

# Hands-on Activity 12.1 Demonstrating SAP Analytics

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## **Title:**

**ASEAN : Fluctuating Crop Yields and Food Security Implications for Responsible Consumption and Sustainable Agricultural Practices**

## **Purpose :**

This presentation looks at how changes in crop yields in ASEAN countries from 2013 to 2022 affect food security. It explores the link between crop production, responsible consumption, and sustainable farming practices, aiming to support the goals of Zero Hunger and responsible consumption.

## **SGD/'s**



## **Statement of the Problem:**

How do fluctuations in crop yields (paddy, cassava, maize, soybean, and sugarcane) across ASEAN countries from 2013 to 2022 impact food security? In particular, how can these changes in crop production be linked to responsible consumption and sustainable agricultural practices to achieve Zero Hunger and promote more responsible consumption?

## Objectives

- To analyze the trend of crop yields (paddy, cassava, maize, soybean, sugarcane) across ASEAN countries from 2013 to 2022.
- To investigate the relationship between crop yield fluctuations and food security in the ASEAN region, identifying regions most vulnerable to food shortages.
- To explore how changes in crop yields are linked to responsible consumption, examining whether reduced yields lead to food waste or shifts in consumption behavior.
- To evaluate the role of sustainable agricultural practices in stabilizing crop yields and promoting food security in the face of climate change.
- To recommend strategies for responsible consumption and agricultural reforms that can ensure food security and support the achievement of SDG 2 (Zero Hunger) and SDG 12 (Responsible Consumption and Production).

## Analysis:

### ASEAN Population

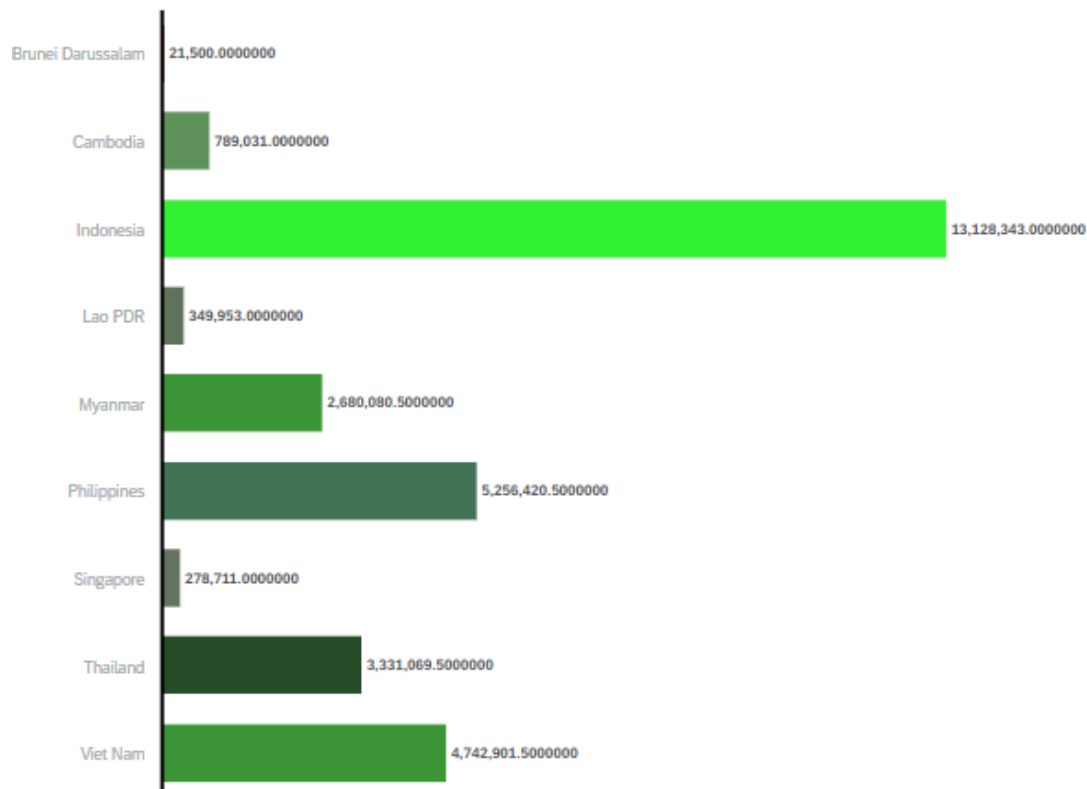


Figure 1.1

**Total Population of per each country**

The results gathered from the visualized graph on ASEAN Population (Figure 1.1), it is clearly observed that Indonesia holds a significantly larger population than any other ASEAN country, with over 13 million people, which greatly surpasses the next most populous countries like the Philippines (5.2 million), Viet Nam (4.7 million), and Thailand (3.3 million). On the other hand, countries like Brunei Darussalam and Singapore show the lowest population figures, both under 300,000.

Total Population, Yield(Crops per tonnes), Yield Growth(%) of all ASEAN Countries

30,578,010.000000

Population

4,922,225.7000000

Yield

1,549.6600000

Yield\_Growth\_%

Figure 1.2

**Total Yield(Crops per tonnes), Yield Growth(%) of all ASEAN Countries**

The results gathered from the summarized output on ASEAN's agricultural profile reveal key insights into the region's food security situation. The total population of the ASEAN countries amounts to approximately 30.6 million people, with Indonesia being the most populous nation, as also seen in earlier figures. The average crop yield across ASEAN stands at around 4.92 million tonnes, which highlights a moderately productive agricultural sector overall. However, when examining the yield growth, the region only records an average growth of 1,549.66%, indicating that yields are increasing.

## Trend of Crop Yields Across ASEAN Countries (2013-2022)



Figure 2.1

### Annual Trends in Maize Crop Yields Across ASEAN Countries, 2013–2022

The annual trends in maize crop yields show fluctuations over the decade, with both significant increases and decreases. Notably, 2017 and 2020 recorded major positive spikes (40.79% and 51.35% respectively), suggesting good harvest years. However, the drastic drop in 2022 by -51.03% severely impacted the overall progress, though the net change remains positive at 79.80%.

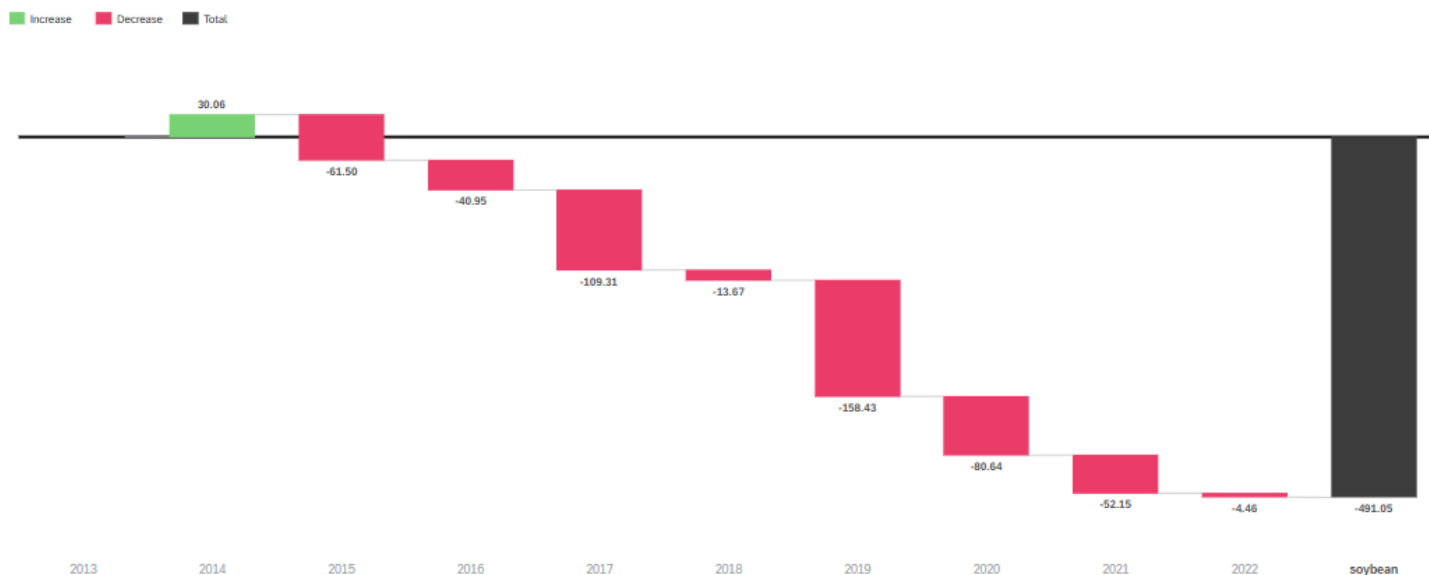


Figure 2.2

### Annual Trends in Soybean Crop Yields Across ASEAN Countries, 2013–2022

The soybean crop shows a consistent downward trend with steep and continuous declines beginning in 2015. By 2022, the total yield growth hit a drastic -491.95%, indicating a serious deterioration in productivity



Figure 2.3

### Annual Trends in Cassava Crop Yields Across ASEAN Countries, 2013–2022

Cassava yields have generally increased, with a total growth of 122.51%. While there were downturns in 2016, 2018, and 2020, strong years like 2015 and 2022 (122.82% and 44.81% respectively) compensated for these losses.

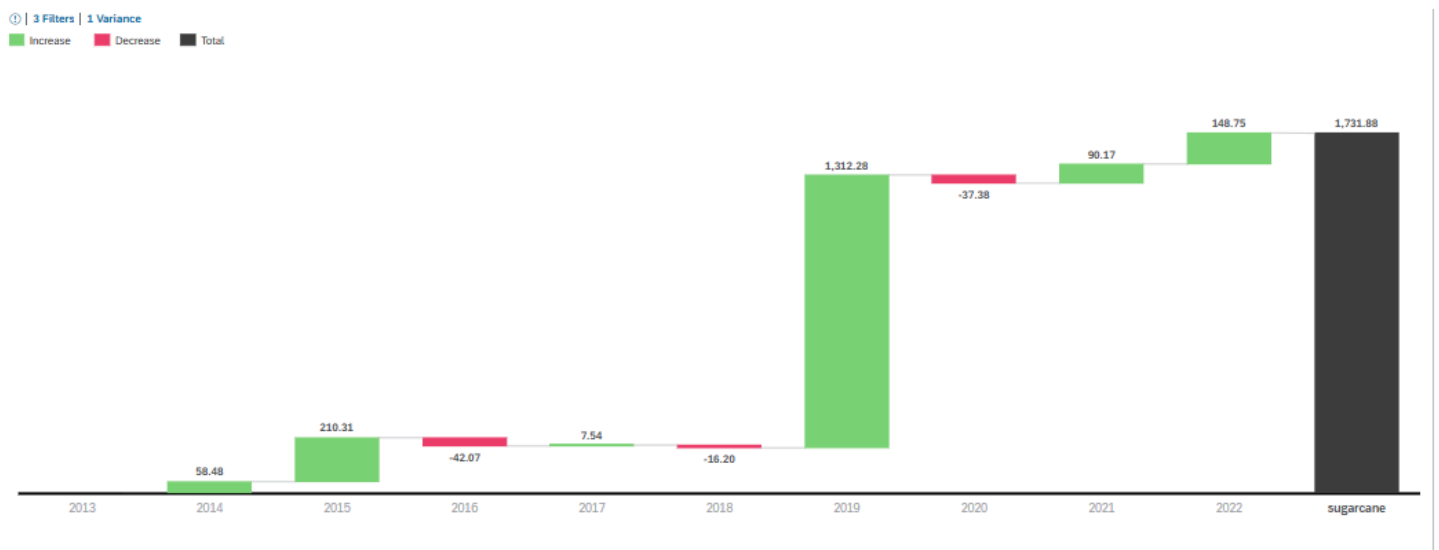


Figure 2.4

### Annual Trends in Sugarcane Crop Yields Across ASEAN Countries, 2013–2022

Sugarcane shows the strongest performance overall, with a massive cumulative increase of 1,731.88% over the period. Major jumps occurred in 2015 (210.31%), 2019 (1,312.28%), and 2022 (148.75%), despite minor setbacks in 2016 and 2018.

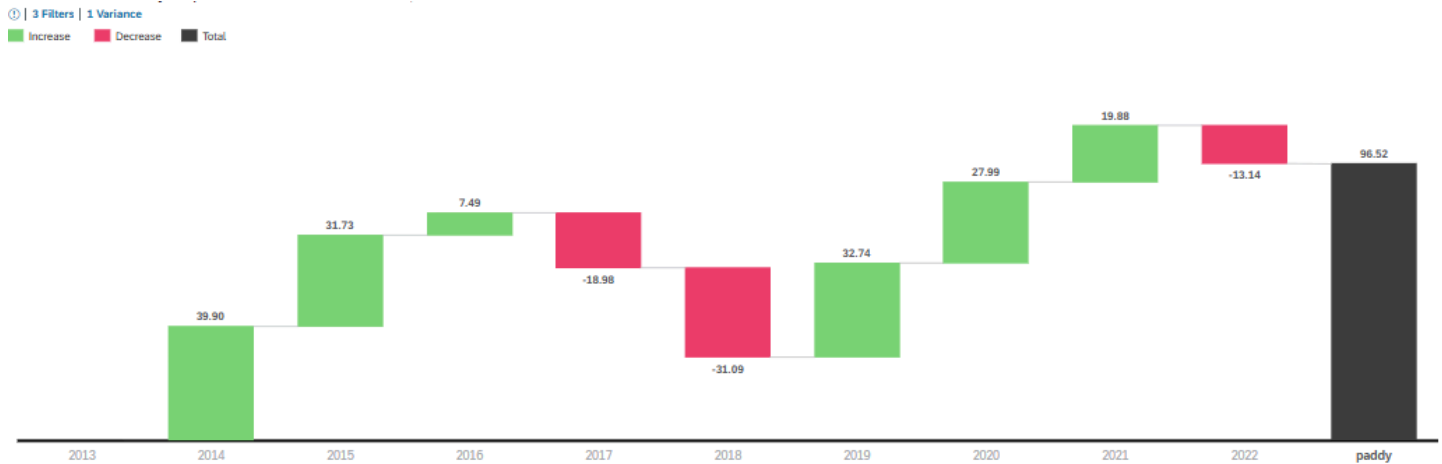


Figure 2.5

### Annual Trends in Paddy(Rice) Crop Yields Across ASEAN Countries, 2013–2022

Paddy yields show a positive trajectory overall, with a cumulative growth of 96.52%. The most notable gains were in 2015 and 2021 (39.90% and 27.99%), though declines in 2017 and 2018 indicate short-term volatility.

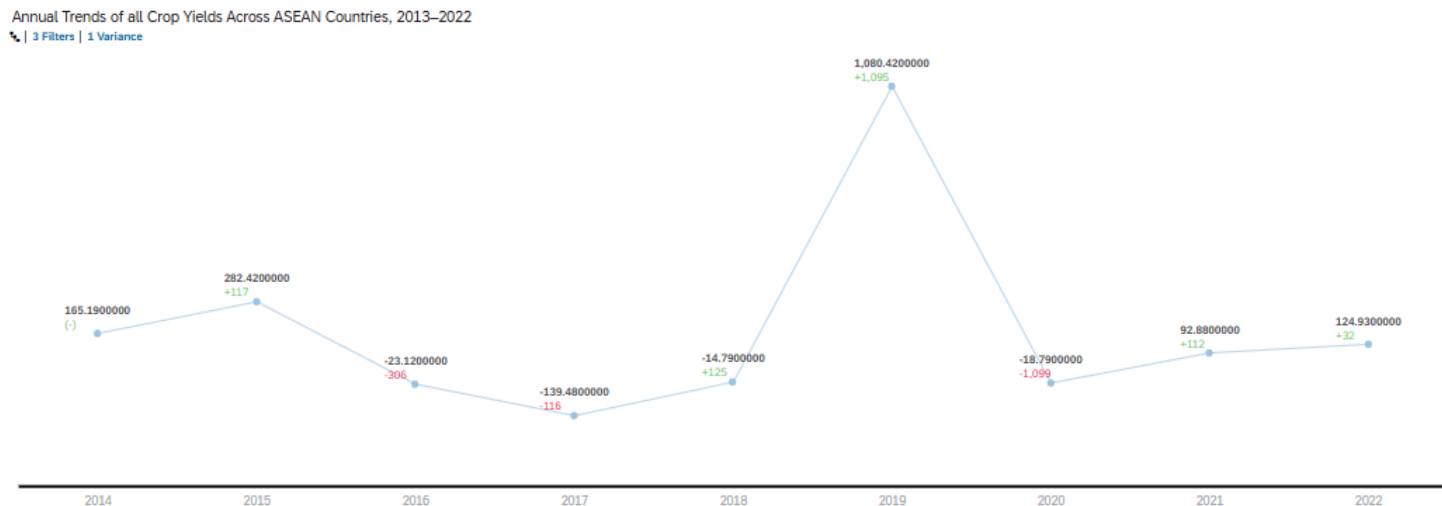


Figure 2.5

## Annual Trends of all Crop Yields Across ASEAN Countries, 2013–2022

From the data shown, it's clear that crop yield trends in ASEAN countries have gone up and down a lot over the past 10 years. In 2015 and especially in 2019, there were big increases in yield. 2019 had the biggest jump, going up by more than 1,080 tonnes. But not every year was good. In 2017, the yield dropped by around 139 tonnes, and there was another big drop in 2020 of about 48 tonnes. This shows that crop yields in the region haven't been very stable and were affected by different factors each year.



Figure 3.1

### ***The Relationship between population and Yield Growth***

This chart shows the relationship between population size and crop yield growth across ASEAN countries. From the plot, most of the data points are clustered between the population range of 575–650 (in thousands), meaning most ASEAN countries fall within that population range. The yield growth varies widely—from significant drops (like -145%) to big increases, including a very large spike of around +1,328%.

## **Conclusion:**

To conclude the results of the study, analyzing crop yield fluctuations across ASEAN countries from 2013 to 2022 further emphasizes the urgency of addressing food security and sustainable agriculture in the region. The significant instability in crop yields, especially the severe drop in soybean production and irregular spikes in maize and sugarcane, reflects the region's vulnerability to environmental, economic, and possibly climate-related disruptions. While sugarcane and cassava show promising growth, the overall inconsistency in yield trends across all major crops highlights the need for deeper investigation into sustainable farming practices. Most notably, countries with large populations, such as Indonesia and the Philippines, face a unique challenge in balancing yield performance with rising food demand. Therefore, enhancing agricultural resilience, promoting responsible consumption, and reducing food system inefficiencies are critical steps in achieving long-term food security and supporting global goals like Zero Hunger and Responsible Consumption and Production.

## **Recommendations:**

Based on the results of our study, we recommend that ASEAN countries invest more in sustainable agricultural practices and climate-resilient technologies to stabilize crop yields, especially for vulnerable crops like soybeans and maize. Governments should support training programs for farmers on eco-friendly farming methods and responsible land use. At the same time, public awareness campaigns promoting responsible consumption and reducing food waste particularly in high-population countries like Indonesia and the Philippines can help ease pressure on food supply systems. Finally, better regional cooperation and data sharing across ASEAN can strengthen food security strategies, ensuring that no country is left behind in achieving SDG 2 (Zero Hunger) and SDG 12 (Responsible Consumption and Production).