Effects of different agricultural diversification methods on an ecosystem

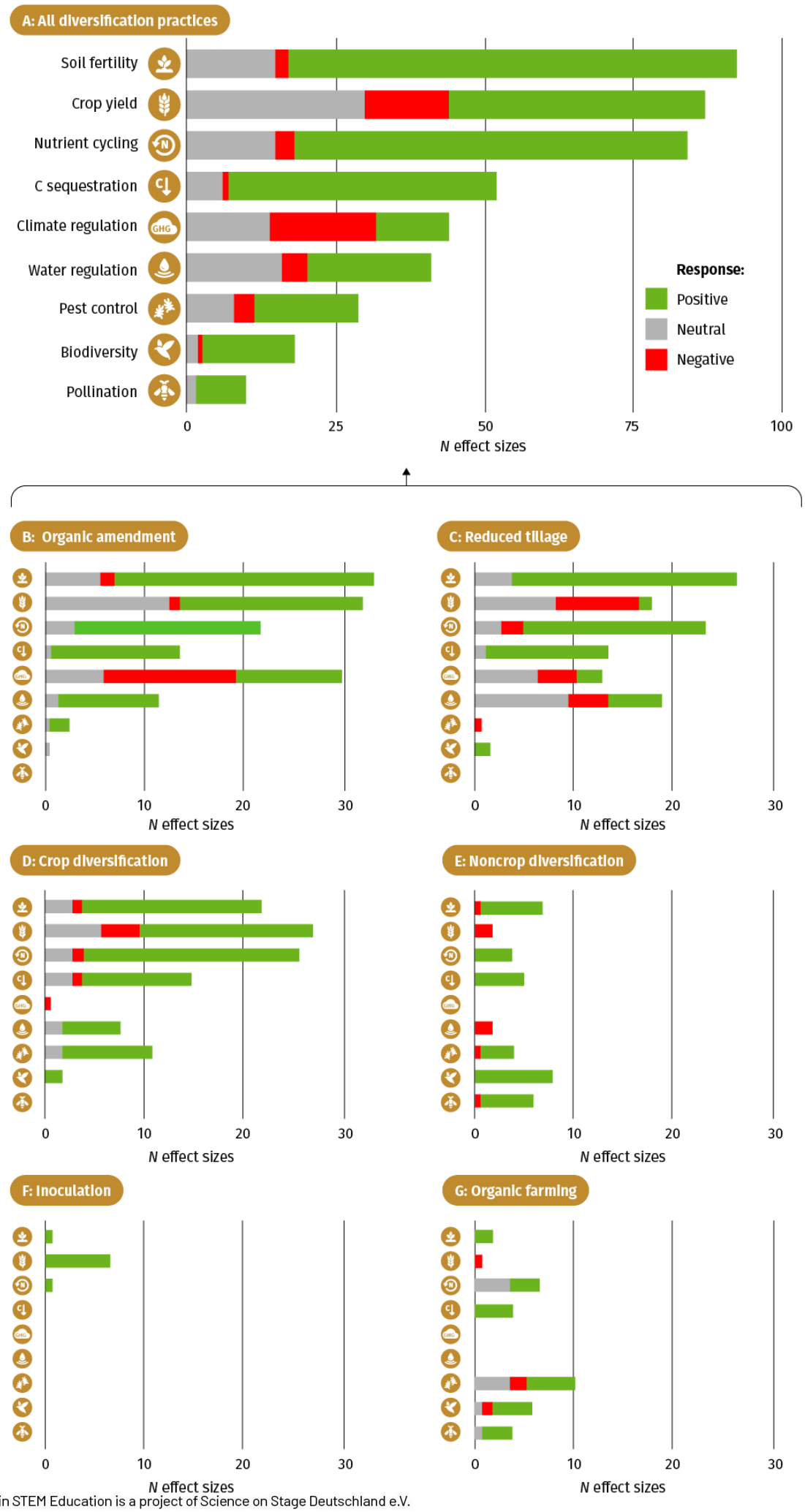
Why organic farming is a better option than conventional apple production

Agricultural intensification, as it can be observed in conventional apple production, has negative impacts on surrounding ecosystems. Scientists have investigated the impact of agricultural diversification practices on the ecosystem. They have found out that all efforts to diversify agriculture have a positive impact on biodiversity, climate, and soil condition.

Work assignment for Fig. 1 on page 2

1) First have a look at the overall effects in Diagram A. Then analyse Diagrams B-G in order to establish what effect the different practices in agriculture have on the different parameters displayed on the y-axis.
2) Focus then on Diagram G and elaborate on the advantages and disadvantages of organic farming in comparison to conventional farming.
3) Discuss your results with your classmate(s) sitting next to you.
4) Write down an answer if and why organic farming may be beneficial to an ecosystem.
5) Propose some suggestions how apple farming can be done in an ecosystem friendly way.

Fig.1 (page 2) Impact of agricultural diversification practices on biodiversity, climate, and soil condition.
A: overall, **B** to **G:** each category of diversification practice separately.
Water regulation refers to water quality and quantity, climate regulation refers to greenhouse gas dynamics, c(arbon) sequestration refers to carbon storage (for example in leaves, roots etc.).
Source: Tamburini et al. (2020), Agricultural diversification promotes multiple ecosystem services without compromising yield, Agri Sci. Adv. 2020;6


A: All diversification practices
Soil fertility
Crop yield
Nutrient cycling
C sequestration
Climate regulation
Water regulation
Pest control
Biodiversity
Pollination
Response:
Positive
Neutral
Negative
0
25
50
75
100
N effect sizes
B: Organic amendment
C: Reduced tillage
D: Crop diversification
E: Noncrop diversification
F: Inoculation
G: Organic farming
0
10
20
30
N effect sizes