Internship Program: Soulvibe.Tech

PROJECT

FARMER AND MARKET DATASET ANALYSIS WITH SQL

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Batch Name: SVT/DAINT/2025/07/B11

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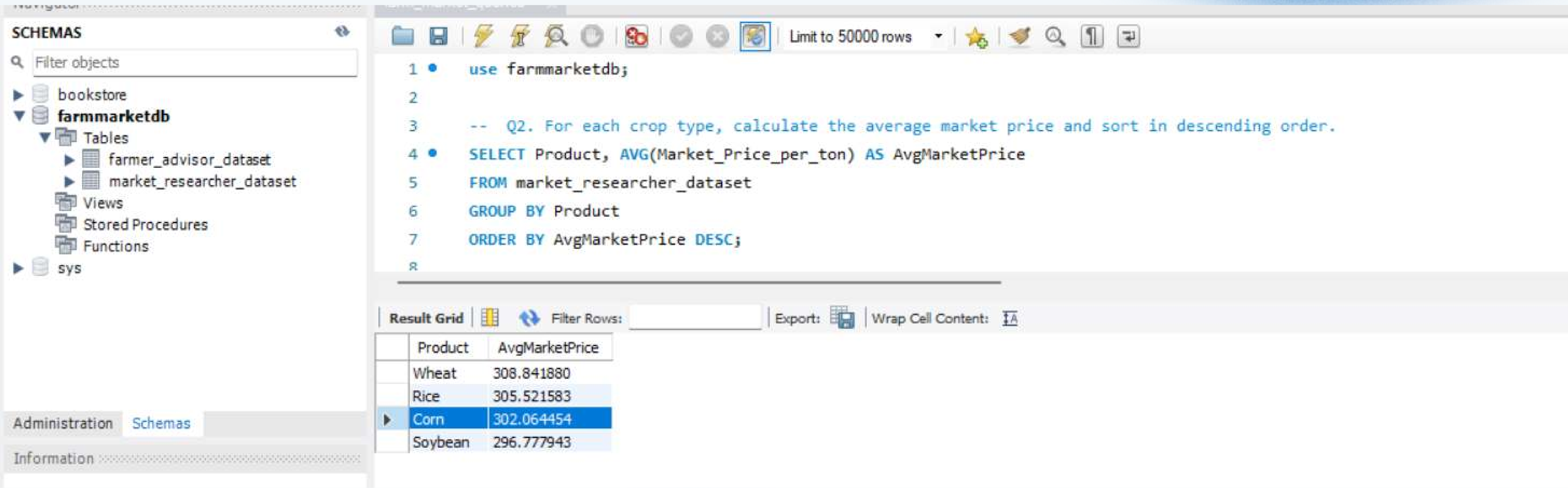
INTRODUCTION

OPTIMIZING AGRICULTURAL DECISION-MAKING WITH STRUCTURED SQL ANALYSIS

In this project, I aimed to analyze and bridge the gap between on-ground farming practices and market-level trends using structured SQL queries. By working with two datasets—farmer_advisor_dataset and market_researcher_dataset—I explored a variety of agricultural and economic patterns, such as crop yield distribution, advisor influence, market price fluctuations, and growth classifications. Each query was designed to extract meaningful insights that could assist farmers, advisors, and policymakers in making informed decisions. Throughout the process, I focused on maintaining case sensitivity and data integrity while identifying correlations and anomalies across both datasets. My goal was to uncover hidden trends that could drive better crop planning, advisory strategies, and pricing awareness. This project reflects my interest in applying data analytics to solve real-world challenges in the agricultural domain.

Q2. FOR EACH CROP TYPE, CALCULATE THE AVERAGE MARKET PRICE AND SORT IN DESCENDING ORDER.

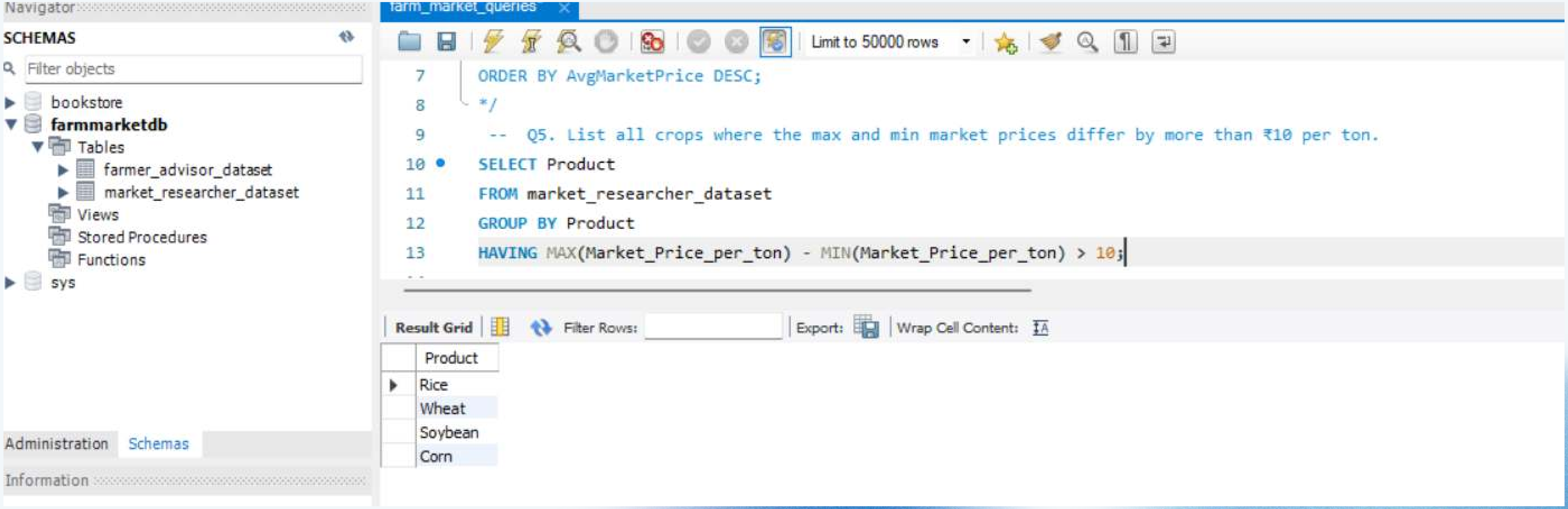


```
use farmmarketdb;

-- Q2. For each crop type, calculate the average market price and sort in descending order.
SELECT Product, AVG(Market_Price_per_ton) AS AvgMarketPrice
FROM market_researcher_dataset
GROUP BY Product
ORDER BY AvgMarketPrice DESC;
```

Product	AvgMarketPrice
Wheat	308.841880
Rice	305.521583
Corn	302.064454
Soybean	296.777943

Q5. .LIST ALL CROPS WHERE THE MAX AND MIN MARKET PRICES (FROM MARKETRESEARCHER) DIFFER BY MORE THAN ₹10 PER KG.



```
ORDER BY AvgMarketPrice DESC;
*/
 -- Q5. List all crops where the max and min market prices differ by more than ₹10 per ton.
SELECT Product
FROM market_researcher_dataset
GROUP BY Product
HAVING MAX(Market_Price_per_ton) - MIN(Market_Price_per_ton) > 10;
```

Product
Rice
Wheat
Soybean
Corn

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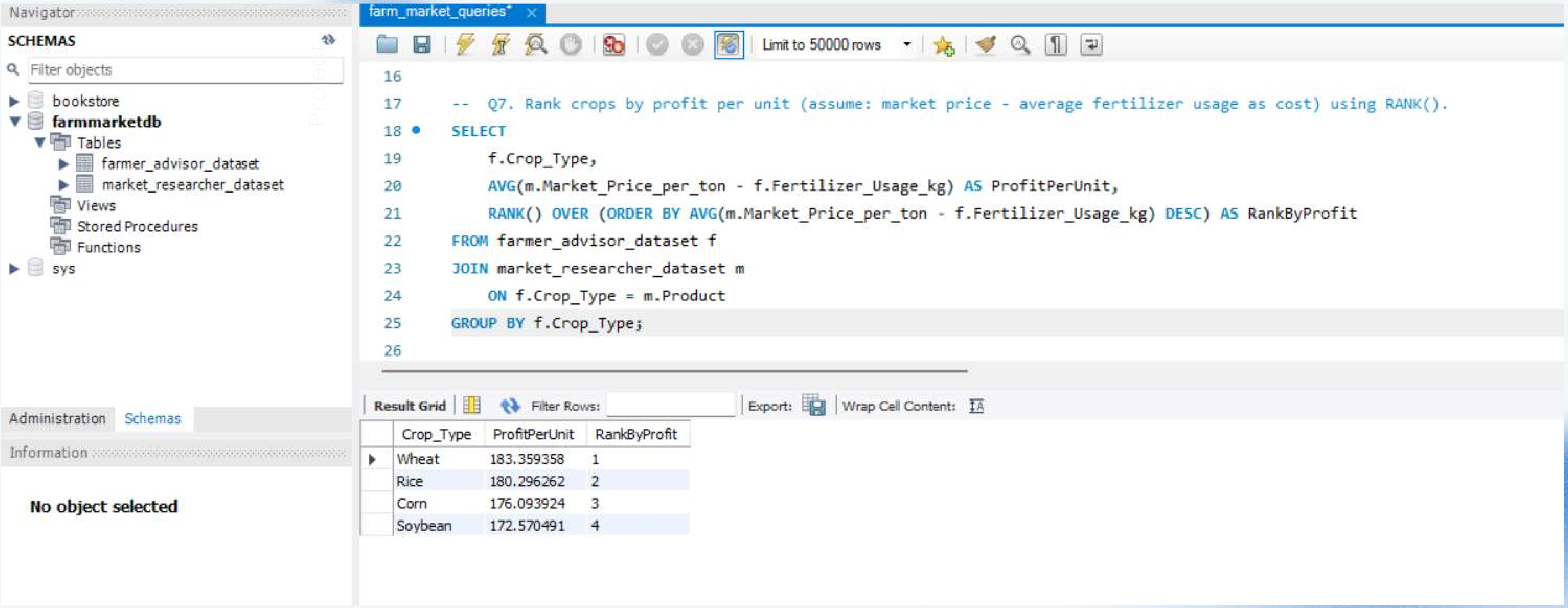
Q7. RANK CROPS BY PROFIT PER UNIT (ASSUME: MARKET PRICE – AVERAGE COST FROM FARMERADVISOR) USING RANK().



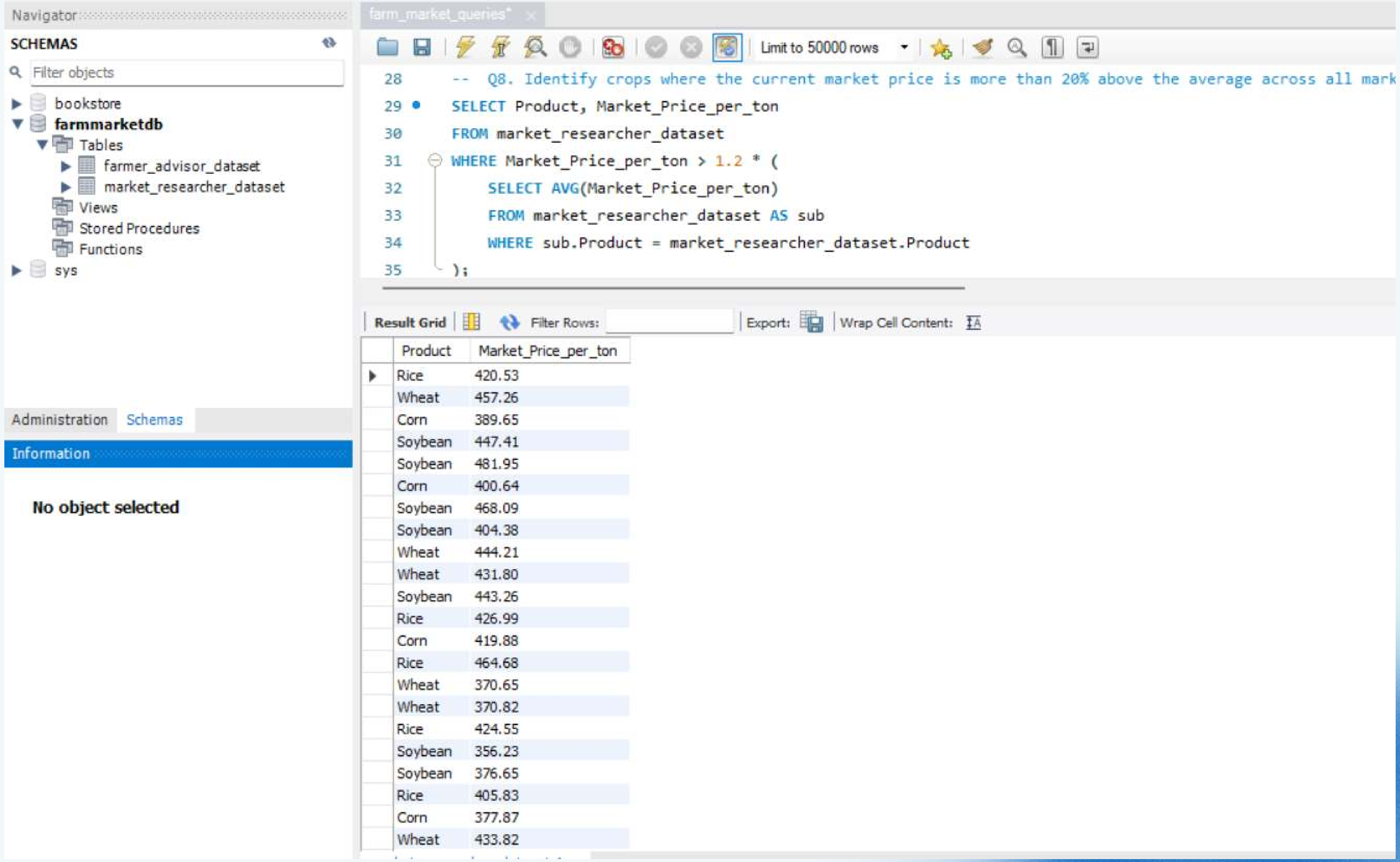
```sql

-- Q7. Rank crops by profit per unit (assume: market price - average fertilizer usage as cost) using RANK().
SELECT
    f.Crop_Type,
    AVG(m.Market_Price_per_ton - f.Fertilizer_Usage_kg) AS ProfitPerUnit,
    RANK() OVER (ORDER BY AVG(m.Market_Price_per_ton - f.Fertilizer_Usage_kg) DESC) AS RankByProfit
FROM farmer_advisor_dataset f
JOIN market_researcher_dataset m
    ON f.Crop_Type = m.Product
GROUP BY f.Crop_Type;

```

Crop_Type	ProfitPerUnit	RankByProfit
Wheat	183.359358	1
Rice	180.296262	2
Corn	176.093924	3
Soybean	172.570491	4

Q8. IDENTIFY LOCATIONS WHERE THE CURRENT MARKET PRICE OF A CROP IS MORE THAN 20% ABOVE THE AVERAGE PRICE OF THAT CROP ACROSS ALL LOCATIONS.



```sql
-- Q8. Identify crops where the current market price is more than 20% above the average across all mark
SELECT Product, Market_Price_per_ton
FROM market_researcher_dataset
WHERE Market_Price_per_ton > 1.2 * (
    SELECT AVG(Market_Price_per_ton)
    FROM market_researcher_dataset AS sub
    WHERE sub.Product = market_researcher_dataset.Product
);
```

Product	Market_Price_per_ton
Rice	420.53
Wheat	457.26
Corn	389.65
Soybean	447.41
Soybean	481.95
Corn	400.64
Soybean	468.09
Soybean	404.38
Wheat	444.21
Wheat	431.80
Soybean	443.26
Rice	426.99
Corn	419.88
Rice	464.68
Wheat	370.65
Wheat	370.82
Rice	424.55
Soybean	356.23
Soybean	376.65
Rice	405.83
Corn	377.87
Wheat	433.82

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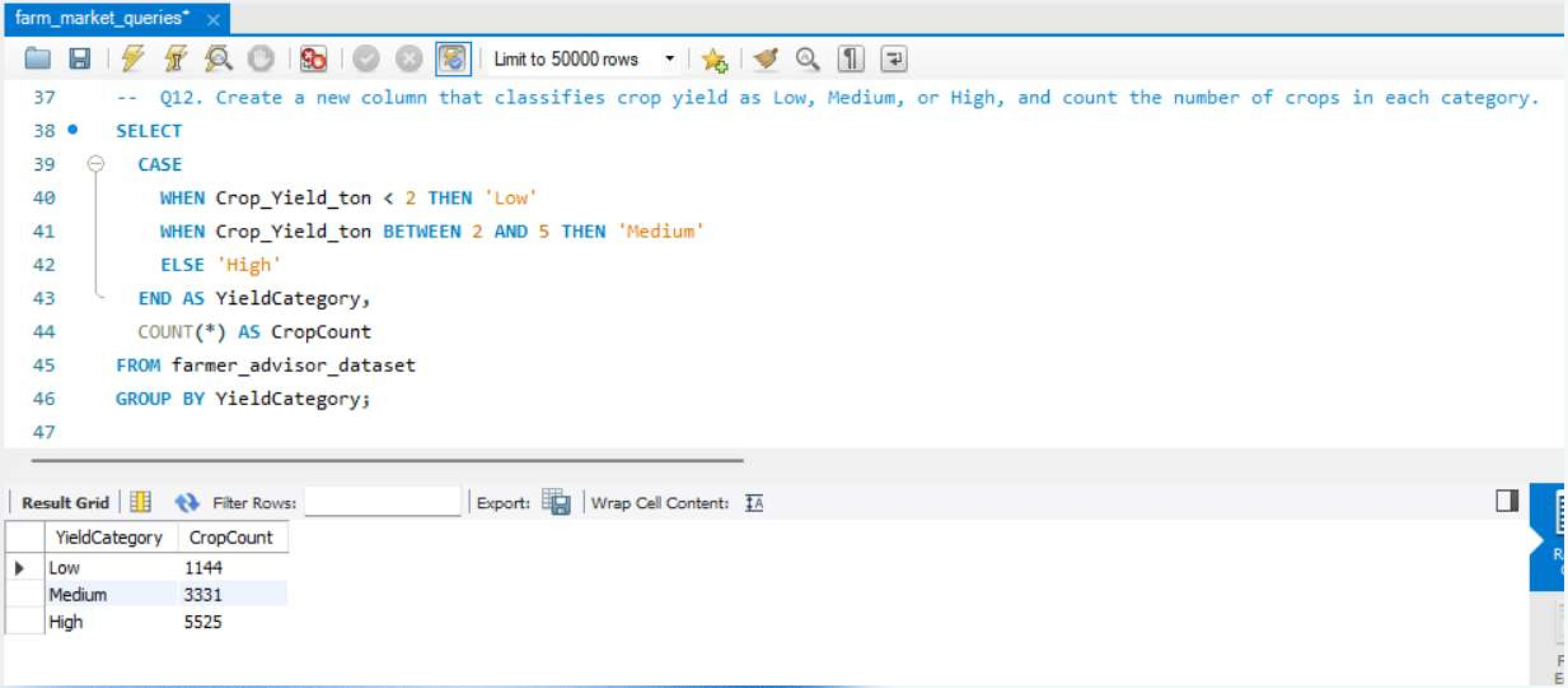
Q12. CREATE A NEW COLUMN THAT CLASSIFIES CROP GROWTH RATE AS:

- LOW (<20%)
- MEDIUM (20–50%)
- HIGH (>50%)

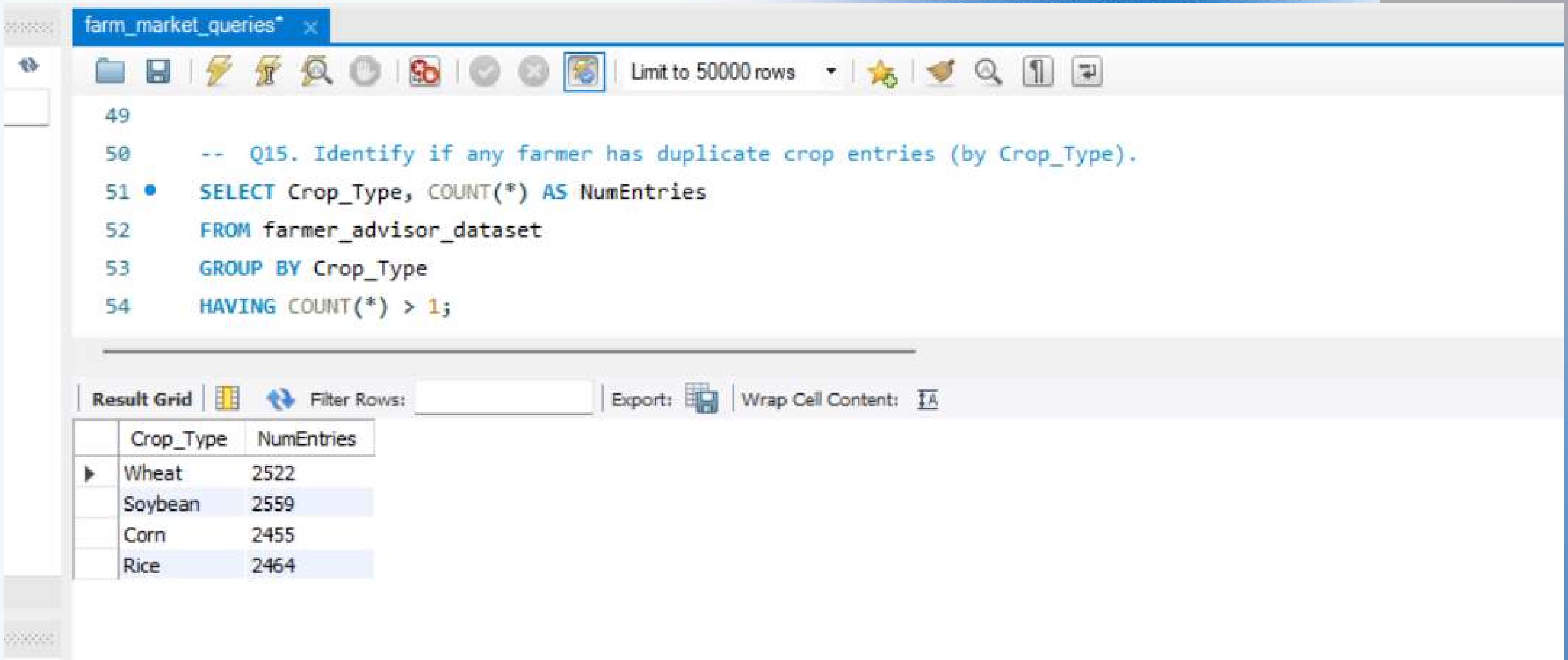
COUNT THE NUMBER OF CROPS IN EACH CATEGORY.



```sql
-- Q12. Create a new column that classifies crop yield as Low, Medium, or High, and count the number of crops in each category.
SELECT
 CASE
  WHEN Crop_Yield_ton < 2 THEN 'Low'
  WHEN Crop_Yield_ton BETWEEN 2 AND 5 THEN 'Medium'
  ELSE 'High'
 END AS YieldCategory,
 COUNT(*) AS CropCount
FROM farmer_advisor_dataset
GROUP BY YieldCategory;
```

YieldCategory	CropCount
Low	1144
Medium	3331
High	5525

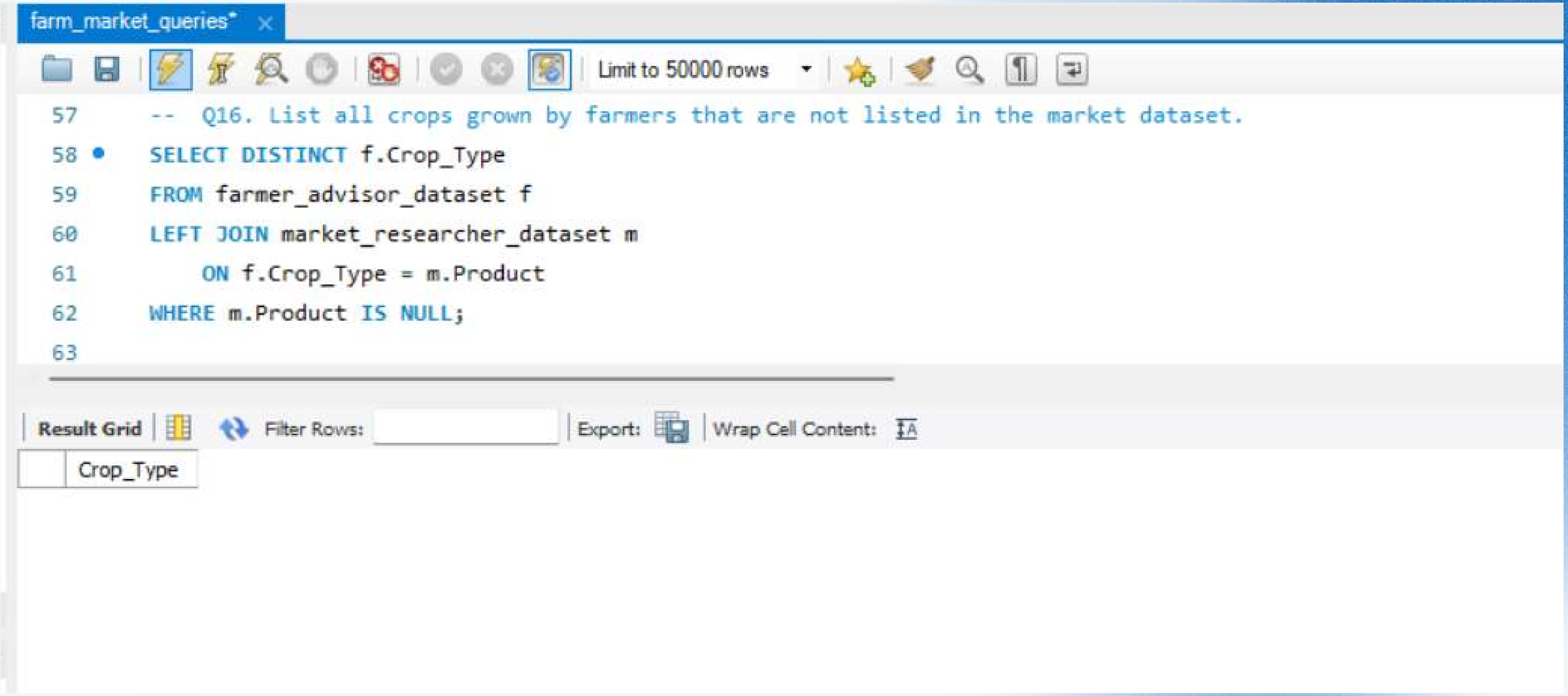
Q15. IDENTIFY IF ANY FARMER HAS DUPLICATE CROP ENTRIES.



```sql
-- Q15. Identify if any farmer has duplicate crop entries (by Crop_Type).
SELECT Crop_Type, COUNT(*) AS NumEntries
FROM farmer_advisor_dataset
GROUP BY Crop_Type
HAVING COUNT(*) > 1;
```

Crop_Type	NumEntries
Wheat	2522
Soybean	2559
Corn	2455
Rice	2464

Q16. LIST ALL CROPS GROWN BY FARMERS THAT ARE NOT LISTED IN THE MARKETRESEARCHER TABLE.



```sql
--  Q16. List all crops grown by farmers that are not listed in the market dataset.
SELECT DISTINCT f.Crop_Type
FROM farmer_advisor_dataset f
LEFT JOIN market_researcher_dataset m
    ON f.Crop_Type = m.Product
WHERE m.Product IS NULL;
```

Crop_Type

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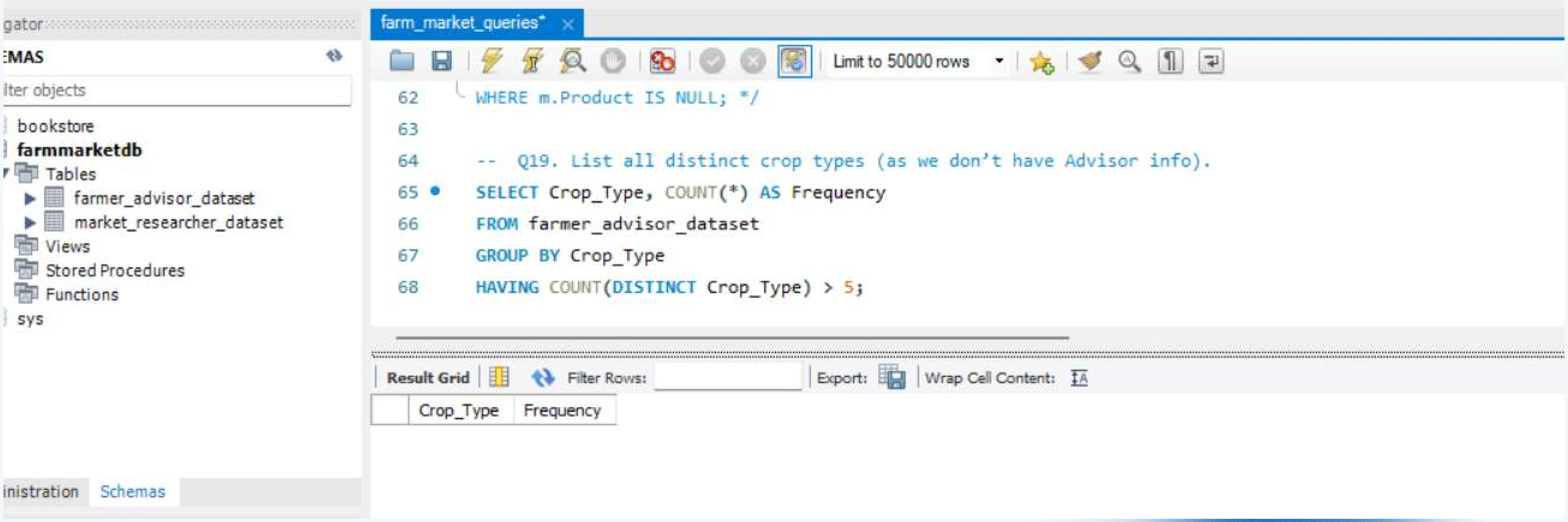
Q19.LIST ALL ADVISORS ASSOCIATED WITH MORE THAN 5 DISTINCT CROP TYPES.



```sql
WHERE m.Product IS NULL; */

-- Q19. List all distinct crop types (as we don’t have Advisor info).
SELECT Crop_Type, COUNT(*) AS Frequency
FROM farmer_advisor_dataset
GROUP BY Crop_Type
HAVING COUNT(DISTINCT Crop_Type) > 5;
```

```
Crop_Type   Frequency
```

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CONCLUSION

This project allowed me to deepen my understanding of SQL-based data analysis in the context of agriculture and market dynamics. By querying and interpreting two interconnected datasets, I was able to generate practical insights that highlight the value of data-driven decision-making for both farmers and market researchers. The process helped me recognize the importance of precision, especially in case-sensitive environments, and improved my ability to ask relevant analytical questions.

I believe this exercise not only sharpened my technical skills but also reinforced the potential of structured data analysis in addressing real-world problems. Moving forward, I'm motivated to explore more advanced tools and larger datasets to continue building impactful solutions at the intersection of agriculture, economics, and data science.

THANK YOU