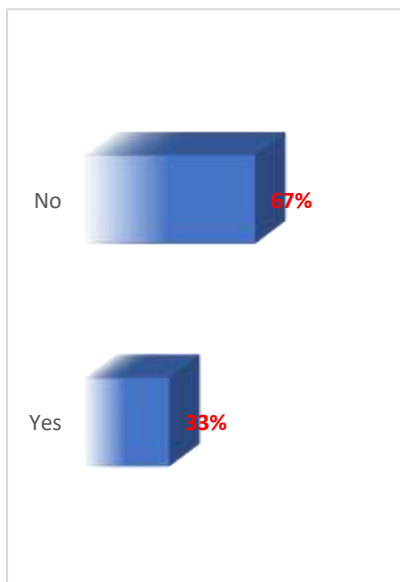


Fig. 10. Attended Any Training on CSA?

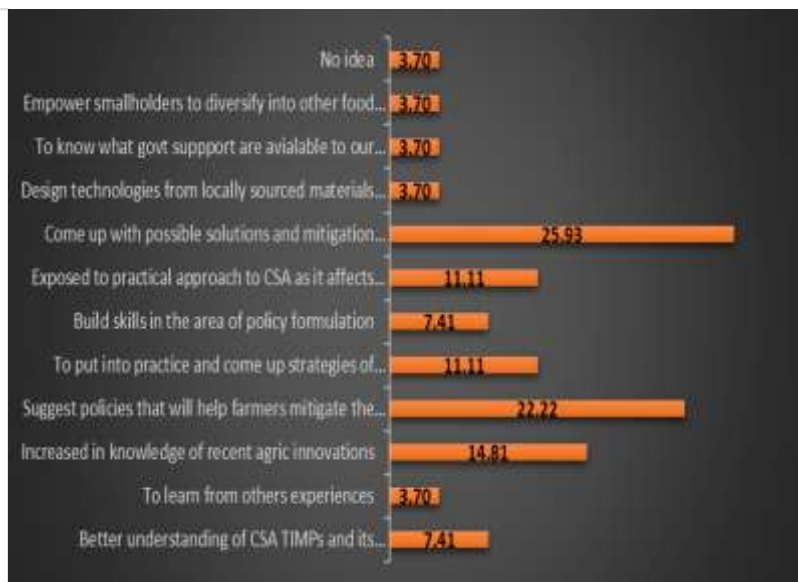


Fig. 11. Expectation of Participants from the Policy Discourse

B. Post-Discourse Evaluation Results

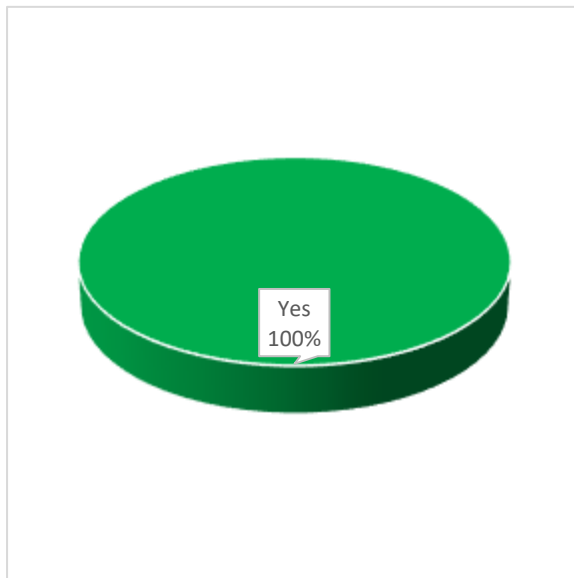


Fig. 12. If the training was helpful?

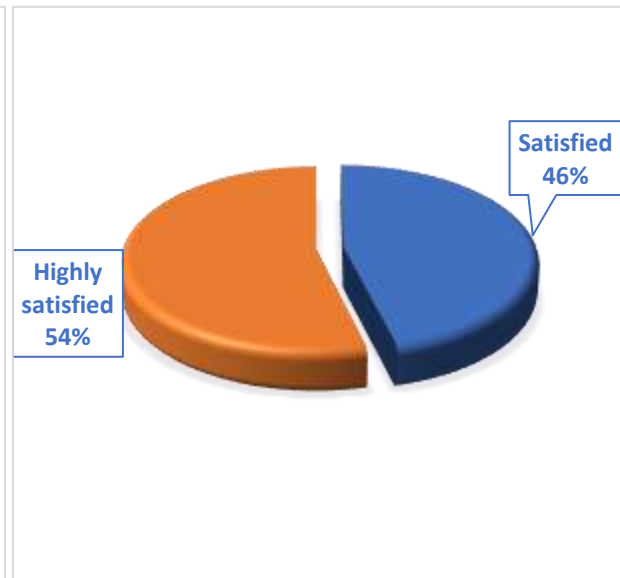


Fig. 13. Training Satisfaction Rating

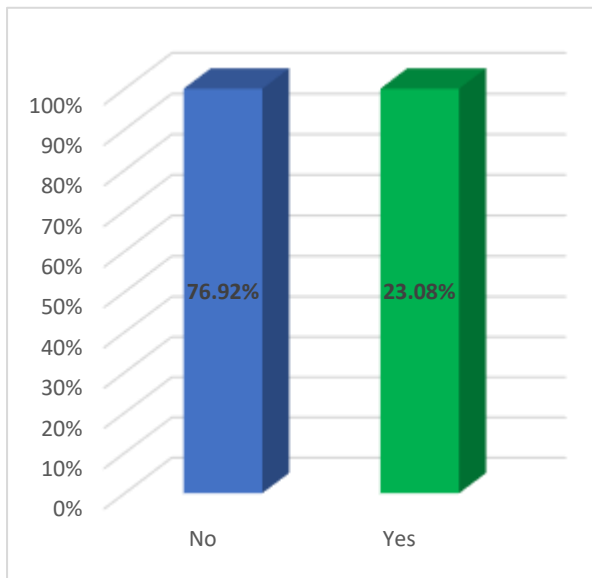


Fig. 14. If CSA is Captured in Nigerian Policy



Fig. 15. If there is need to include CSA in Nigerian Policy

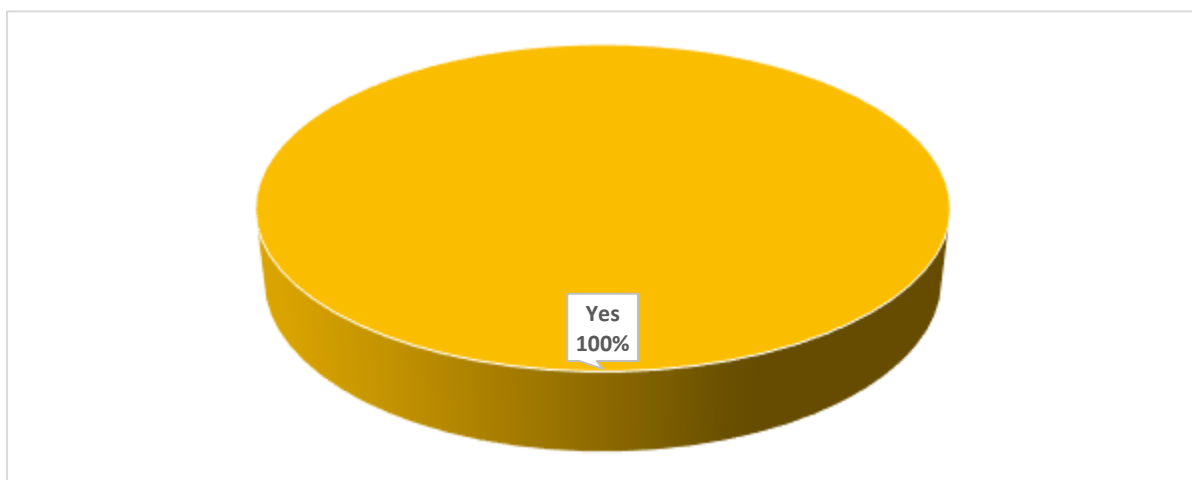
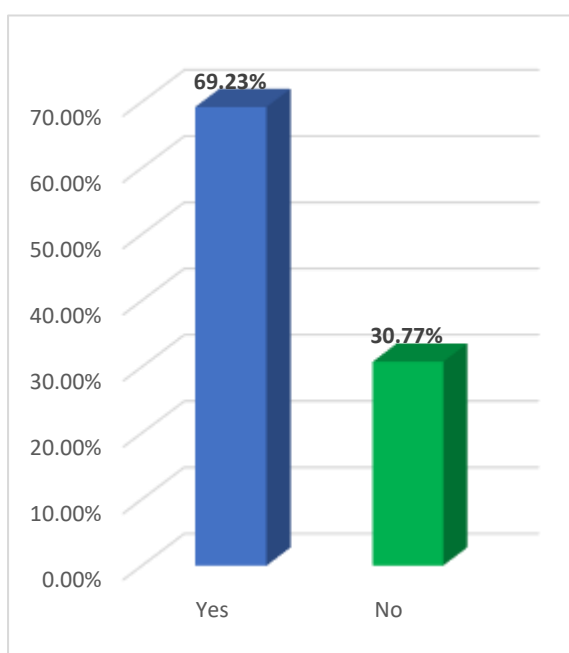


Fig. 16. If Participants have role in Integrating CSA TIMPs into Policy

Roles	Frequency	Percentage
Include it in our budget	1	3.85%
Land and nutrient management and agriculture waste recycling	1	3.85%
Massive radio programmes to make stakeholders aware	1	3.85%
Organize a stepdown training to the locals I represent	1	3.85%
Practical implementation of the methodologies of CSA	1	3.85%
Promotion of orphan/underutilized legumes prominent to serve as a good CSA crop	1	3.85%
Revegetation of degraded grazing land	1	3.85%
Through extension dissemination on the effects of climate change, mitigation and adoption strategies	4	15.38%
Using social media to craete awareness to the public	1	3.85%
Sensitization to create awarenes on CSA and ensure farmers are practicing	10	38.46%
Develop new forest technologies which encourage CSA	1	3.85%
Development of improved seeds that are resistance to climate change	1	3.85%
Regulates pesticides application which leads to erosion	1	3.85%
Ensure full participation of government in helping farmers	1	3.85%
Climate smart energy technologies	1	3.85%
Include it in our extension and farmers training schedule	1	3.85%
Demonstration on use of organic manure and agroforestry	1	3.85%
Establishment of demonstration ranch	1	3.85%

Fig. 17. List of Role to Play by Participants in the Northwest Zone



Challenges	Frequency	Percentage
Farmers attitude and resistance to change	6	33.33
Poor knowledge of the pesticides dosage	1	5.56
Lack of funding for research by the government	4	22.22
Low level of adoption of improved seeds by farmers	1	5.56
Policy inconsistencies and lack of implementation by the government	4	22.22
Lack of funding to pay for radio airtime	1	5.56
Low level of advocacy	1	5.56
Inadequate financial support to farmers	2	11.11
Inadequate information on CSA and Extension Services	3	16.67
Adulteration of improved seeds	1	5.56
Shortage of extension staff	1	5.56
Low level of education of some farmers	1	5.56
Lack of existing policy on CSA	1	5.56
Herculian tasks	1	5.56
Shortage of seedlings	1	5.56
Political interest	1	5.56

Fig. 18. Challenges Envisaged in Playing Role in the Northwest Zone

Fig. 19. List of Challenges Envisaged by Participants

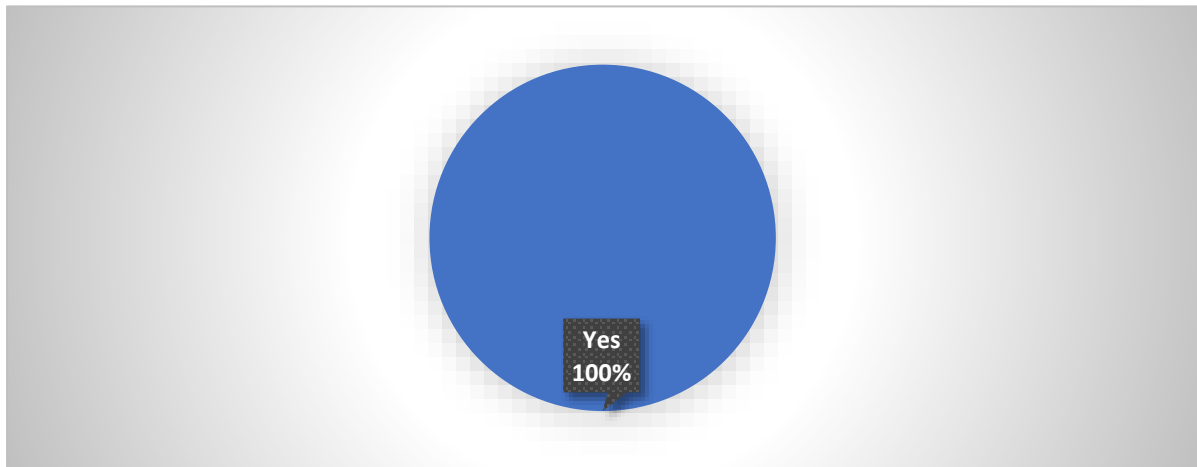


Fig. 20. Willingness to Participate in future CSA Training

Conclusion

The policy discourse quite apt especially, when the climate impact is becoming very glaring to all stakeholders. Also, the technical session was well educative and well fascinating, with ideas and experience sharing. This kind of policy discourse is important however, it is more important that outcome from this discourse is implemented and ensure that the target audience (farmers and other stakeholders) are reached. The participants therefore, expressed their gratitude to NIFAAS for setting up this forum and promised to pass the knowledge learnt to other farmers and stakeholders. They finally solicited for continuous policy discourse on CSA until all stakeholders are satisfactorily playing their role.

APPENDIX I: Event in pictures (Group photograph of participants)





Group Photograph of Participants



Cross-Section of Participants During Opening Ceremony



Lead Presenter Dr. Iyiola-Tunji A.O, Presenting his Paper



Group 1 Discourse Session



Group 2 Discourse Session



Group 3 Discourse Session



Group 4 Discourse Session



Presentation of Outcomes from Groups Discourse



Comments/Contributions and Questions



Presentation of Certificates to Participants