

Presented by Luke Slms

Predicting Produce:

Examining Changing Climates

Time Series - Regression



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Github:

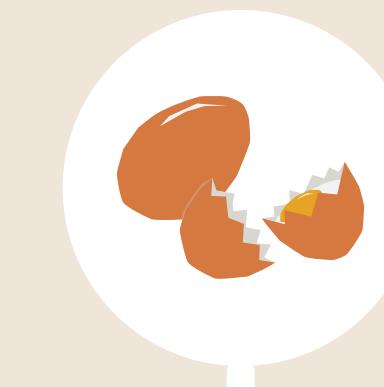
github.com/vileincorp

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www.linkedin.com/in/luke-sims-oo7/



Executive Summary



Grape and Walnuts

Good Investment, Easier to Grow



Hay

Bad Investment, Dislikes Acidity



Acidity

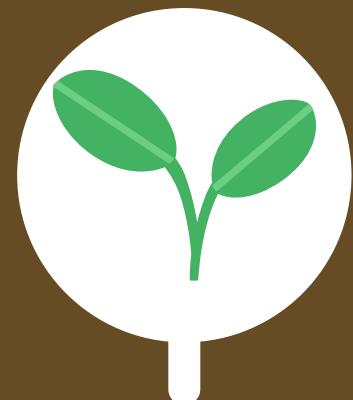
Determental to certain food types



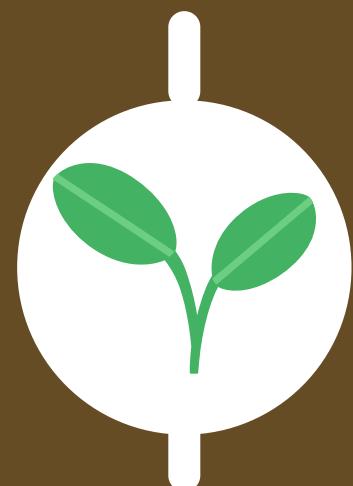
Business Problem

Technology must replace aging farmers and overcome climate change, what insights can we create to make sure families are fed?

Data Set Facts



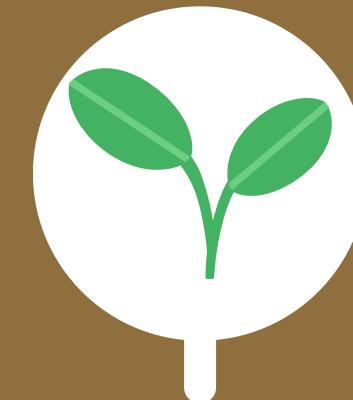
31 Data Frames



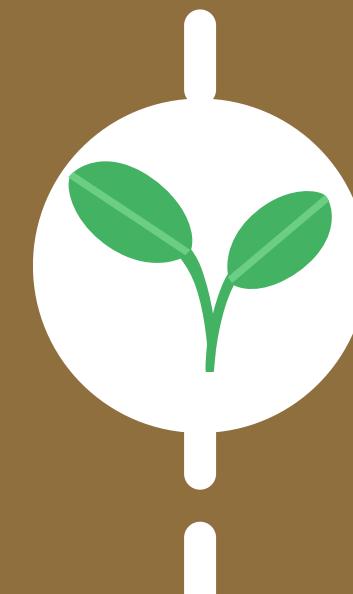
17 Variables



5 Most Productive
Counties



3 Crop Type:
Fruit, Nut, Grains

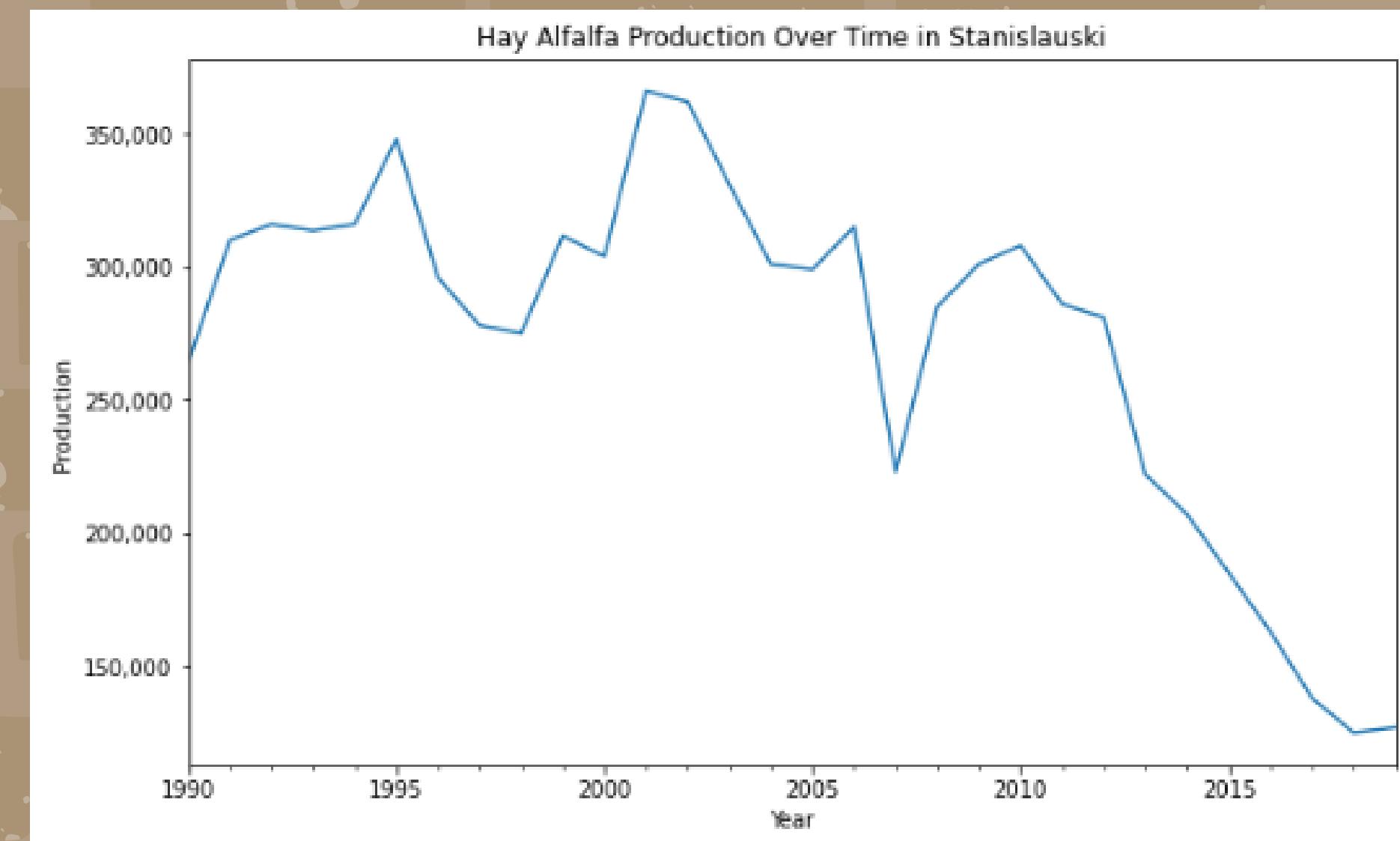
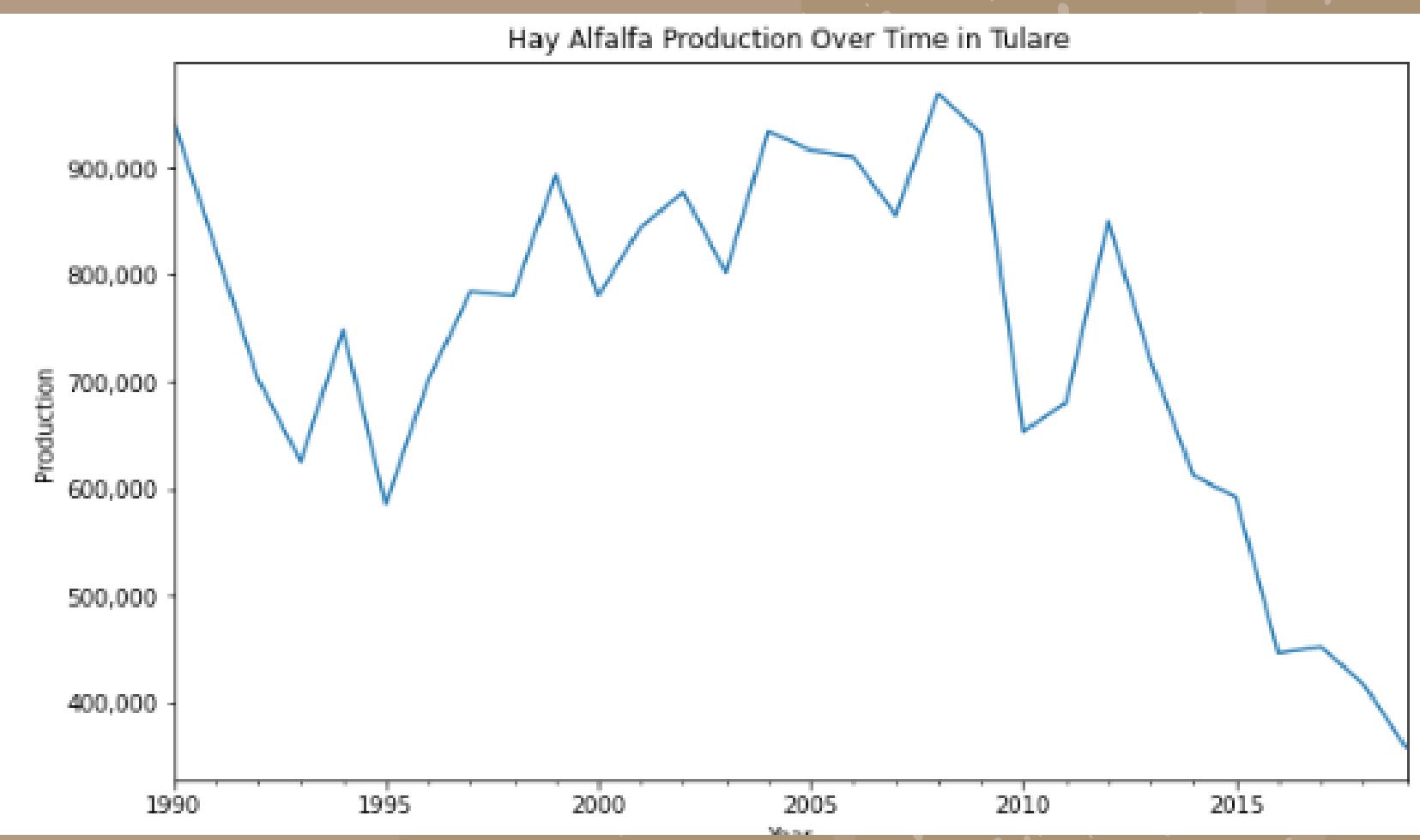
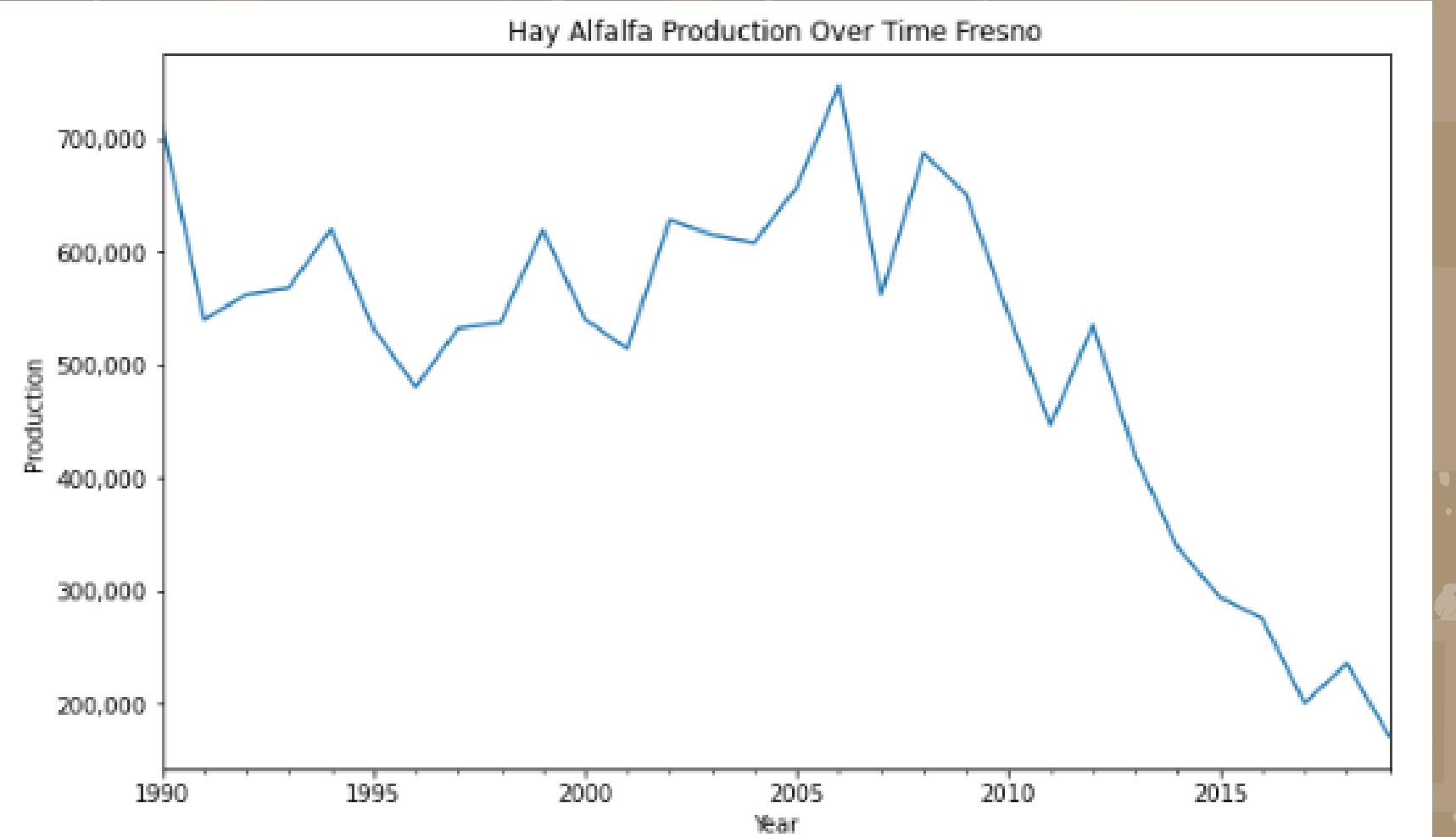


Macro, Micro and
Environmental Factors

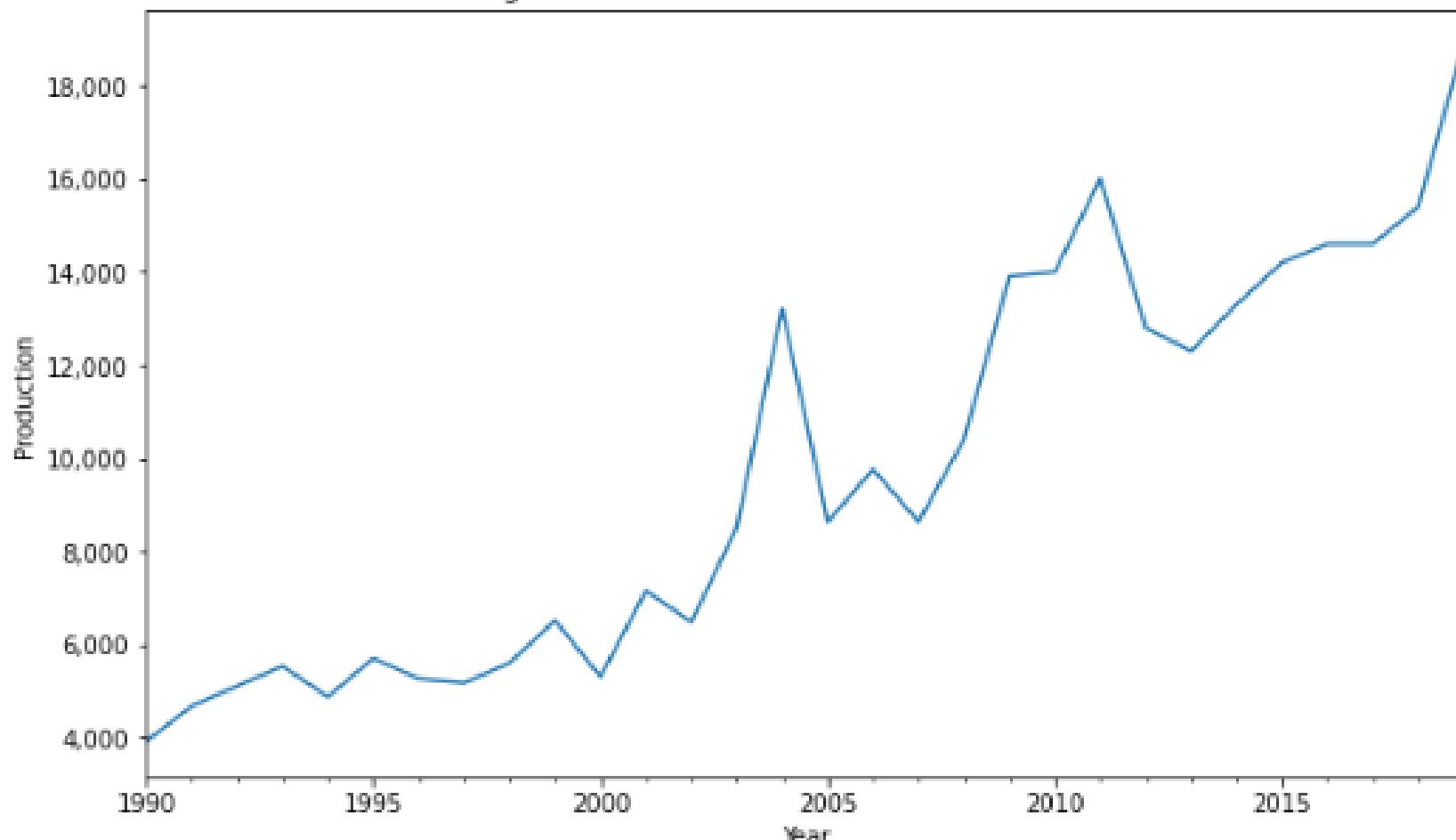


Near human population,
international exports

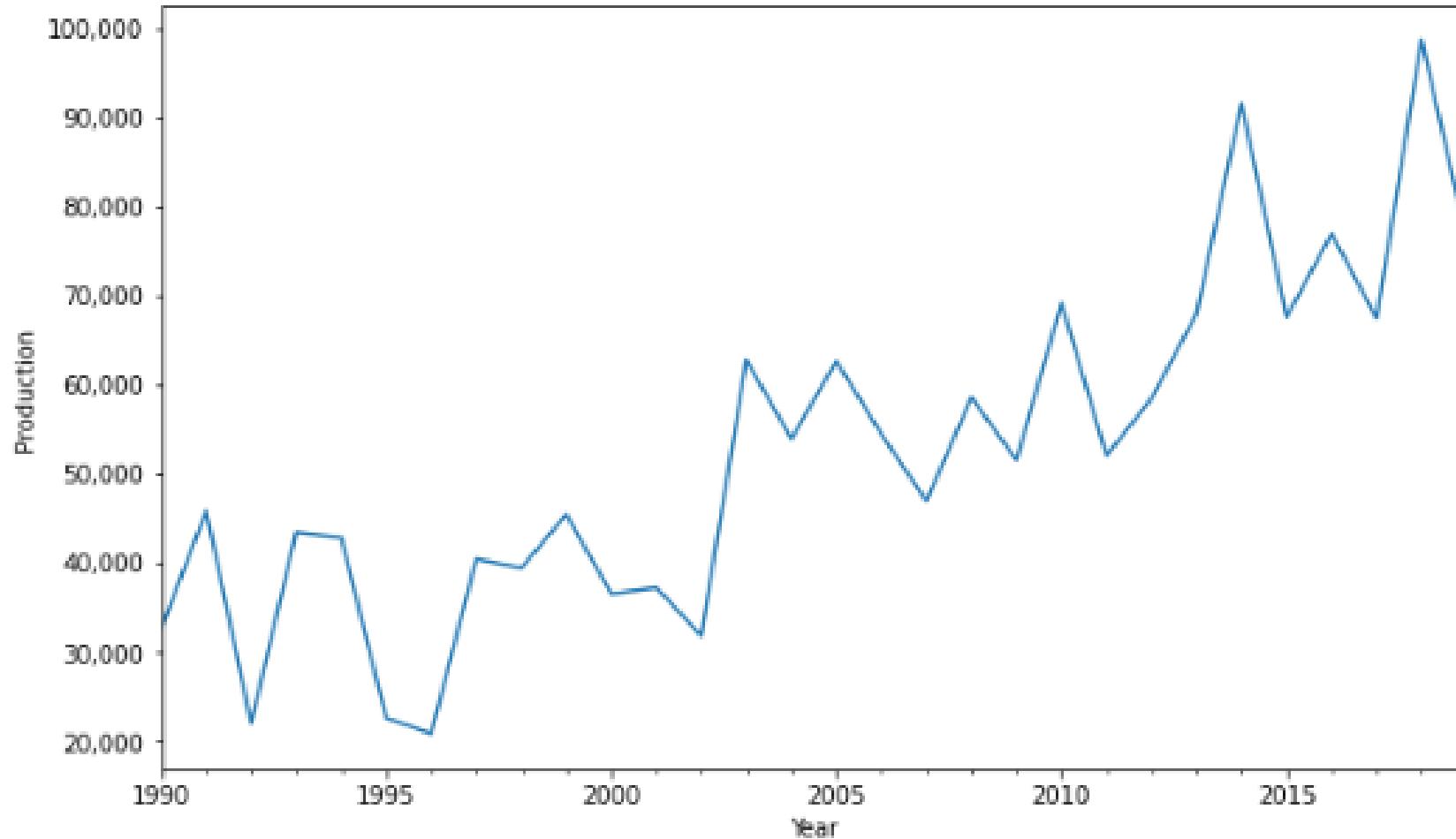
History - Hay



English Walnuts Production Over Time in Fresno

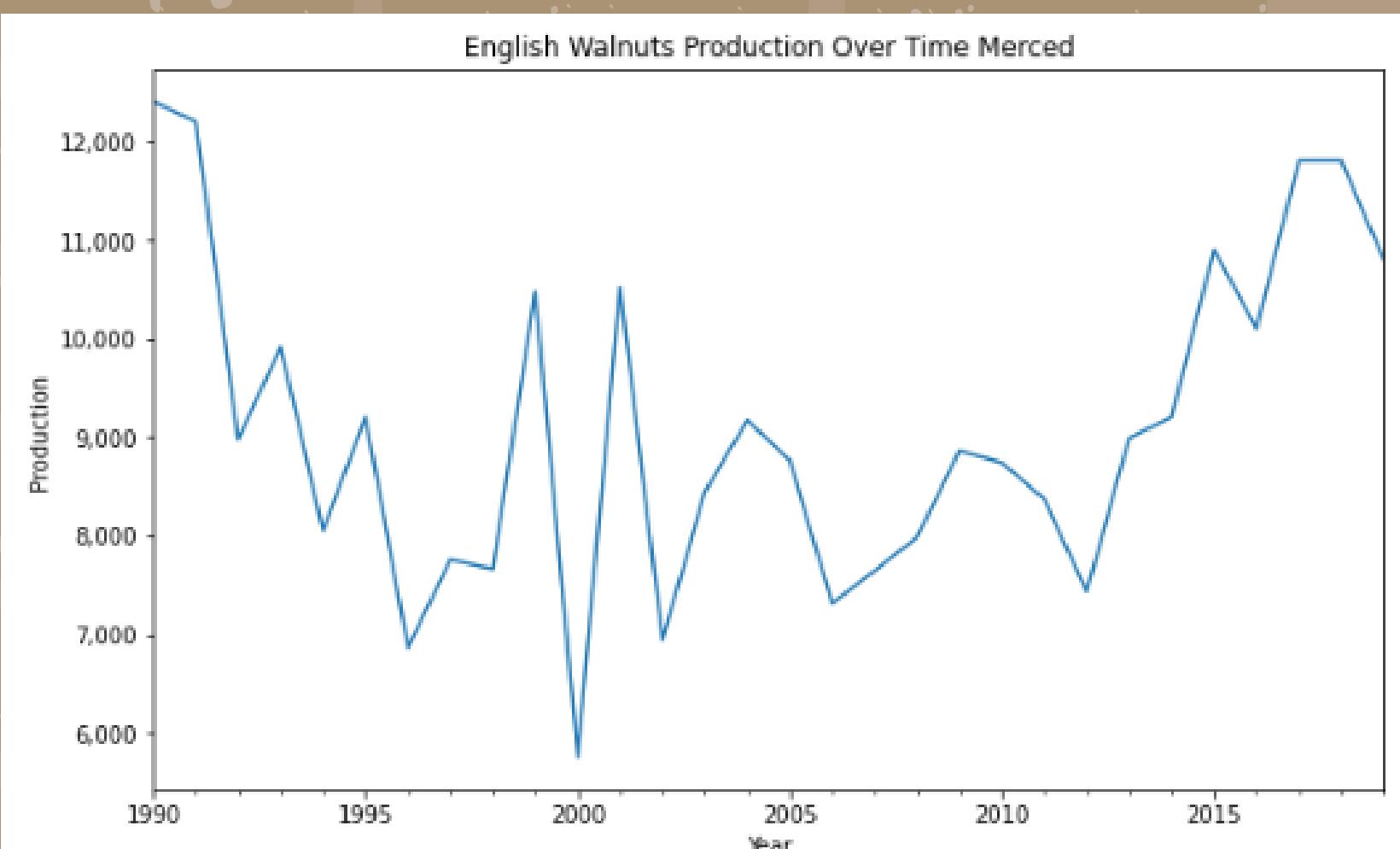


English Walnuts Production Over Time in Tulare

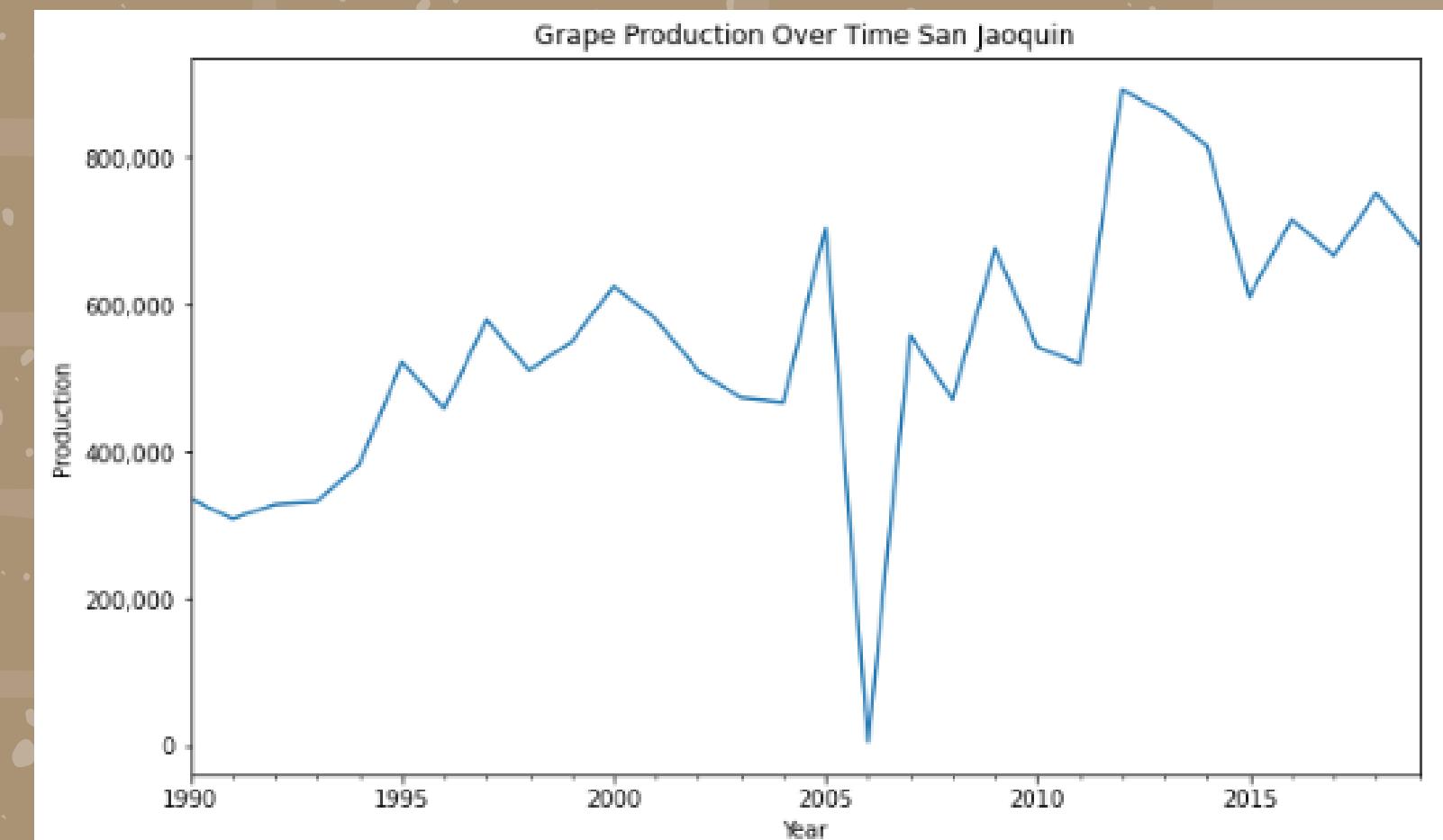
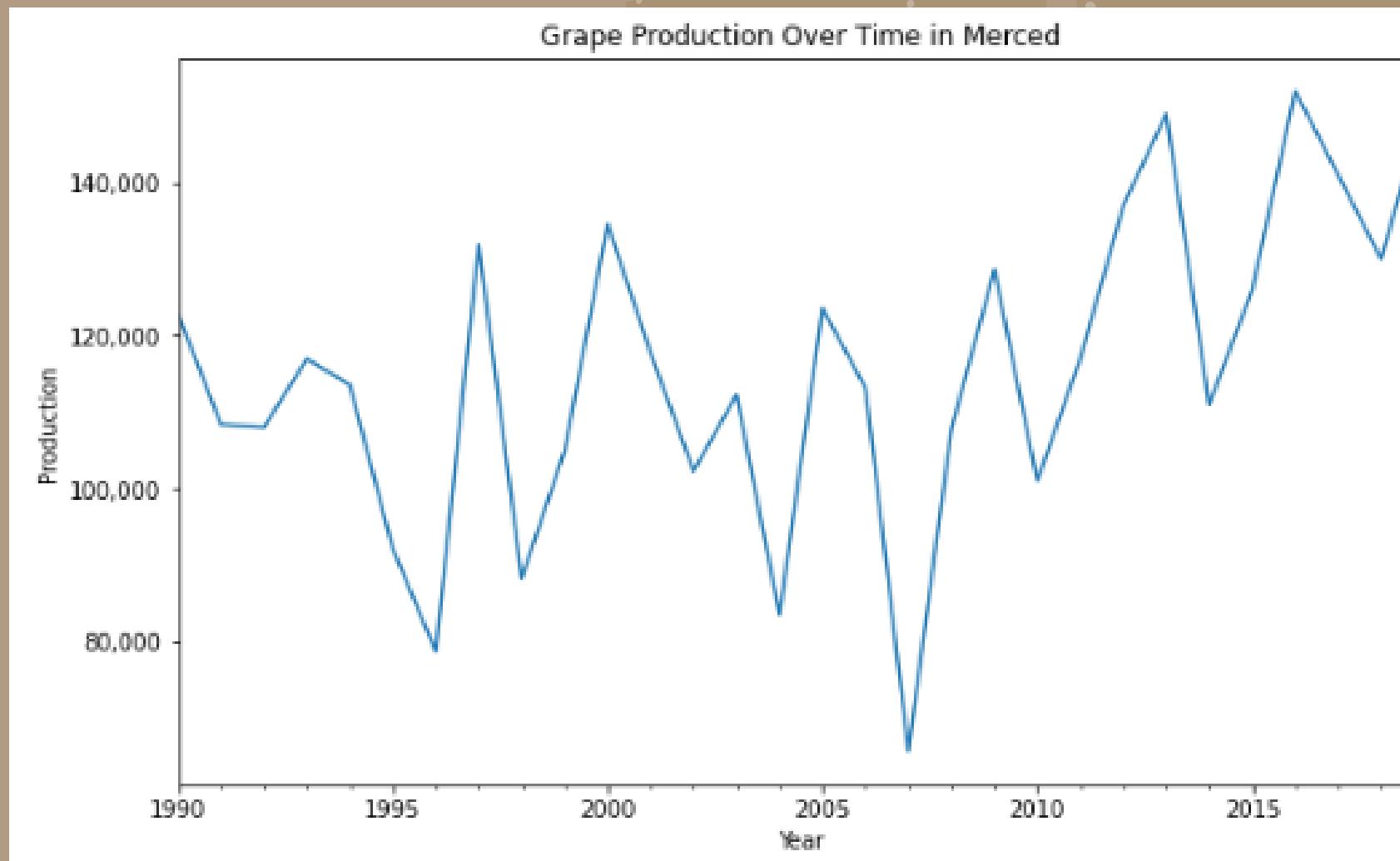
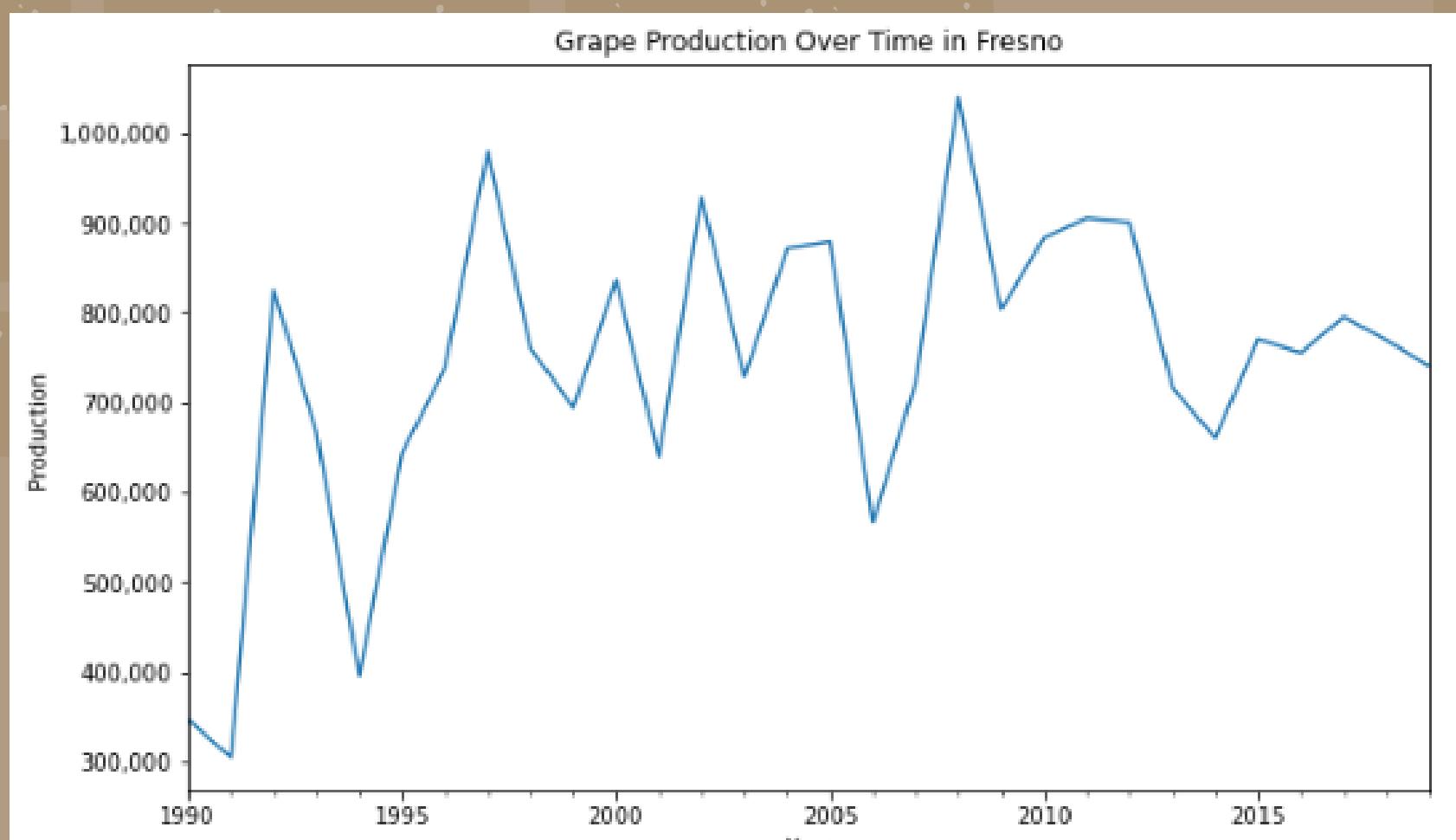


History - Walnuts

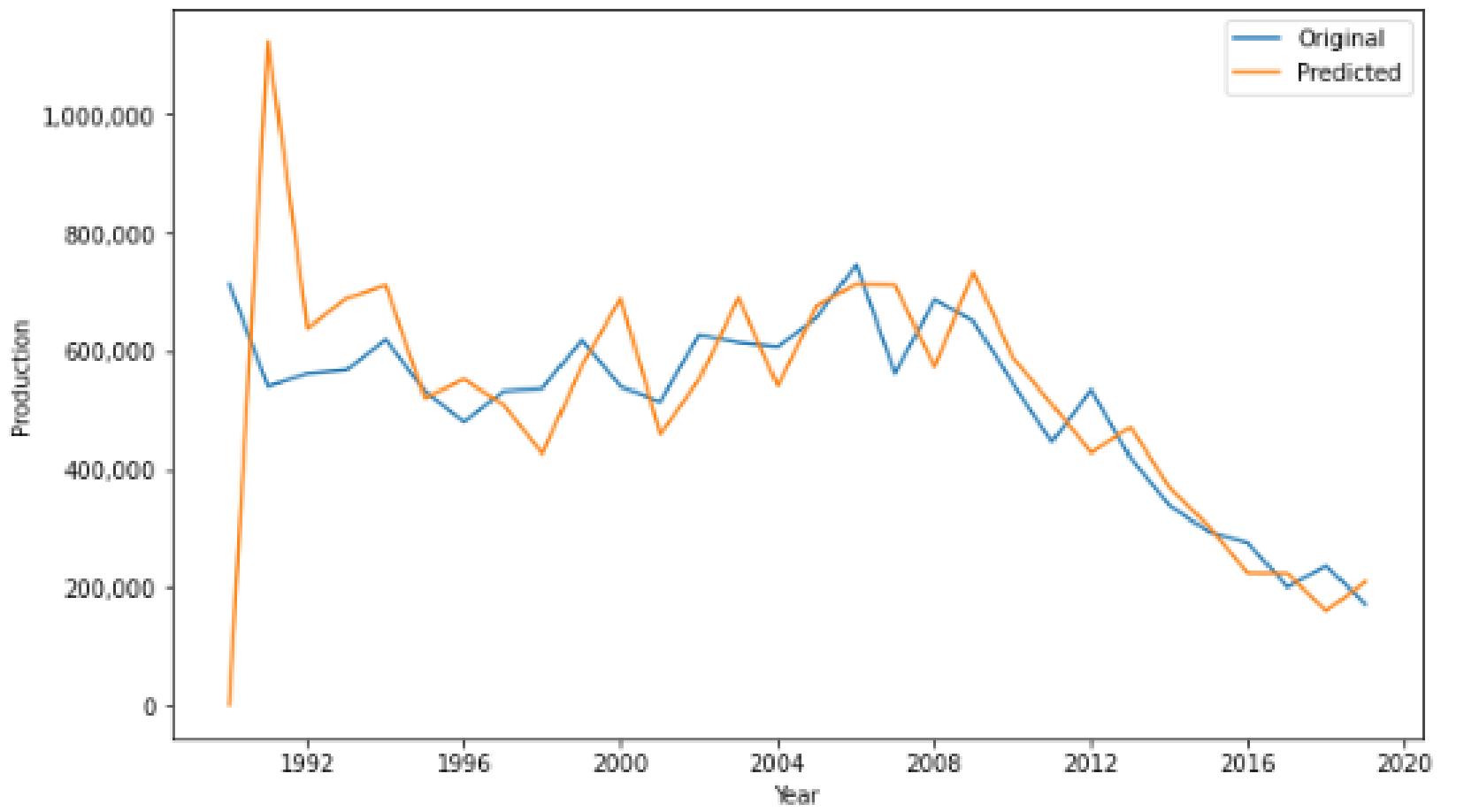
English Walnuts Production Over Time Merced



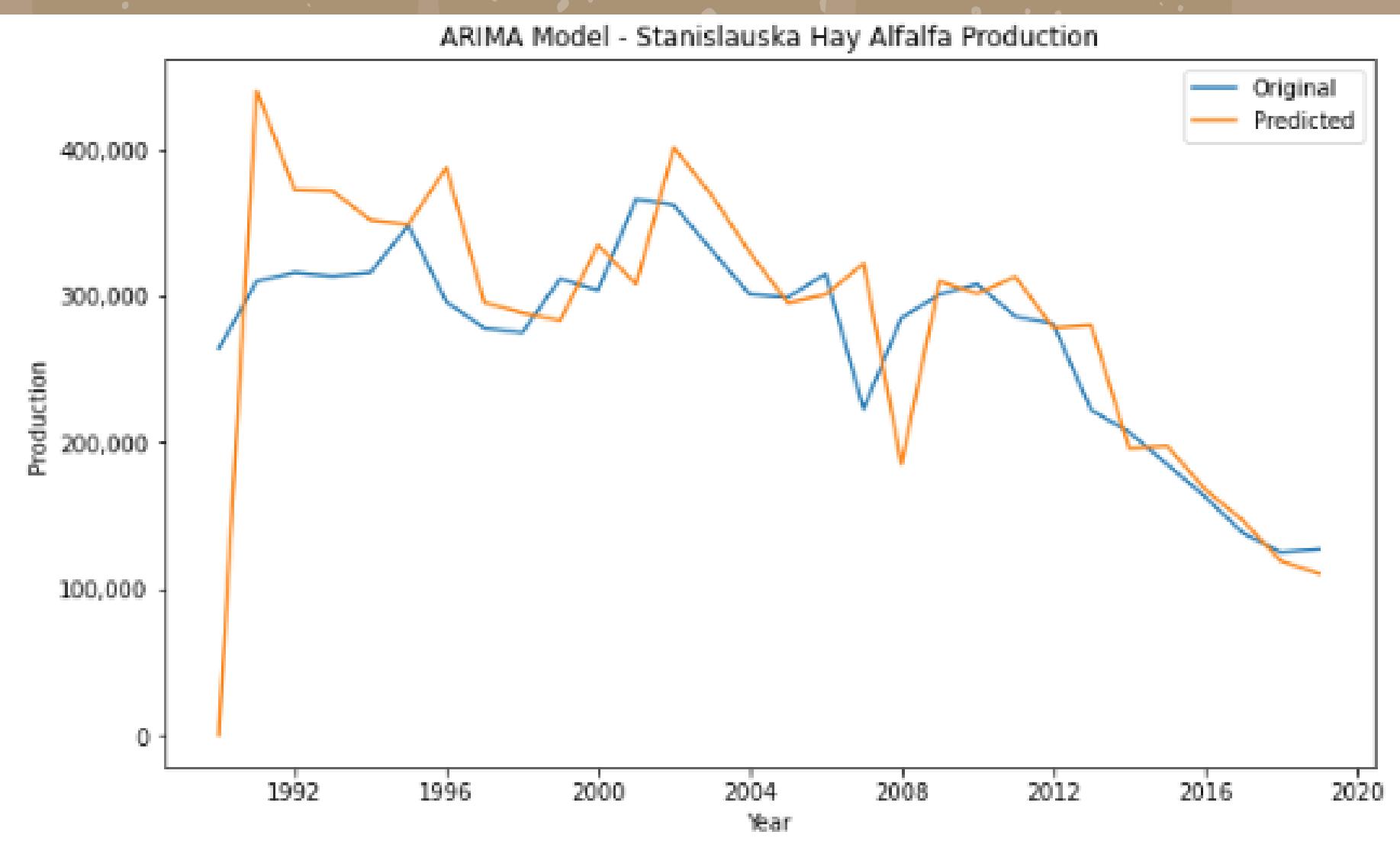
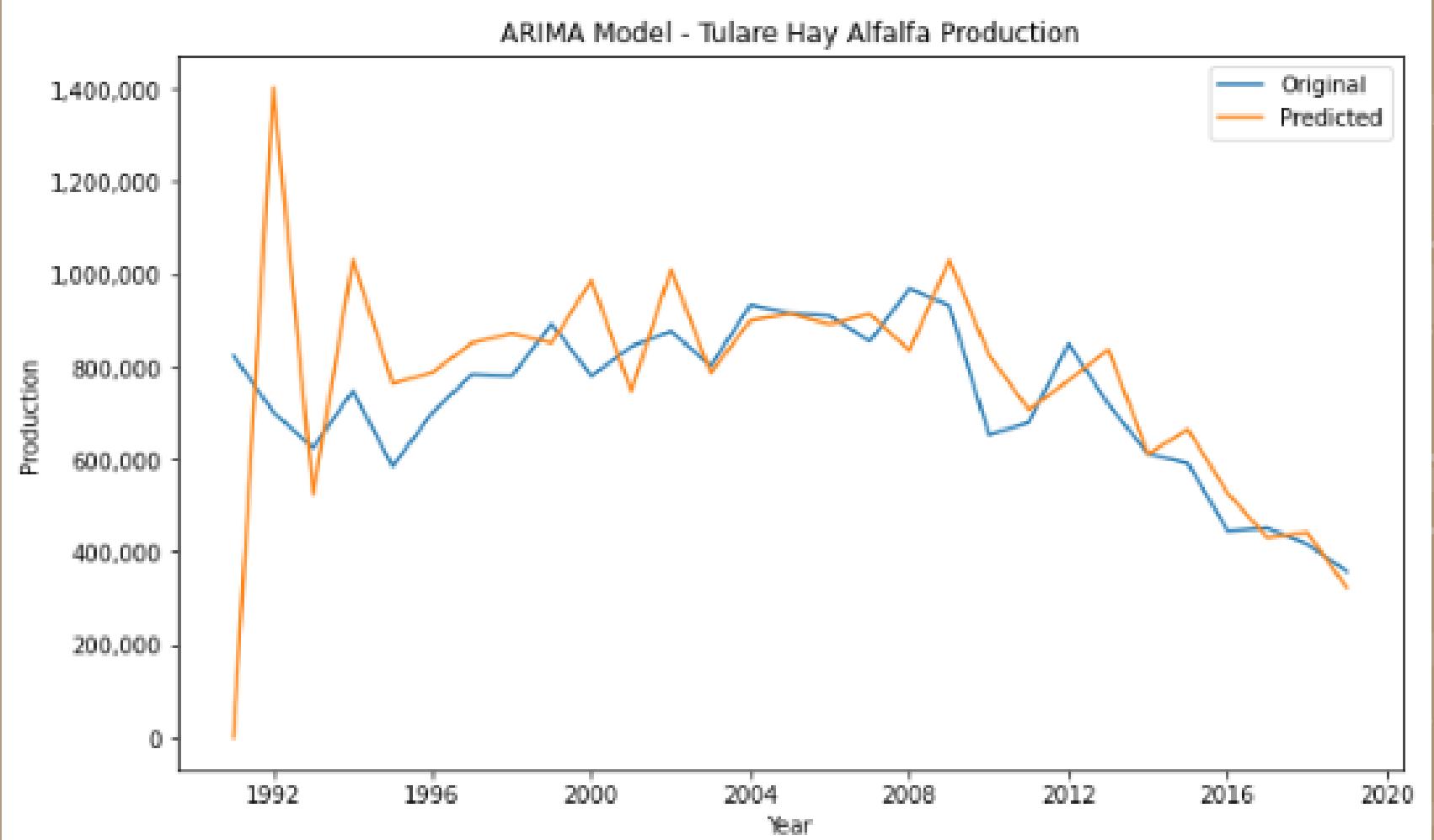
History - Grapes



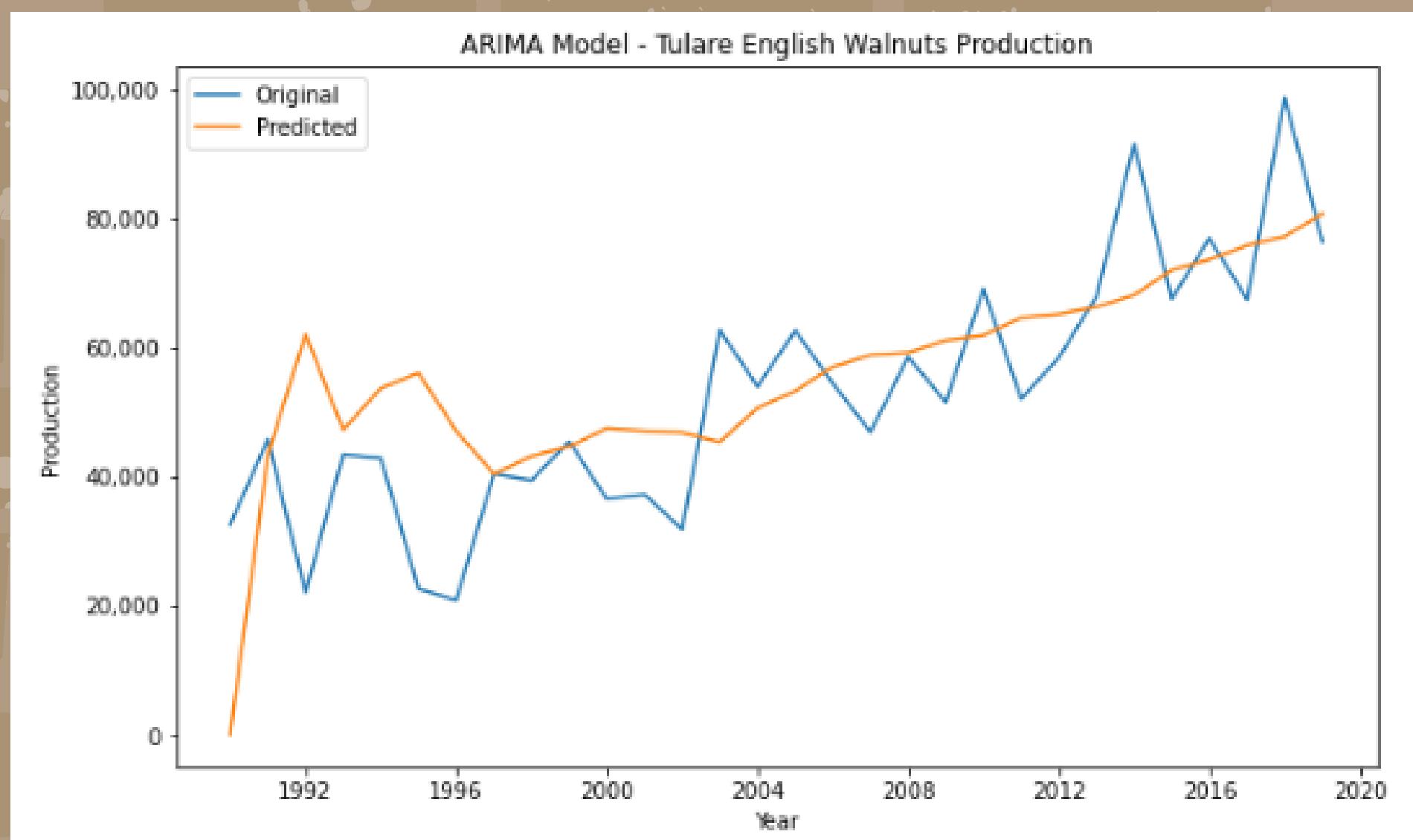
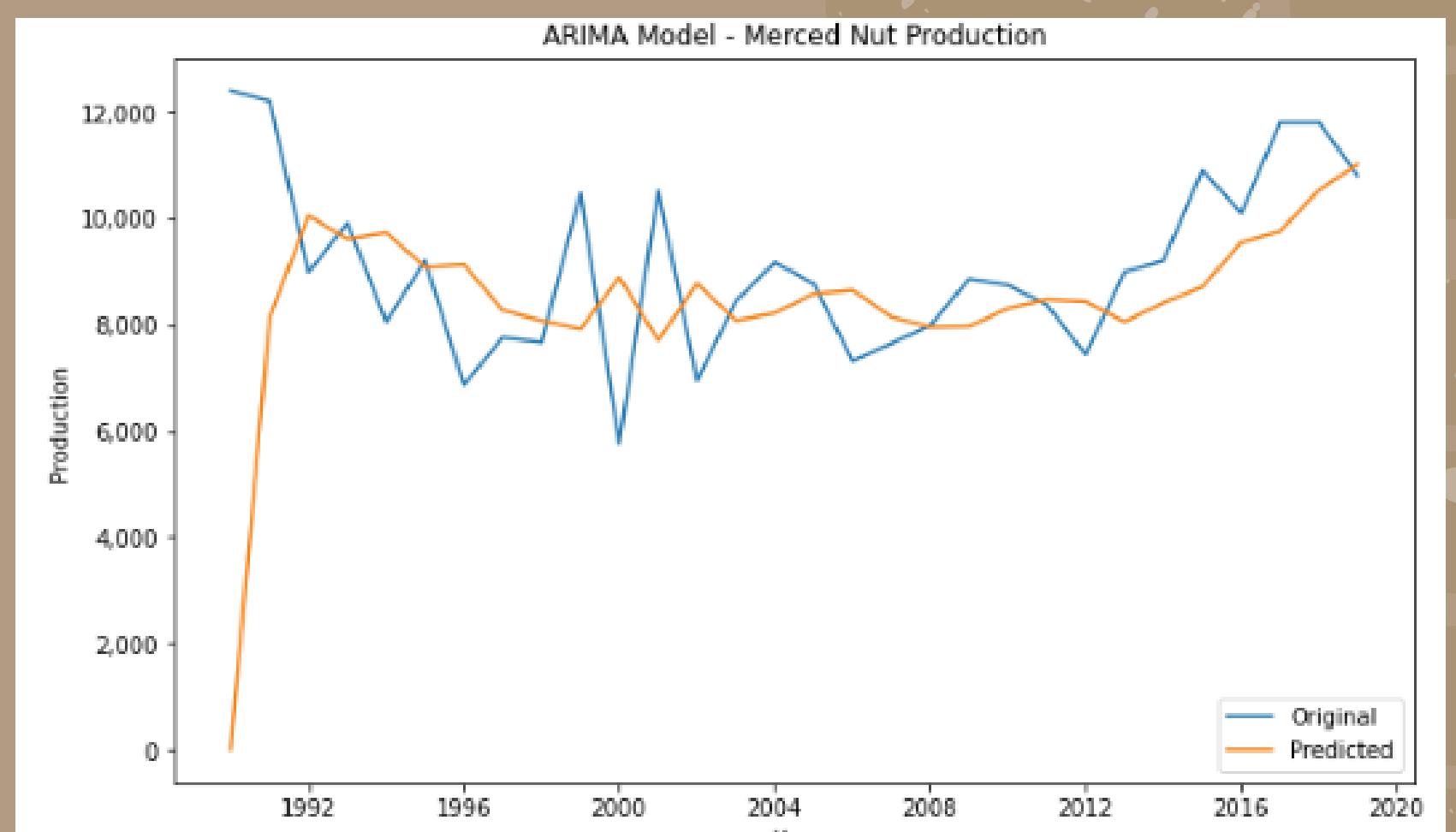
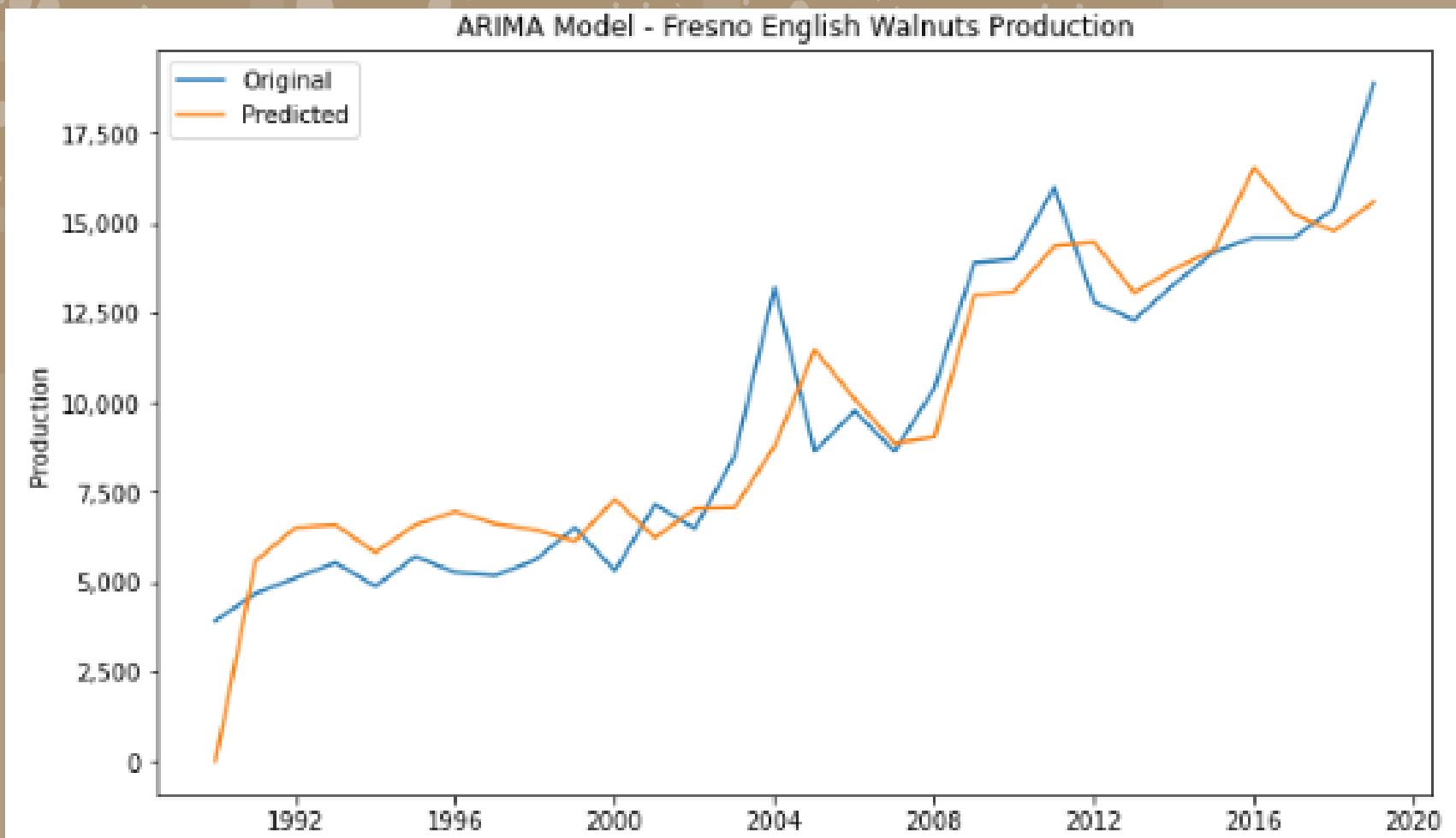
ARIMA Model - Fresno Alfalfa Production



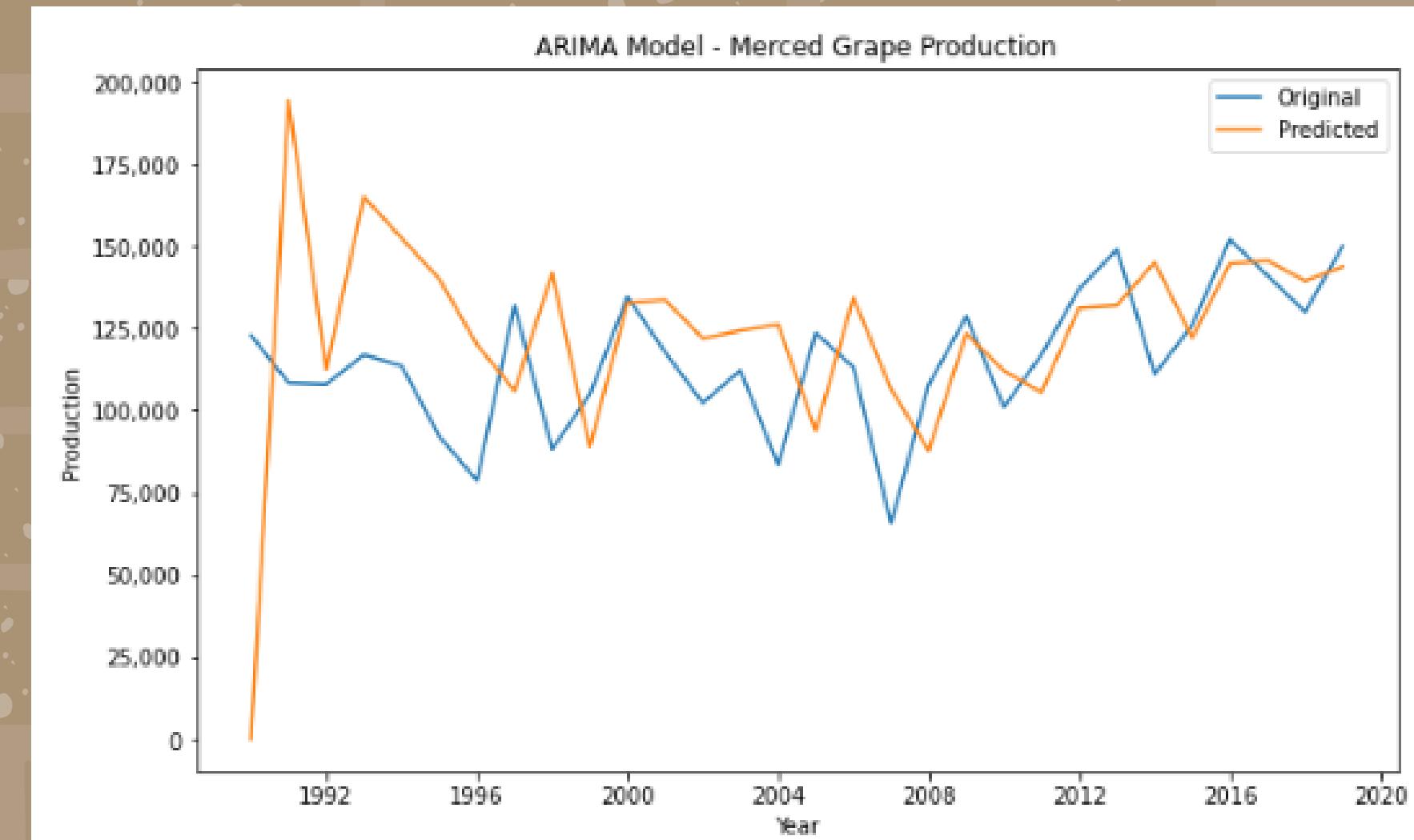
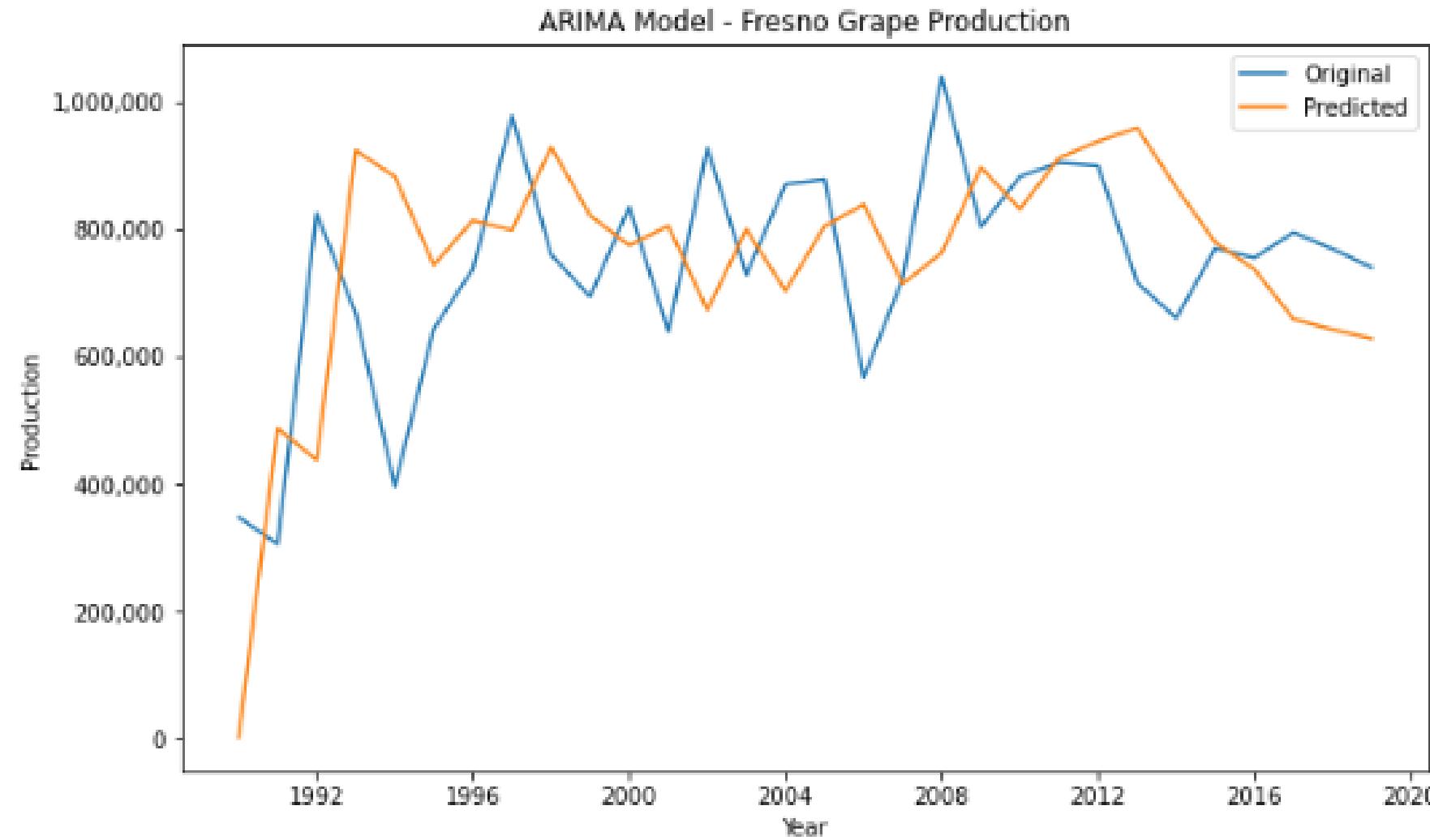
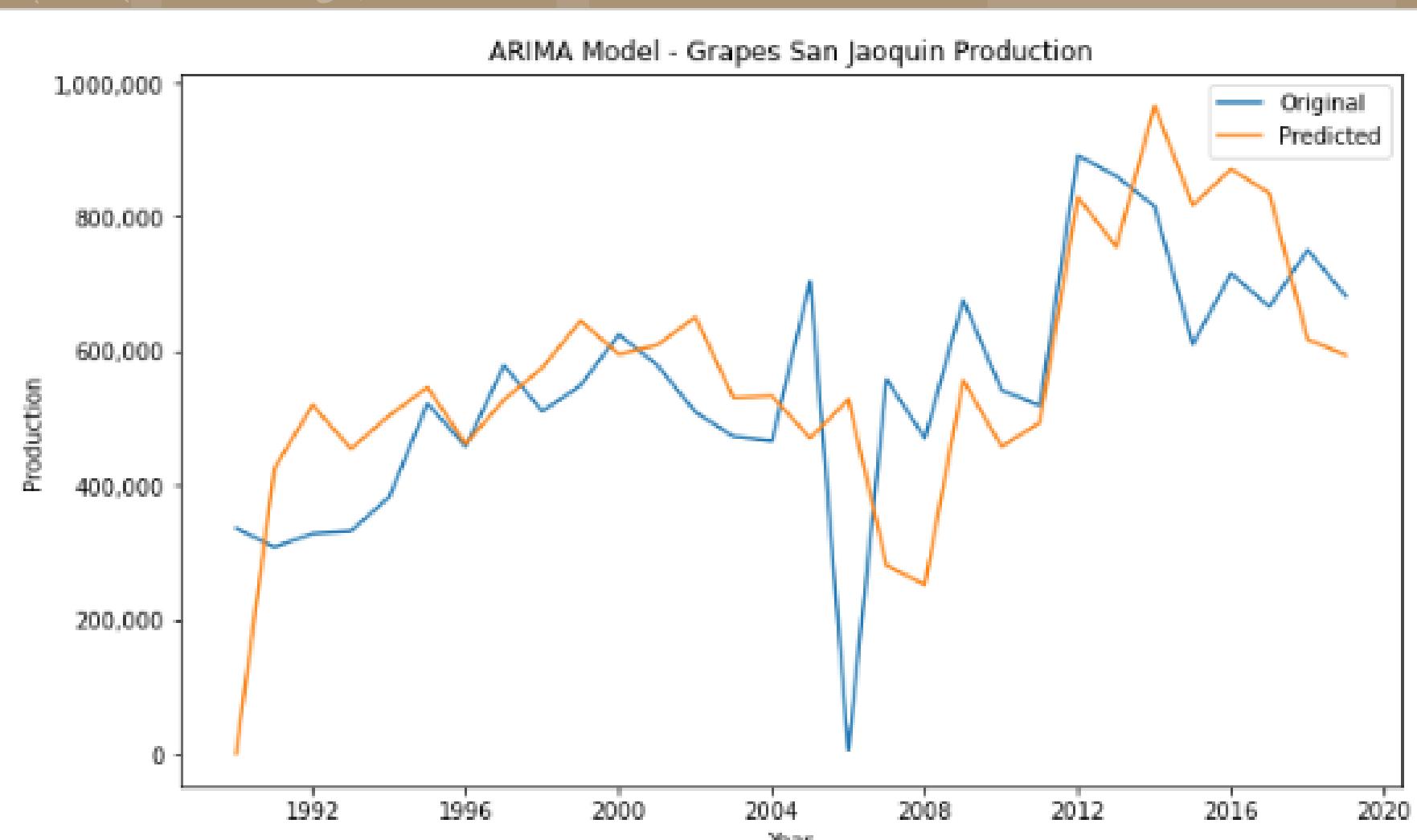
ARIMA - Hay



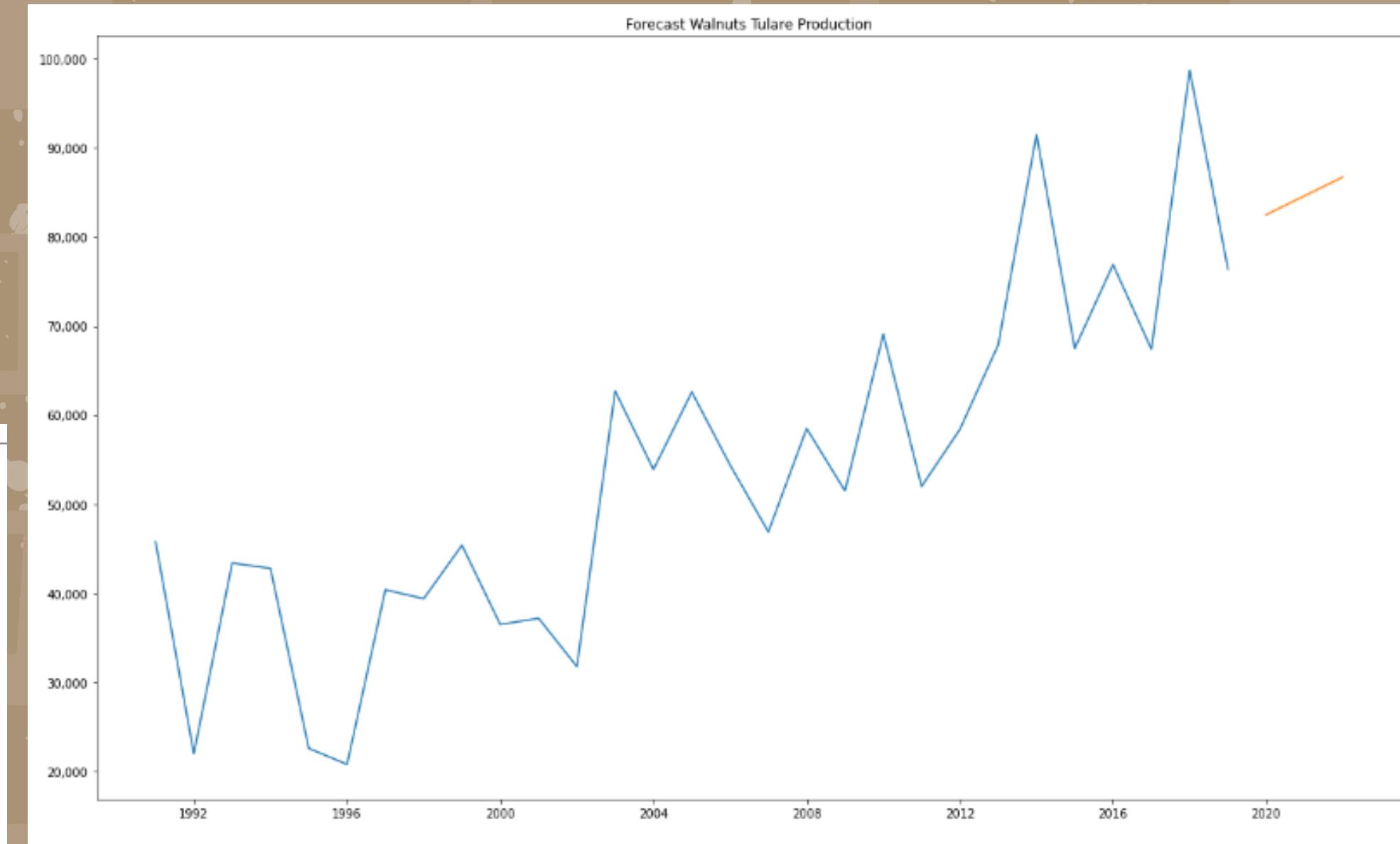
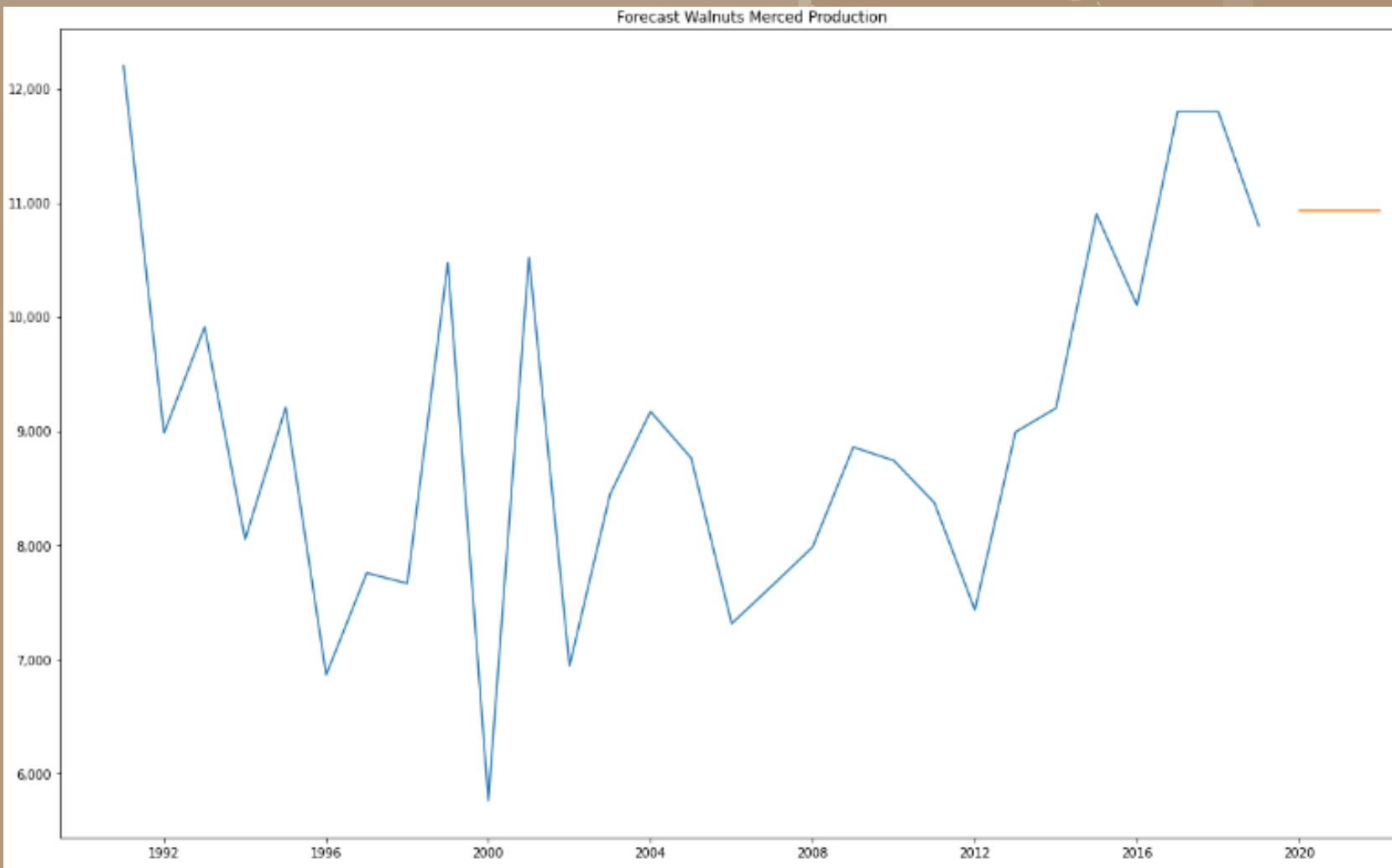
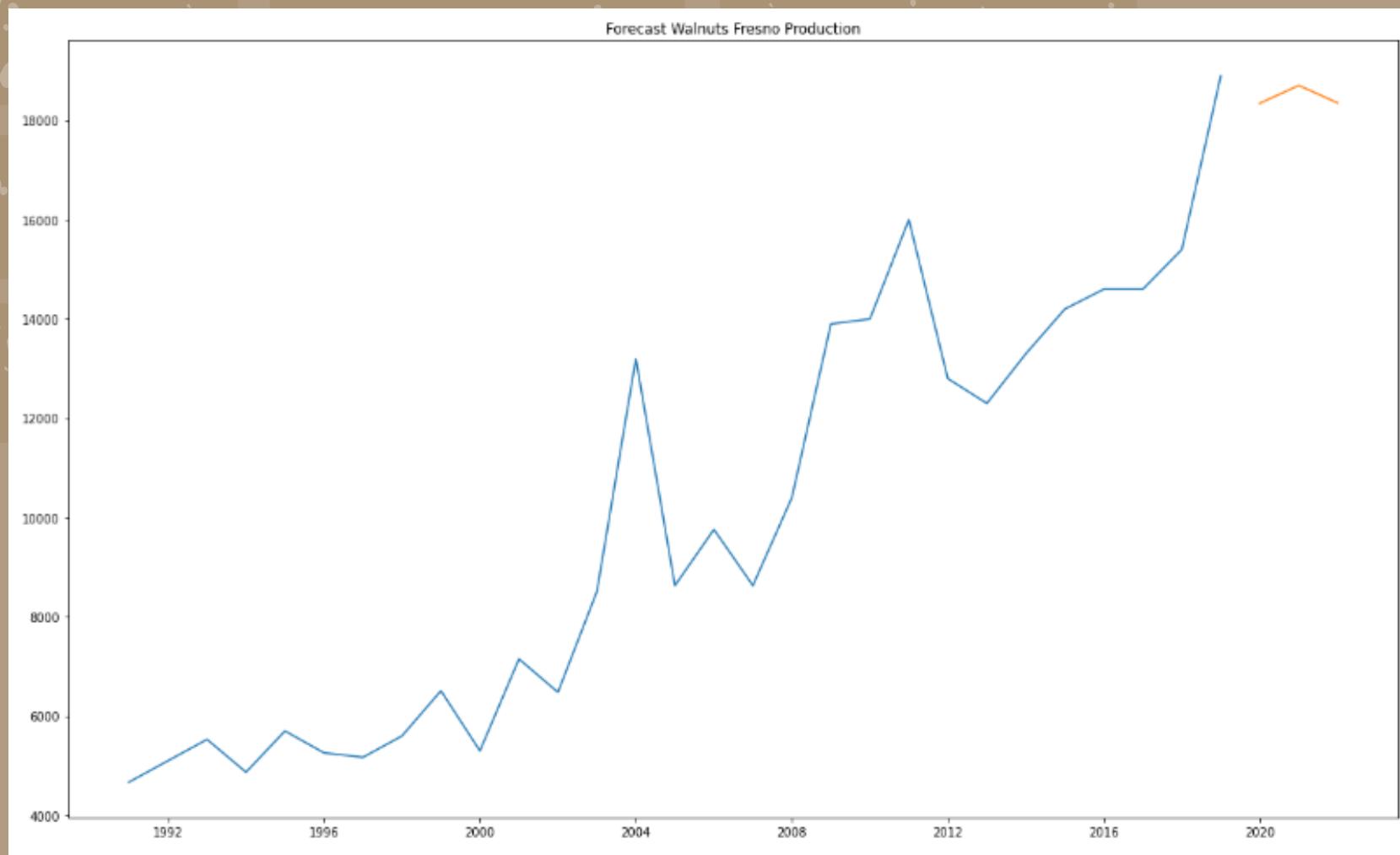
ARIMA - Nuts



ARIMA - Grapes



Forecast - Walnuts



Fresno Walnuts 19,000
test - 1,973 / training - 1,739 / Naive 1,262

= 87% Predictive

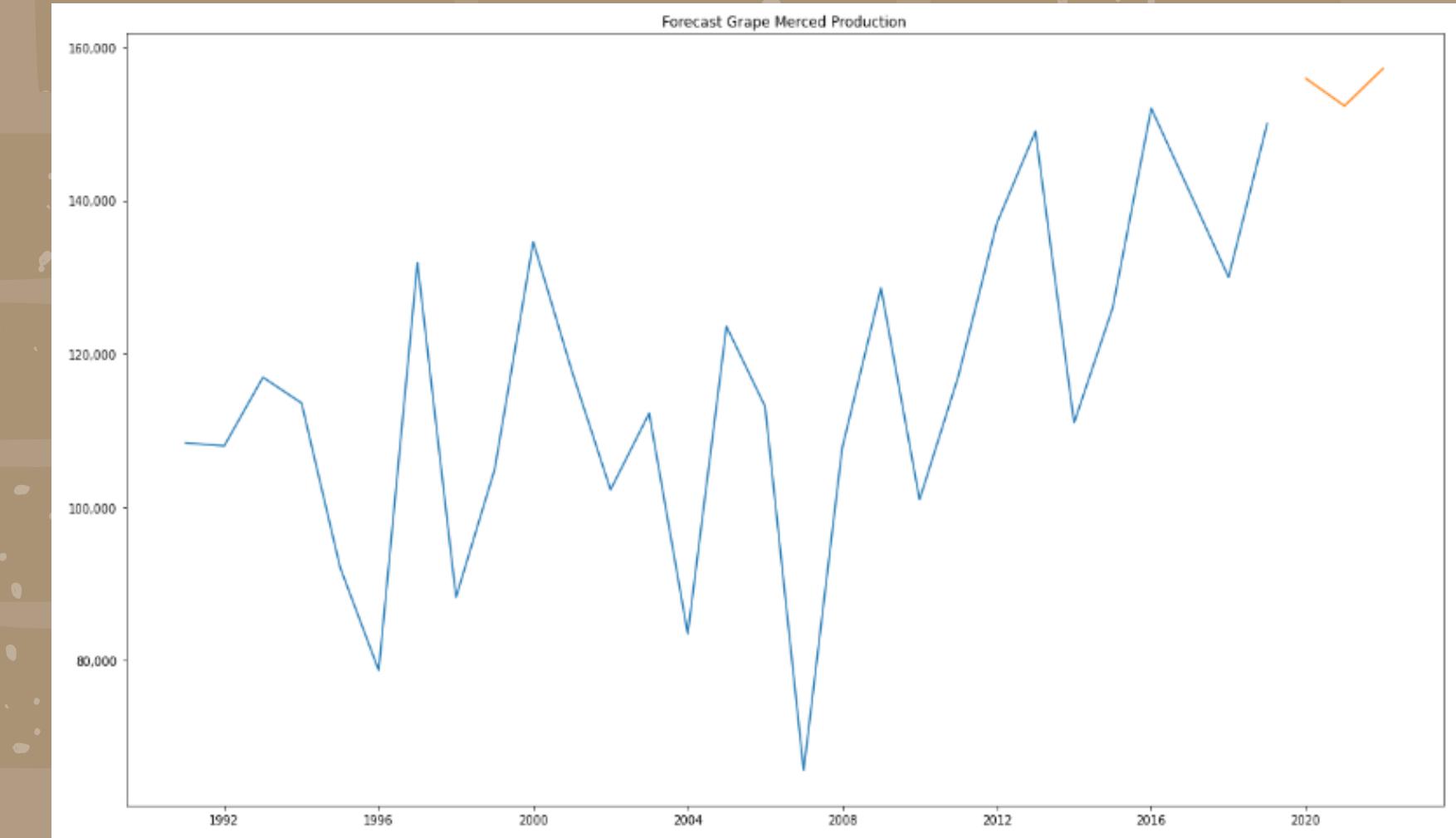
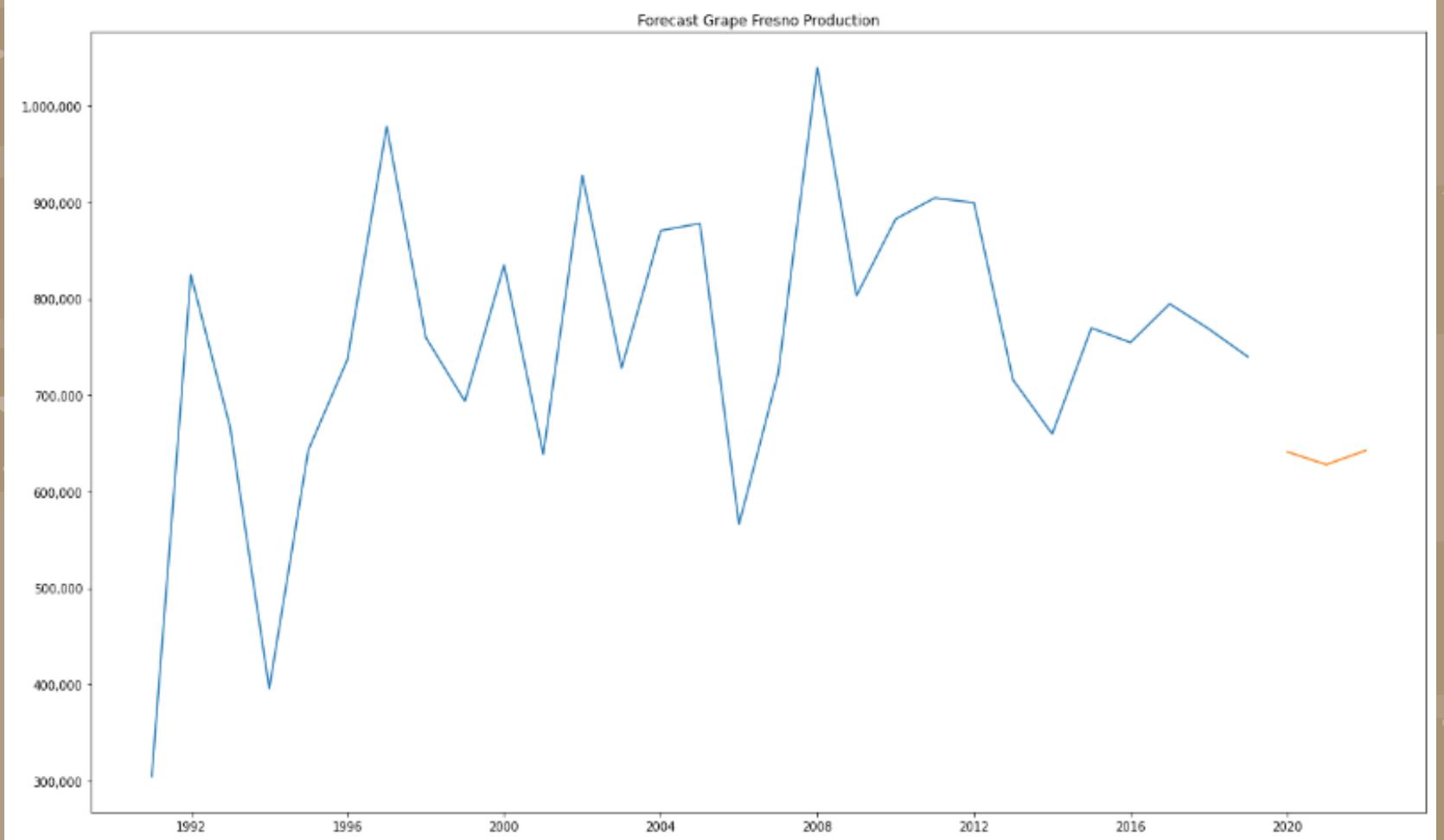
Tulare Walnuts 80,000
Test - 13,011 / Training 14,665 / Naive 19,581

= 81% Predictive

Merced Walnuts 11,000
Test - 2,876 / Training 3,664 / Naive 1,913

= 75% Predictive

Forecast - Grapes



Fresno Grape 750,000

Test - 211,951 / Training 196,479 / Naive 71,343

= 79% Predictive

Merced Grapes 145,000

Test - 8,657 / Training 37,924 / Naive 25,668

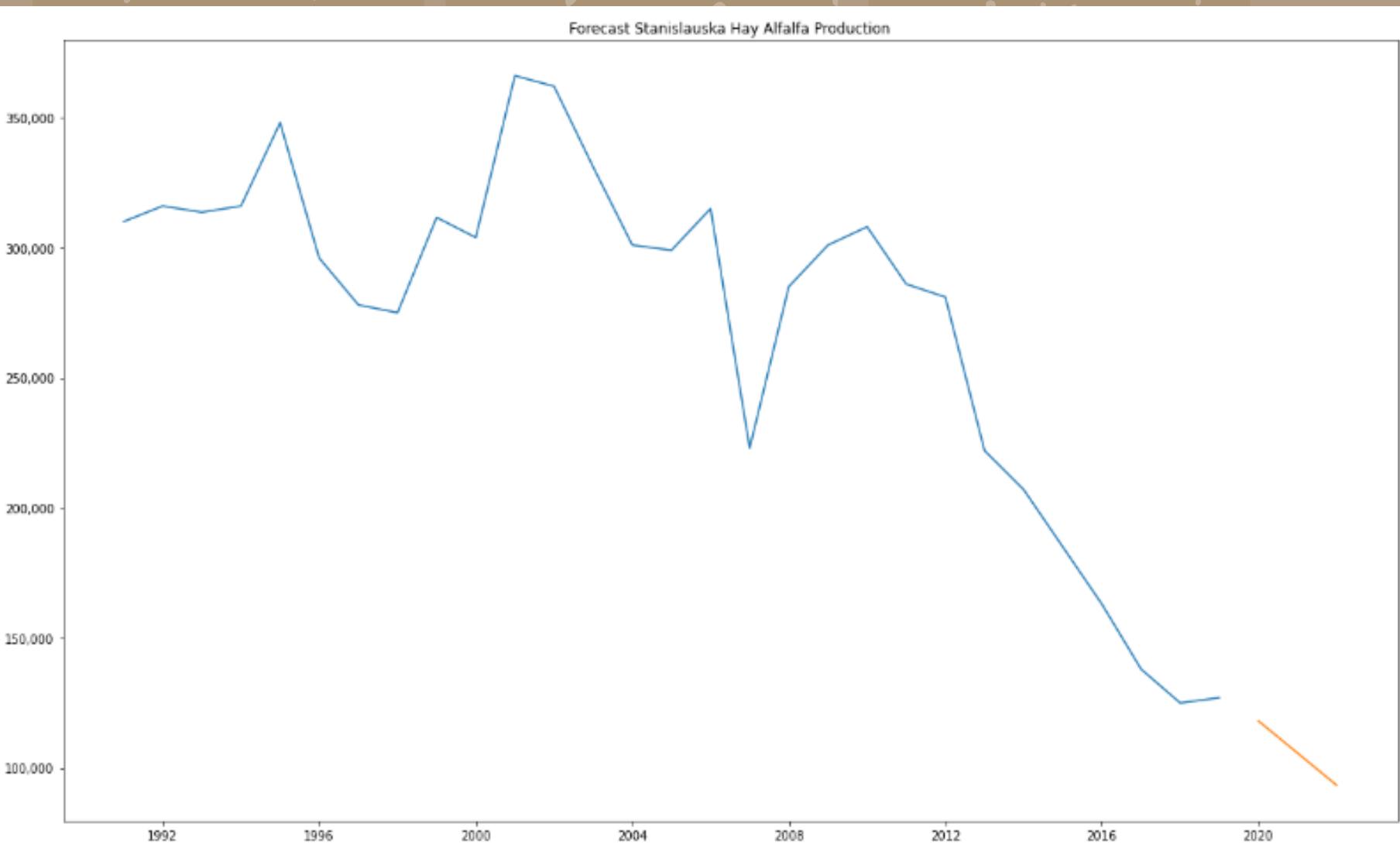
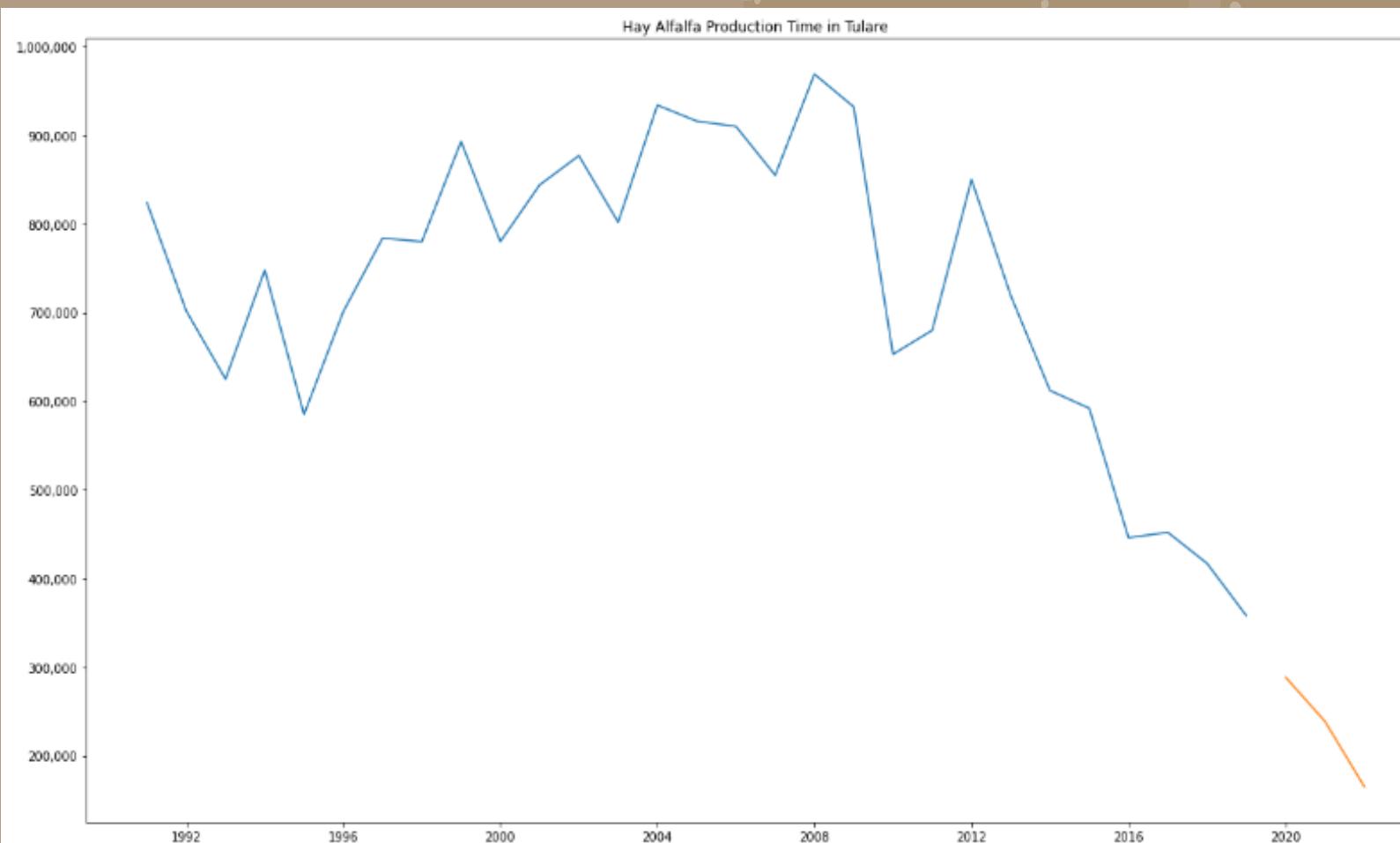
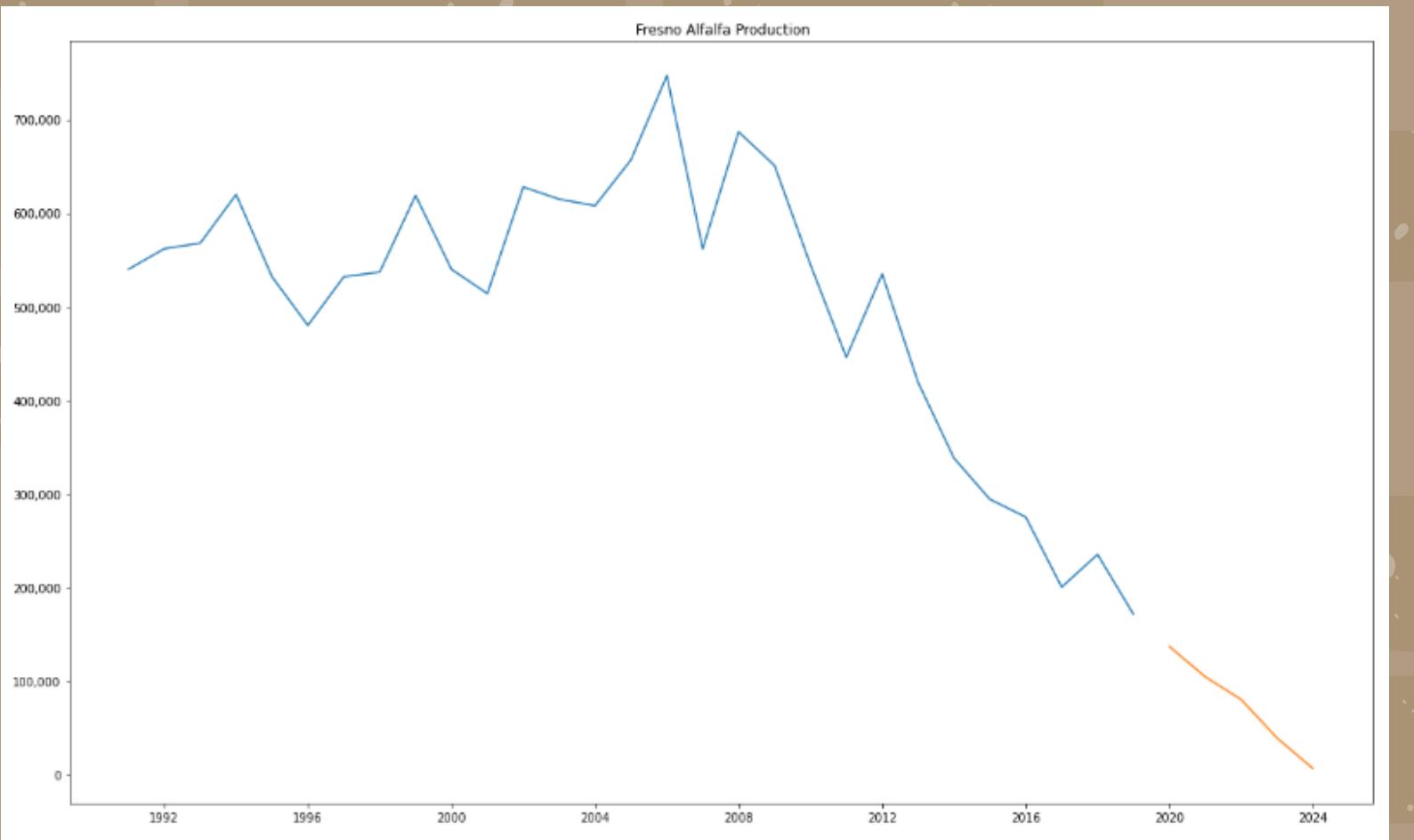
= 84% Predictive

San Joaquin Grapes 700,000

Test - 121,919 / Training 184,156 / Naive 151,745

= 79% Predictive

Forecast - Hay



Fresno Alfalfa - 180,000

Test - 36,232 / Training - 37,924 / Naive 98,638

= 69% Predictive

Tulare Alfalfa - 360,000

Test - 44,361 / Training 37,924 / Naive 81,816

= 85% Predictive

Stanislauski Alfalfa - 125,000

Test - 69,950 / Training - 9,342 / Naive 49,835

= 66% Predictive

Predictive Regressive

Acidity Reduces Conductivity

- SO_4
- SiO_2

Switch to plants that thrive in
Acidity or remediate soil

	Coef.	:
CONDUCTIVITY	898.843854	
CA	-1324.277845	
MG	883.092806	
NA	-381.771368	
K	218.698600	
CL	950.961322	
SO4	-2197.774135	
N03-N	-609.092610	
SiO2	-3780.376669	
HCO3	390.375452	
DTW_M	778.427332	
TRIT_2016_TU	-418.198847	



Conclusions

- Hay Alfalfa Production is Dropping
- English Walnuts Production is on the Rise
- Grape Production is Production is on the Rise
- Acidification Might be negatively influencing grain production

Going Foward

More Data:

Finding more
localized readings
means greater
accuracy

Bills vs. Yield

Agriculture and
Climate Change
are subsidized and
influence
production

Human Seasonality

Gas, AC and
Microplastics are
released in
Seasonlity,
perhaps influencing
outputs

Questions?



Thank You!

