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The U.S. Government's Global Hunger & Food Security Initiative

Preliminary Results: African Soil Fertility and Soil Health Survey

P.V. Vara Prasad and Elizabeth Guertal
Kansas State University



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Soil Initiative for Africa
SOILS Consortium



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Rationale

- Soil nutrients are rapidly being depleted; and soil health is deteriorating. Fertilizer use in Africa is extremely low (18 to 20 kg/ha) in many countries. This limits crop productivity.
- The “Africa Fertilizer and Soil Health (AFSH) Summit” was held from 7-9 May 2024, in Nairobi, Kenya. The objective/goal was to highlight the crucial role of fertilizer and soil health in stimulating sustainable productivity growth in African agriculture, and take collective action.
- It resulted in signing four key documents (a) Nairobi Declaration; (b) 10-year Action Plan; (c) Soils Initiative for Africa; and (d) Mechanism to Finance Action Plan.
- These plans now need to be implemented and acted upon. To provide background information for the AFSH declaration this survey was designed to better understand the current state of African soil fertility, soil health, and soil management.

This survey was designed to provide guidance for future activities in soil health and fertility, to help meet document goals.

Methods

- Survey was prepared in Qualtrics and pre-tested with many experts before administering.
- Survey was approved by Kansas State University - Institutional Review Board.
- Survey was emailed to a list of 900 agricultural professionals (university, government, non-profit, farmers, for-profit) throughout Africa.
- Survey consisted of 55 questions about topics on fertilizers, soil fertility, soil health, limitations and human and institutional capacity.
- Questions mostly multiple choice, with a few open-ended to provide additional information.
- The survey was accessible via a hyperlink, and thus it could be forwarded to other professionals who could also complete the survey.

This presentation is a short summary of results from 268 replies obtained, to date (7-6-24).

Survey – Priority Areas

1. POLICY, FINANCING AND INVESTMENT FOR FERTILIZERS AND SOIL HEALTH
2. ACCESS AND AFFORDABILITY OF MINERAL AND ORGANIC FERTILIZERS; AND FERTILIZER RESEARCH
3. GREATER EFFICIENCY, RESILIENCE, AND SUSTAINABLE USE OF FERTILIZERS
4. ENHANCED INSTITUTIONAL AND HUMAN CAPACITY FOR SUSTAINABLE FERTILIZER AND SOIL HEALTH

Results from selected key questions on these topics are being presented.



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POLICY, FINANCING AND INVESTMENT FOR FERTILIZER AND SOIL HEALTH



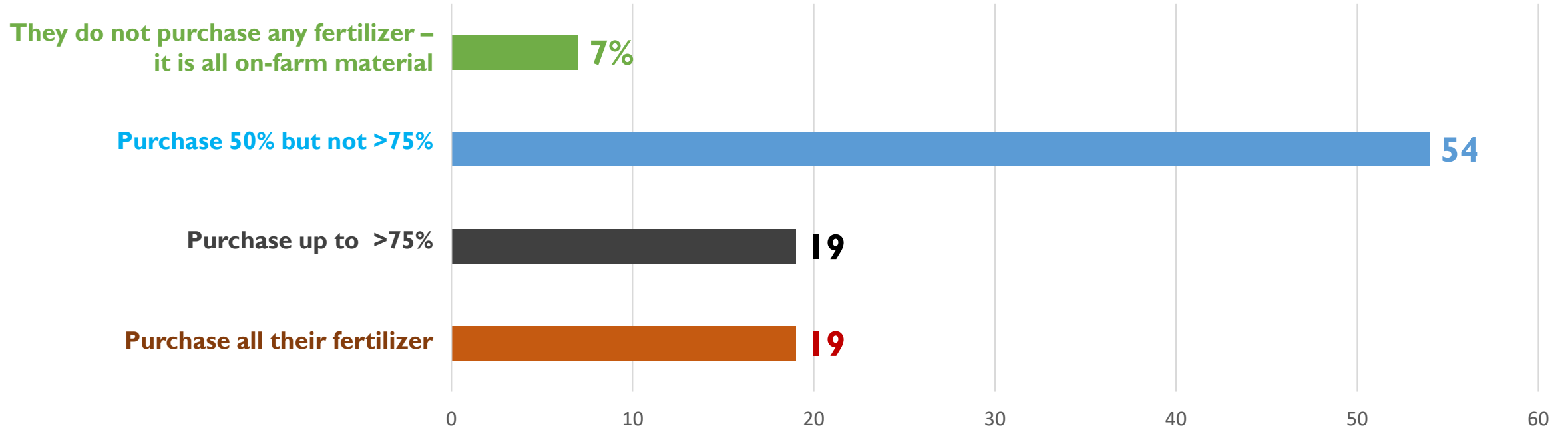
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Results

How much fertilizer do farmers in your region purchase



- *How do farmers pay for this fertilizer?* 47% selected ‘a loan for some of it (but not all)’, 33% said ‘no loan, farmers use cash or hand or other resources to buy’.
- *Can farmers find the fertilizer they want (or need)?* 41% said few sources are available and farmers cannot find what they want/need, 27% said farmers can find what they want but it can take a while to get it, 14% said few sources are available, but what farmers like/need is available.

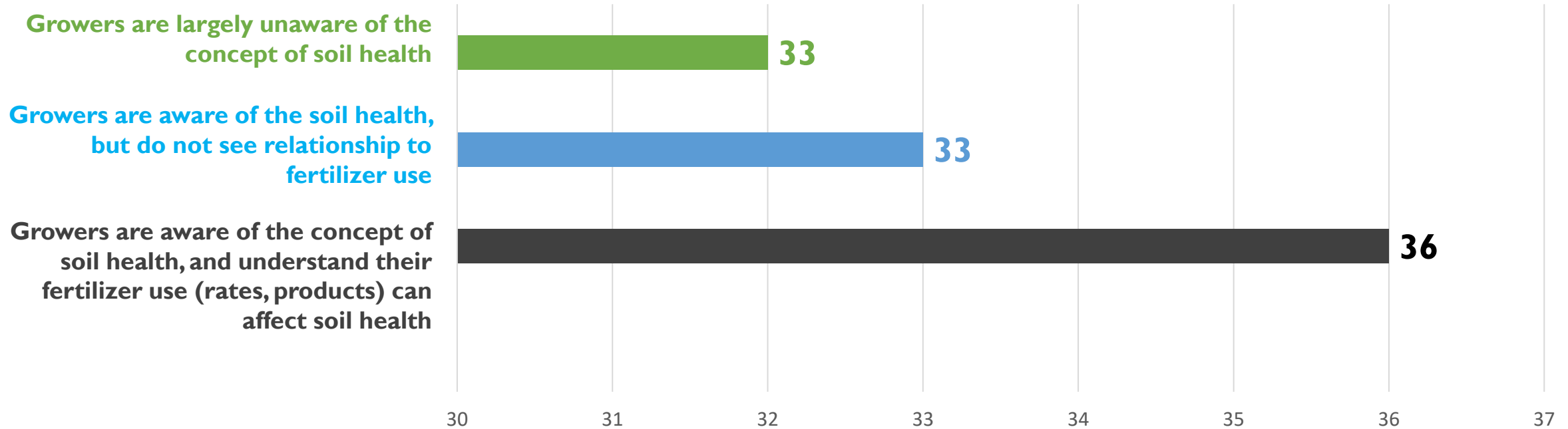
Results

Is there support for the purchase of the fertilizer?

- About half (56%) of the respondents said that they are either unaware of any government support for fertilizer purchases, or they know that there is no such support. Another third (33%), however, said that there is a cash rebate or other support available in their region.
- If a rebate or other purchase support is available 38% of respondents said that farmers do not know about it, while 26% said they are aware, and do use it.
- If a rebate or other purchase support is available, it is not as free fertilizer (6% selected this option). Instead, farmers get a price reduction (51%) or a coupon or voucher they use when purchasing (9%). One-third (31%) of all respondents said there is no fertilizer subsidy.
- Two thirds (66%) of respondents said that there is an office, ministry or bureau that manages fertilizer in their region, and half (54%) said that group administers fertilizer labeling and quality control.

Results

Do growers see a relationship between fertilizer use and soil health?



- Three-quarters (74%) said there are no outside payments for improved soil health, while 24% selected that there has been discussion about creating a payment system. So, currently, there are no payments to farmers for improved soil health (only 3% indicated there were payments, but no specifics were provided).
- Half (46%) said no soil health data is being collected, while half (54%) said it was. Various universities and government ministries were listed as the source of the soil health data..



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ACCESS TO AND AFFORDABILITY OF MINERAL AND ORGANIC FERTILIZER; AND FERTILIZER RESEARCH



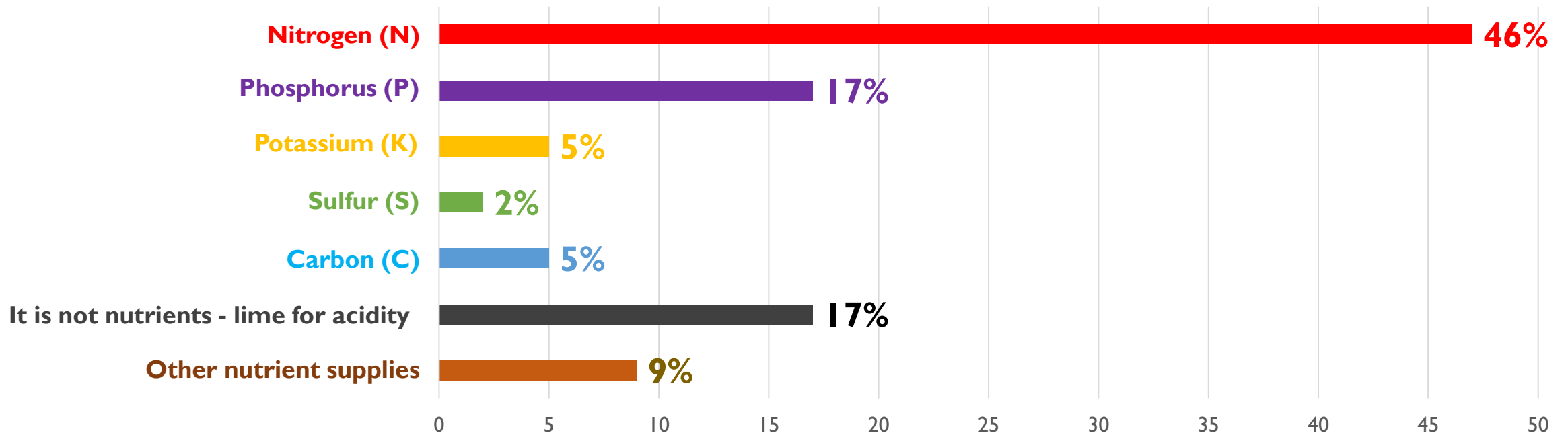
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Results

What one plant nutrient do you think are MOST missing and should be applied in greater quantity?



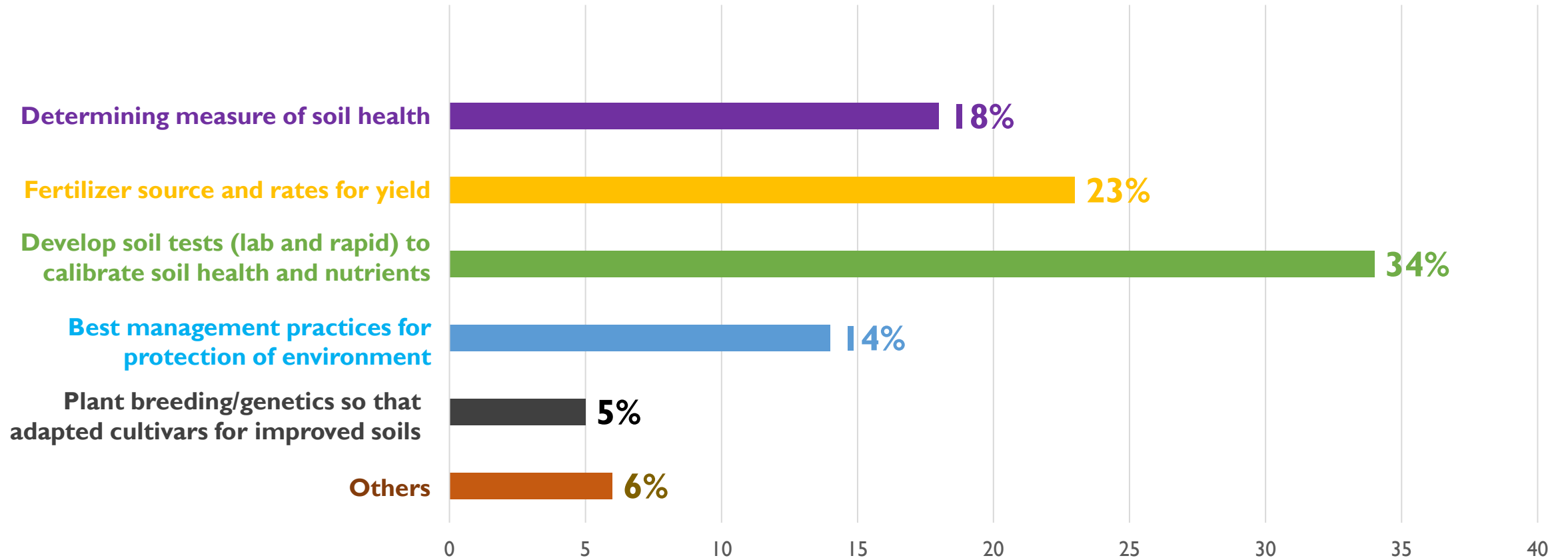
Results

Fertilizers Amounts and Sources

- Forty-nine percent said that growers apply under 50 kg/ha fertilizer per year, in total.
- Most (37%) said that applied fertilizer is an ag-grade product (Urea, KCl, DAP, TSP) or a commercial blend (30% selected this option for blends such as 5-5-15, 13-13-13, etc.). One quarter (26%) of respondents said that the farmer simply buys whatever is at the dealer.
- Only 6% use entirely organic waste materials from their own farm.
- Few (1%) buy biomaterials (humic acids, biochar, bio-amendments).
- Fertilizer cost (54%) most affects application rates, followed by not knowing which/how much of a nutrient to apply (21%), or having access to the correct fertilizer (13%).

Results

Which fertilizer / soil health area MOST needs more research?





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GREATER EFFICIENCY, RESILIENCE AND SUSTAINABLE USE OF FERTILIZERS



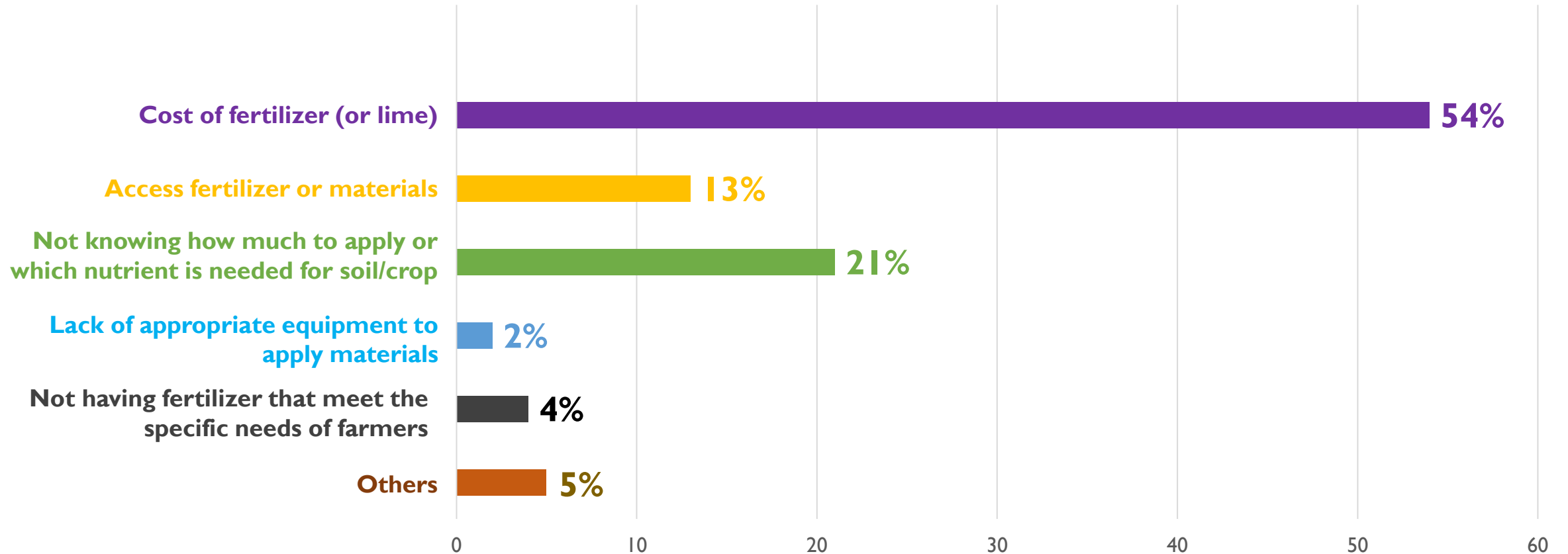
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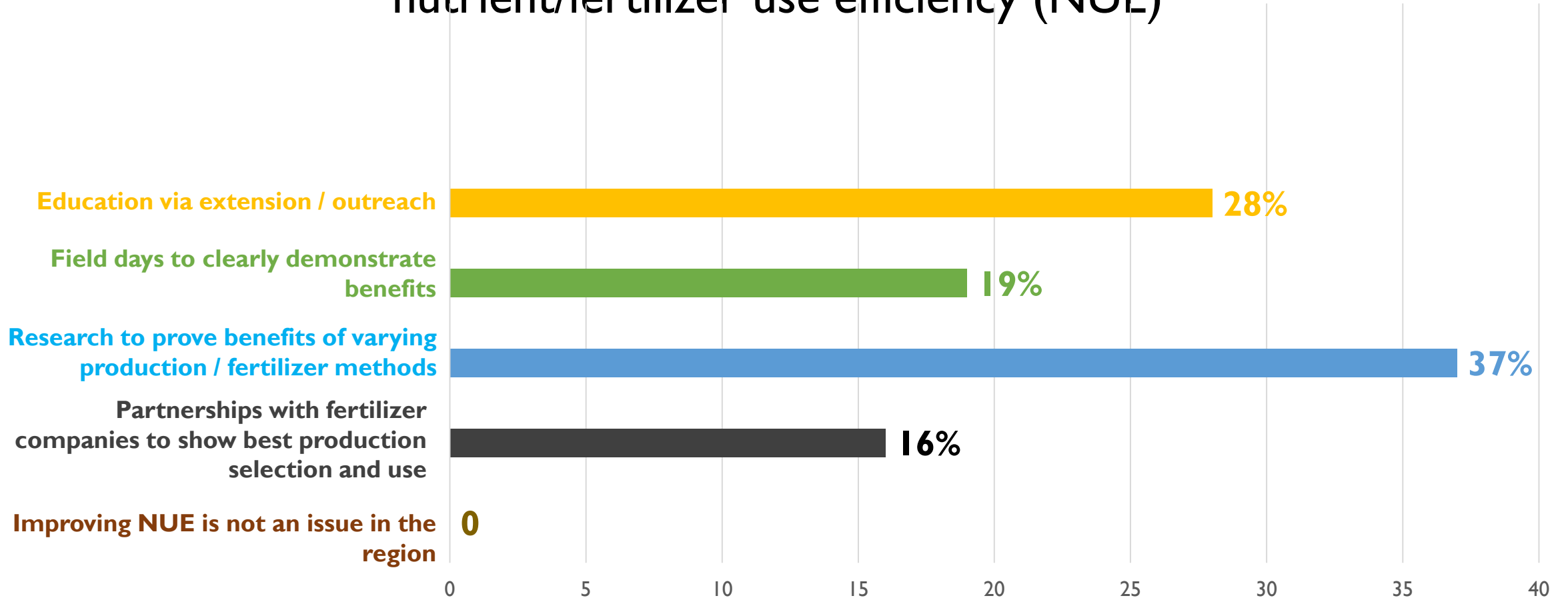
Results

What MOST limits the application of fertilizers (or lime)?



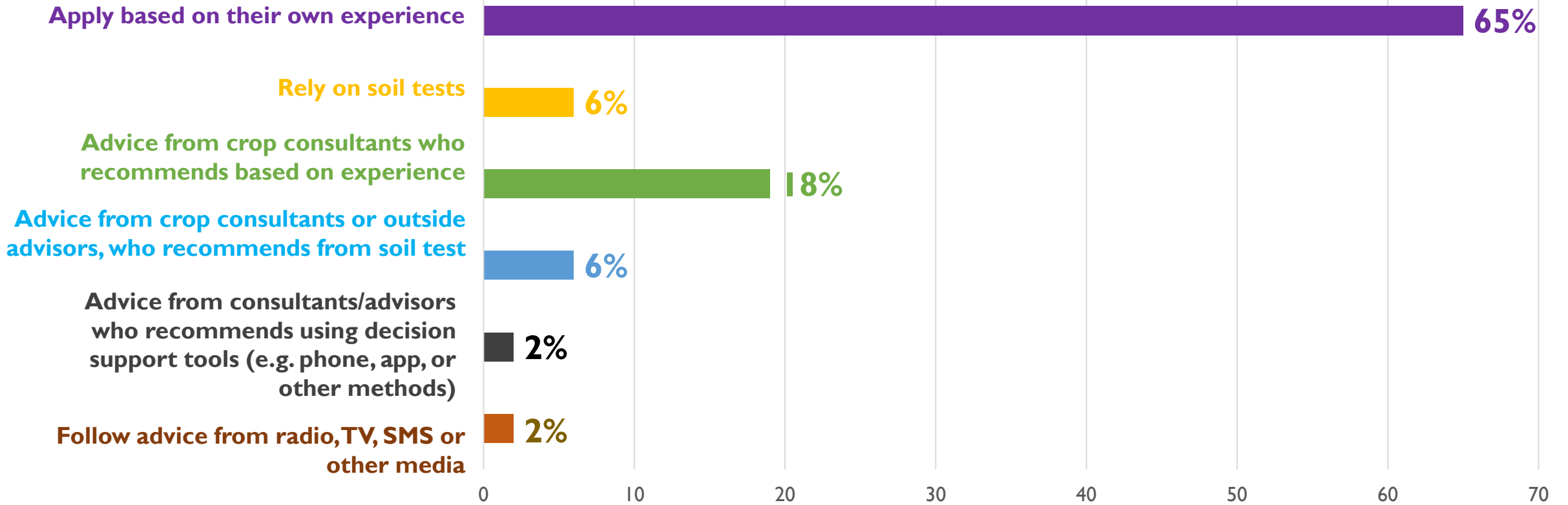
Results

What is the MOST critical activity that is needed to improve nutrient/fertilizer use efficiency (NUE)



Results

How do MOST farmers make their fertilization decisions?



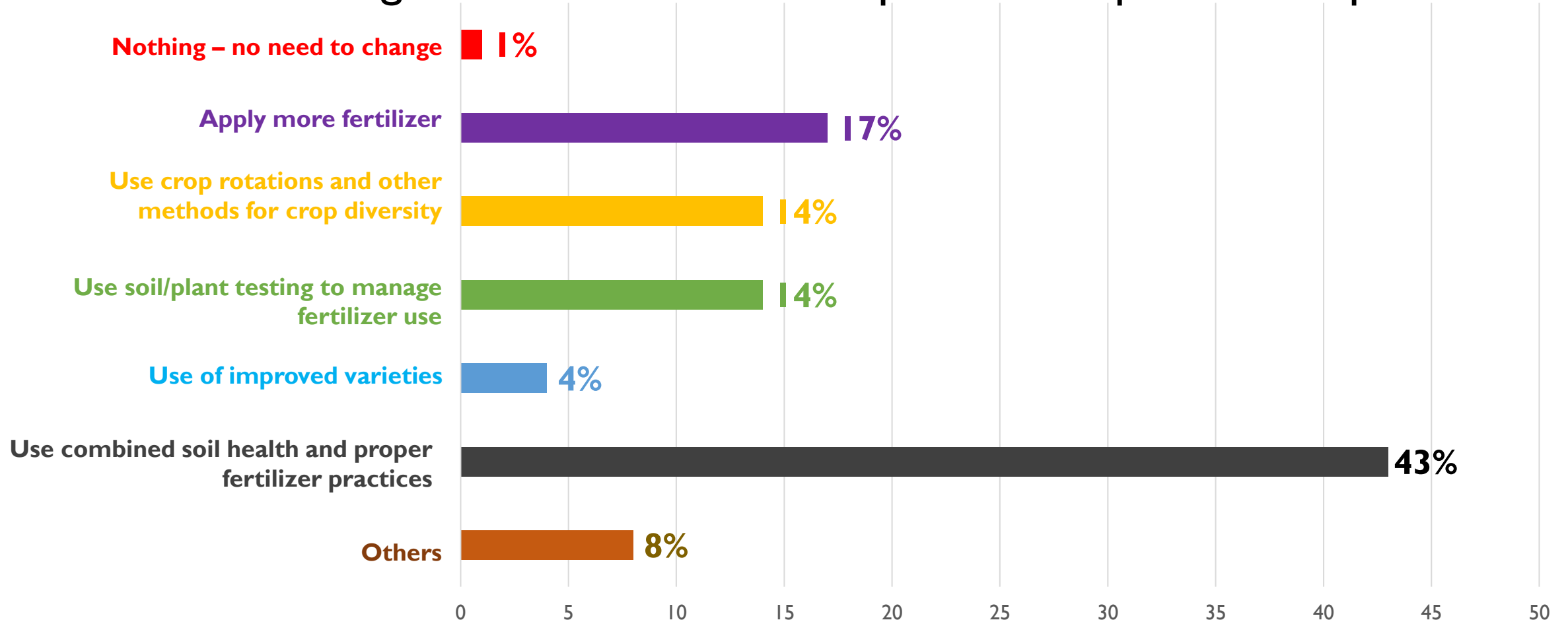
Results

Fertilizer Sources and Application Decision Processes

- Eighty-one percent of farmers use manures (composted or not) as the source of organic nutrients (this question was just for organic sources) for their crops.
- Two thirds (65%) apply their fertilizers based on their own experience and judgement.
- Only 18% rely on outside crop advisor and 2% use decision support tools (such as apps).
- 60% of the respondents selected that no soil tests are used for fertilizer recommendations, while 6% do use soil tests.
- If a grower does use soil testing, 25% of those samples are collected via random sampling in the field, while 13% were collected via grid or geo-referenced sampling.

Results

What is ONE thing farmers could do to improve their production practices?



Two items that respondents felt MOST kept farmers from improving their production practices were:

(a) lack of qualified training and extension services (50%); (b) access to fertilizers, seeds and technologies (23%)



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IMPROVED INSTITUTIONAL AND HUMAN CAPACITY FOR SUSTAINABLE FERTILIZER AND SOIL HEALTH



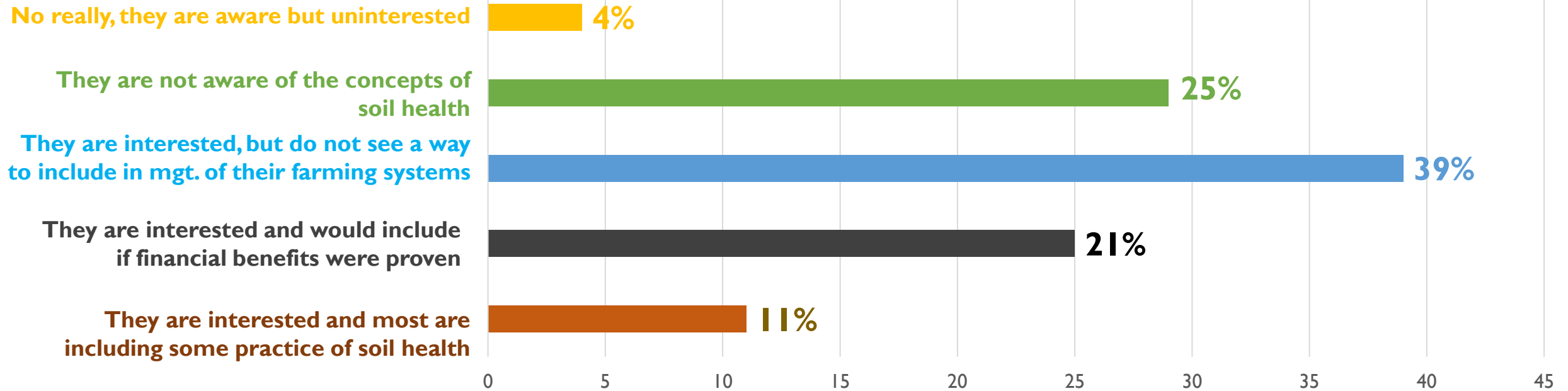
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Results

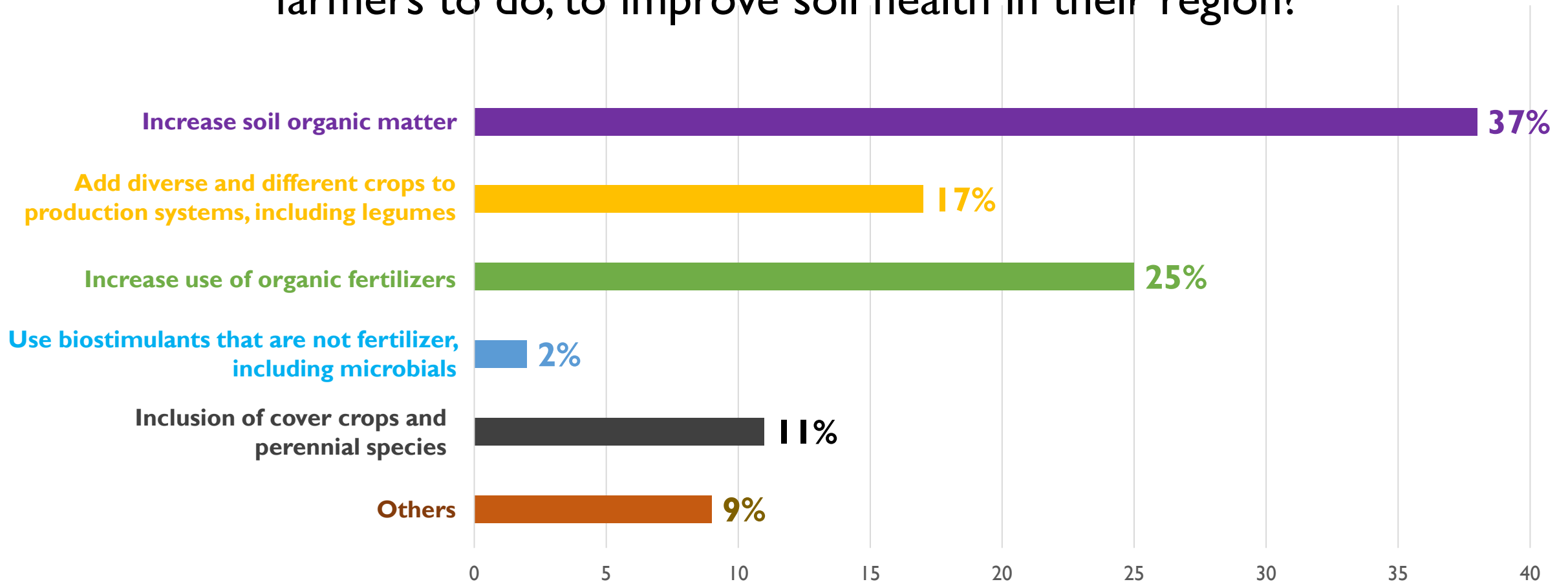
Are farmers in your region interested in the idea of soil health



- There are no (24%) or limited (55%) activities in soil health at local universities or ministries or organizations.
- There is no (34%) or limited (54%) funding for soil health research.

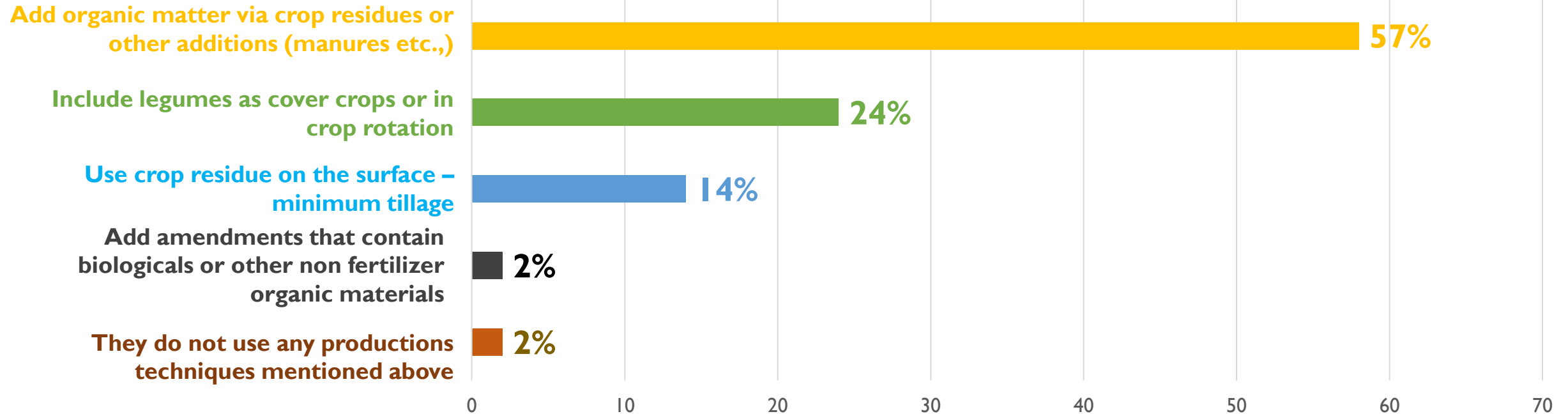
Results

What is the MOST important thing (that is practical) that you would advise farmers to do, to improve soil health in their region?



Results

What ONE thing do most farmers do in their production that could be considered as a contributor to soil health?

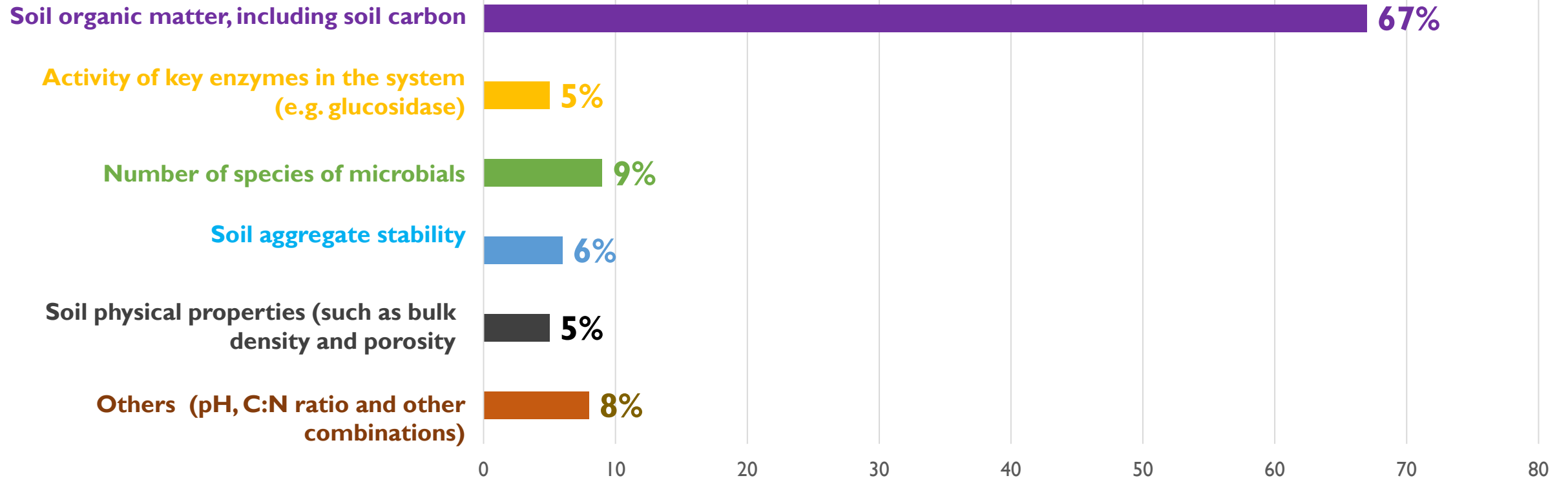


There was strong interest in increasing and adding organic matter.

- 72% of all respondents said that increasing organic matter via residues or organic fertilizer is needed.
- 66% of all respondents said that a test for soil organic carbon / organic matter is needed.

Results

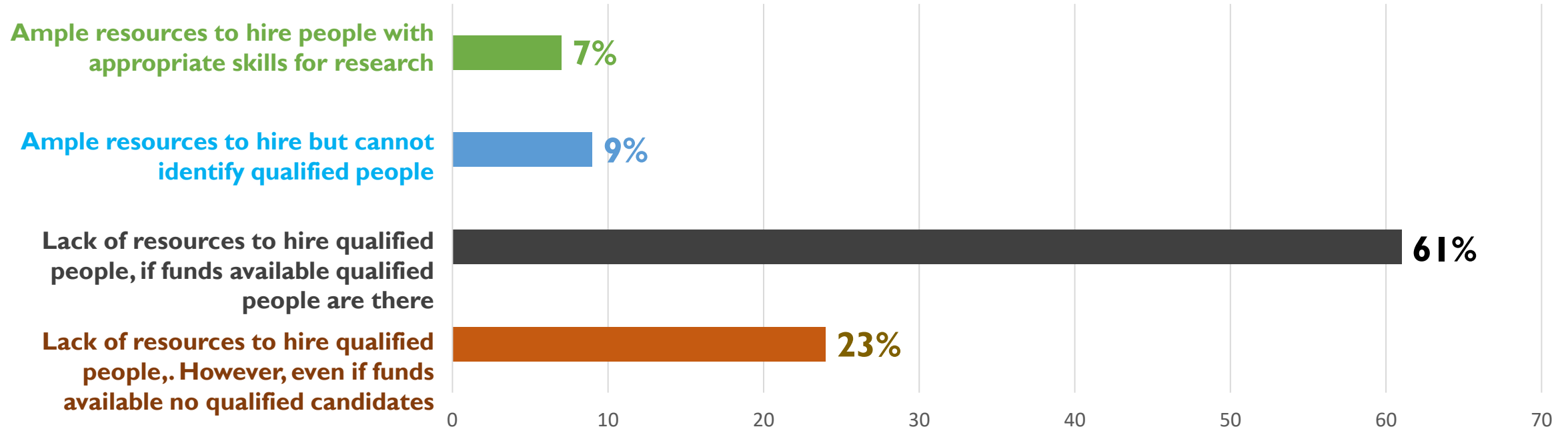
What would you like to **MOST** measure (if the test was available) that could be an indicator of soil health?



Three major reasons why soil health tests are not available/being used were: 1) Available measurements did not show a clear financial benefit (40%); 2) Measurements are not available due to a lack of research, (24%) and, 3) Measurements are available, but no training to understand their interpretation and use (32%)

Results

Which statement about the availability of human resources for fertilizer/soil health research in your region is MOST correct?



While there appears interest in soil health, there is impression that funding is limited.

24% of respondents said that soil health is not a priority; 62% said that there is not funding to hire positions; 25% said there are few faculty to train students in soil health; and 67% said those faculty do not have funding.

Summary to Date

Important Topic with Lots of Interest and Responses

- Farmers and other agricultural professionals are aware of and interested in soil health and soil fertility, and recognize the benefits of improved soil health and better soil fertility.
- There is a need to demonstrate financial benefits for improvements in soil health.
- Fertilizer availability is limited, and the decision-making process for nutrient selection and application are mostly farmer based.
- There is great interest in increasing soil organic matter and for documenting (through accurate soil testing) its impact on soil health.
- Education, research, training and extension are key for better decisions, but these activities are often lacking and/or underfunded.