



How to know when PFD will strike again?

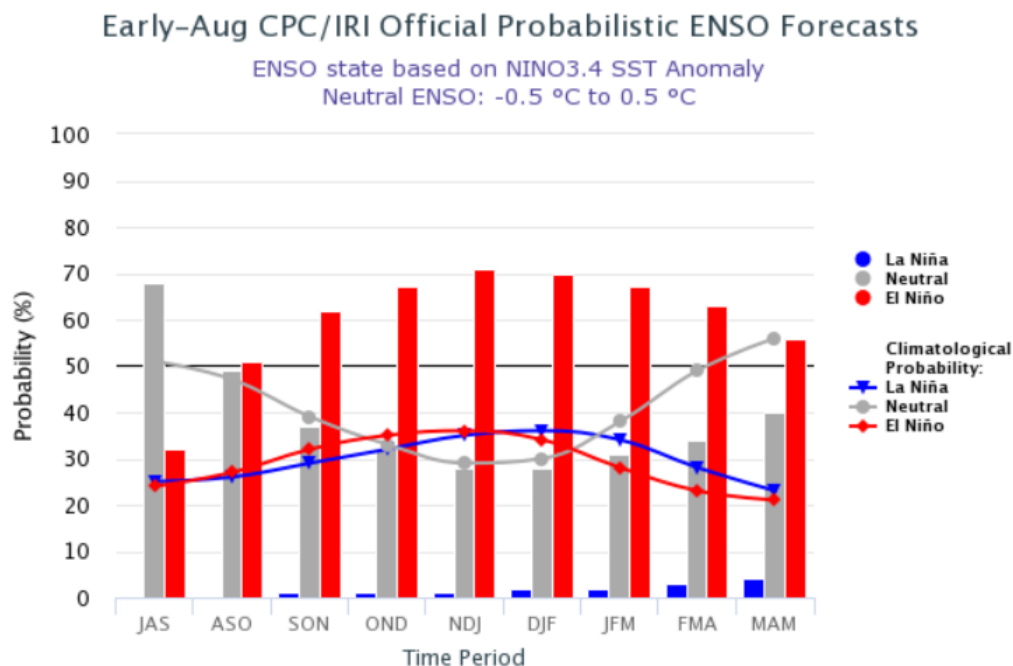
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Climate forecast for winter 2018-2019

- Consensus forecast of probability of El Niño weather pattern
 - over three month intervals
- Increased rainfall and moderate temperatures
 - PFD becomes more likely

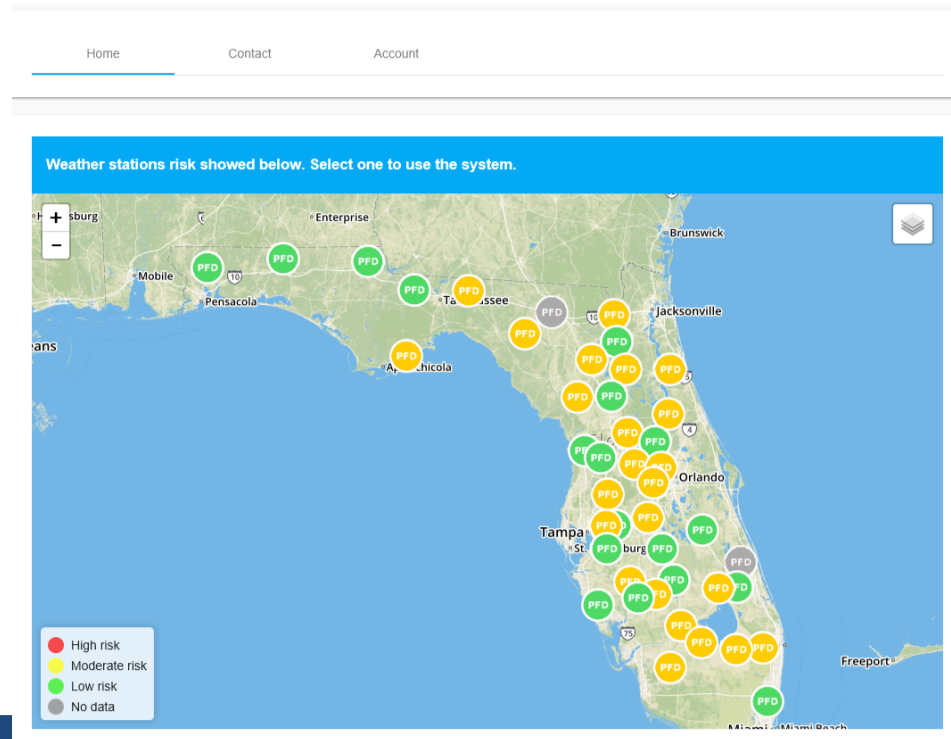


Development of new PFD advisory system

- Project in collaboration with Natalia Peres and Clyde Fraisse
- To simplify PFD predictions from PFD-FAD
 - Less data collection required
 - Automatically pulls in weather data
- Based off of the FAWN system
 - Some stations with leaf wetness probes
 - Mostly calculated from available models

Homepage of new PFD advisory system

- Hosted on Agroclimate.org
 - Under tools/crop diseases
 - Similar to Strawberry Advisory System (SAS)
 - Each circle represents a FAWN weather station




Criteria to select

- Palmdale station selected
 - Map zooms in automatically
- Need to indicate bloom intensity
 - Will I recoup costs if application made?
- Flowering stage
- Last fungicide application

Home Contact Account

Weather stations risk showed below. Select one to use the system.



Recommendation Disease Simulation Daily summary Weather


Palmdale - Recommendation


Flowering intensity:


☒ Sufficient bloom present on the trees to justify the cost of application


☐ Insufficient bloom present to justify the cost of application

Flowering stage:

☐  Pinhead bloom, few popcorn, no open flowers

☐  Pinhead, button bloom, few open flowers

☒  Many open flowers, some pinhead or button bloom remaining

☐  All flowers open, no pinhead or button bloom remaining

When was your last fungicide application:

☒ None

☐ Last 7 days

☐ More than 7 days

[View recommendation](#) EDIS: Postbloom Fruit Drop

If there is an infection event

- Conditions could allow for infection event
- Still need sufficient bloom
- Fungicide applications minimum 7 days apart

When was your last fungicide application:

- ☒ None
- ☐ Last 7 days
- ☐ More than 7 days

[View recommendation](#)

EDIS: Postbloom Fruit Drop

[Link to current FPG](#)

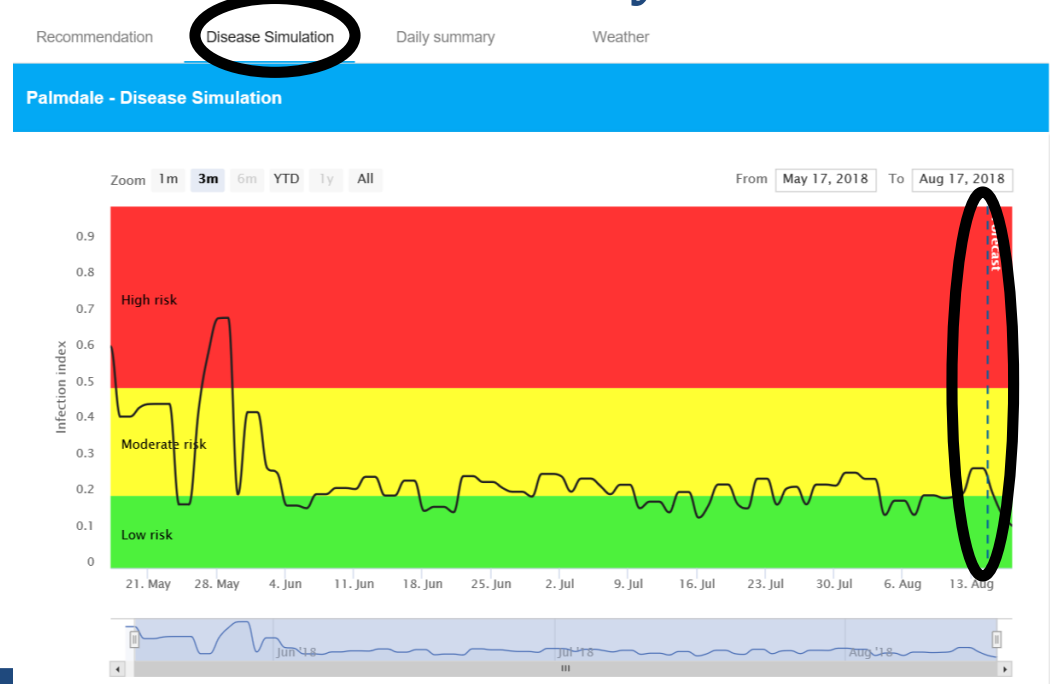
Spray fungicide! We recommend the following products:

- Abound
Rate: 12-15.5 fl oz/acre
- Headline SC
Rate: 12-15 lbs/acre
- Quadris Top
Rate: 15.4 fl oz/acre
- Gem 500 SC
Rate: 1.9-3.8 fl oz/acre

Fungicide
recommendations

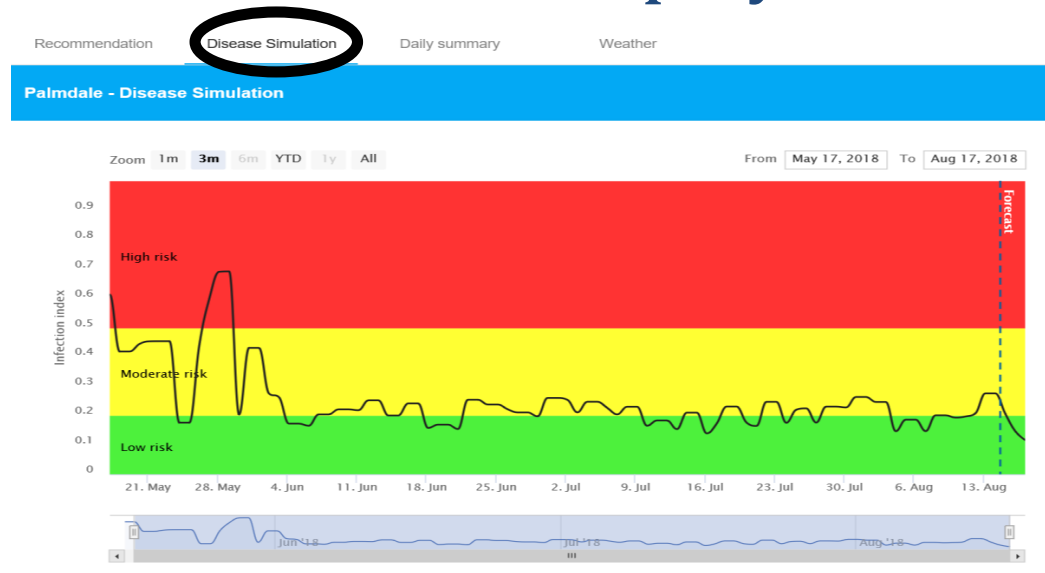
Disease simulation tab

- Graphical representation of infection risk
 - Can select time frame
- Forecasted risk (from NOAA weather data) for three days from actual date
 - Help plan if infection will be favored by weather in near term



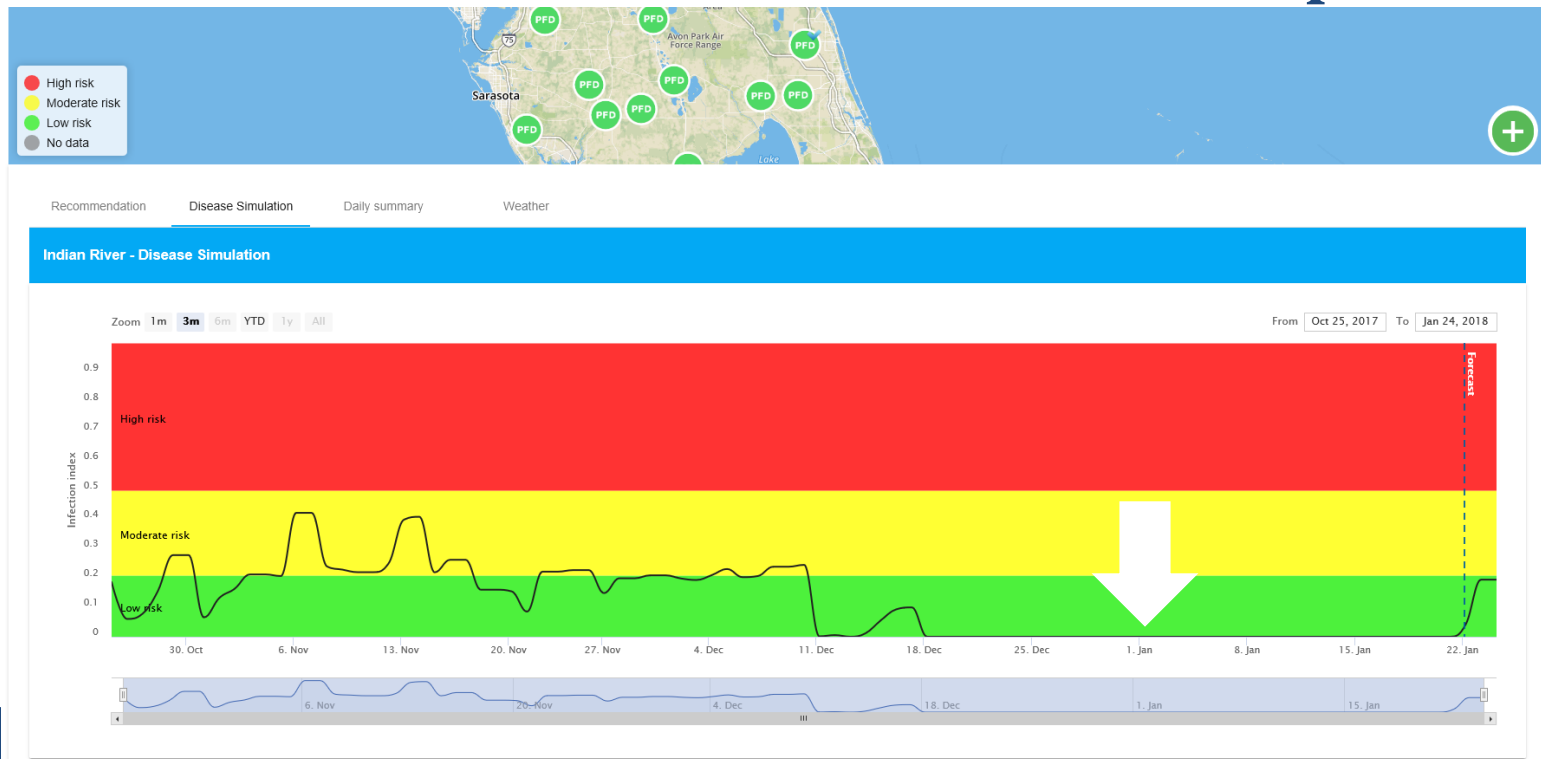
Infection risk levels

- High risk (red area)
 - Index above 0.51; Spray as soon as possible
- Moderate risk (yellow area)
 - Index between 0.21 -0.5; Spray recommended
- Low risk (green area)
 - Index between 0-0.2; No spray recommended



Problem with station

- Problem with leaf wetness estimates
 - Should see an increase in infection index overnight from dew
- Please let us know ASAP if there is a problem



Daily summary of data

- Gives leaf wetness, temperature, PFD index and risk level
 - Weather variables daily average
 - PFD index max. daily value

Recommendation Disease Simulation **Daily summary** Weather

Loaded data!

Select a range of dates:

Begin date: 2017-12-23 End date: 2018-01-23 [Export data](#)

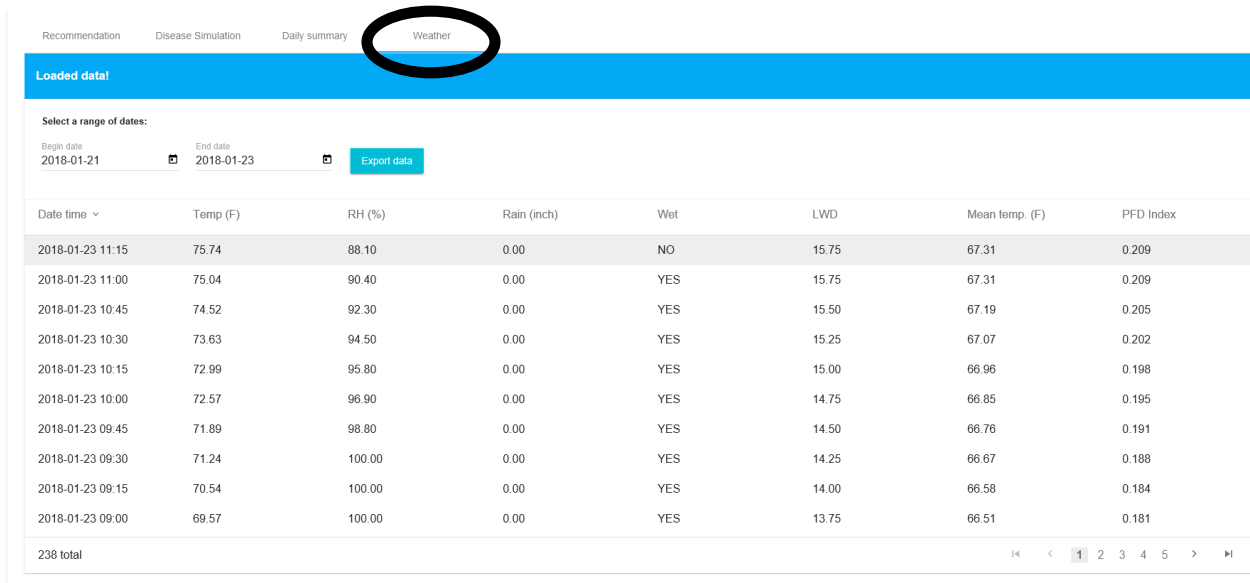
Date ▾	LWD	Temp (F)	Temp (C)	PFD Index	PFD description
2018-01-23	15.00	67.0	19.4	0.198	Low risk
2018-01-22	15.00	56.8	13.8	0.134	Low risk
2018-01-21	14.00	57.8	14.3	0.133	Low risk
2018-01-20	15.75	50.0	10.0	0.072	Low risk
2018-01-19	0.00			0.000	Low risk
2018-01-18	13.00	52.0	11.1	0.078	Low risk
2018-01-17	13.00	52.0	11.1	0.078	Low risk
2018-01-16	13.00	49.4	9.6	0.055	Low risk
2018-01-15	13.00	49.4	9.6	0.055	Low risk
2018-01-14	17.25	64.8	18.2	0.214	Moderate risk

32 total

1 2 3 4

Weather data

- Can look at the weather data for every 15 min.
 - Temperature, relative humidity, rainfall, leaf wetness
- Find out when drying periods occur
 - After 4 hours of drying, PFD index resets to zero



Recommendation Disease Simulation Daily summary **Weather**

Loaded data!

Select a range of dates:

Begin date: 2018-01-21 End date: 2018-01-23 [Export data](#)

Date time	Temp (F)	RH (%)	Rain (inch)	Wet	LWD	Mean temp. (F)	PFD Index
2018-01-23 11:15	75.74	88.10	0.00	NO	15.75	67.31	0.209
2018-01-23 11:00	75.04	90.40	0.00	YES	15.75	67.31	0.209
2018-01-23 10:45	74.52	92.30	0.00	YES	15.50	67.19	0.205
2018-01-23 10:30	73.63	94.50	0.00	YES	15.25	67.07	0.202
2018-01-23 10:15	72.99	95.80	0.00	YES	15.00	66.96	0.198
2018-01-23 10:00	72.57	96.90	0.00	YES	14.75	66.85	0.195
2018-01-23 09:45	71.89	98.80	0.00	YES	14.50	66.76	0.191
2018-01-23 09:30	71.24	100.00	0.00	YES	14.25	66.67	0.188
2018-01-23 09:15	70.54	100.00	0.00	YES	14.00	66.58	0.184
2018-01-23 09:00	69.57	100.00	0.00	YES	13.75	66.51	0.181

238 total

1 2 3 4 5

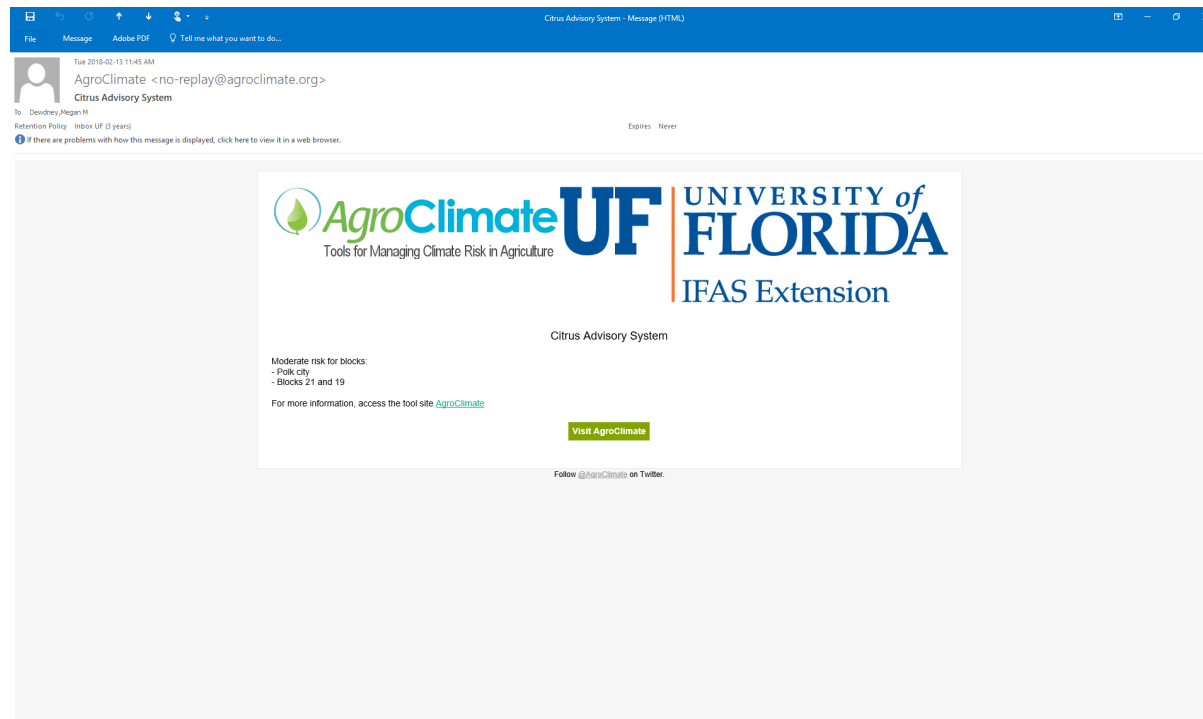
With an account

- Can mark specific blocks of interest
 - Map and satellite views
 - Use map to find block and satellite to mark
- Specific risk assessment for location



Will send alerts

- SMS alerts for each location
- E-mail notification
- Can choose both



Conclusions

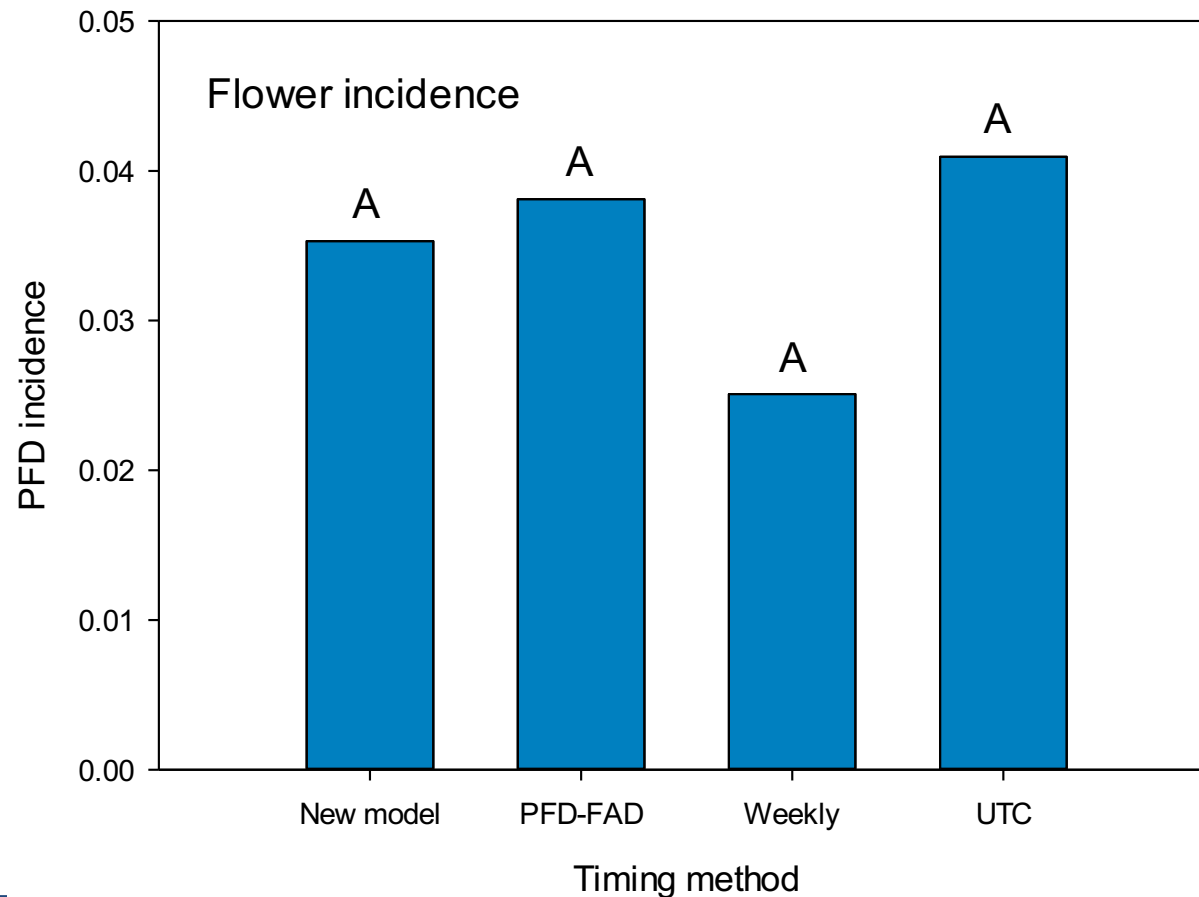
- New model was released in January for the 2018 PFD season
 - Fewer data inputs; easier to use
 - Login system should make block-by-block planning easier
- Working with programmer to detect and fix bugs
 - Expect occasional difficulties with program first year
 - Want your feedback on problems and ways to improve

How do application timings compare?

- Fort Meade grove in 2017
 - Valencia on Swingle with history of PFD
 - Headline at 15.5 fl. oz./acre
- Four timing treatments:
 - No applications
 - Weekly for three applications
 - March 8th, 15th, 22nd
 - PFD-FAD (fungicide application decision)
 - Two applications recommended on March 15th, 24th
 - New PFD model
 - No applications recommended

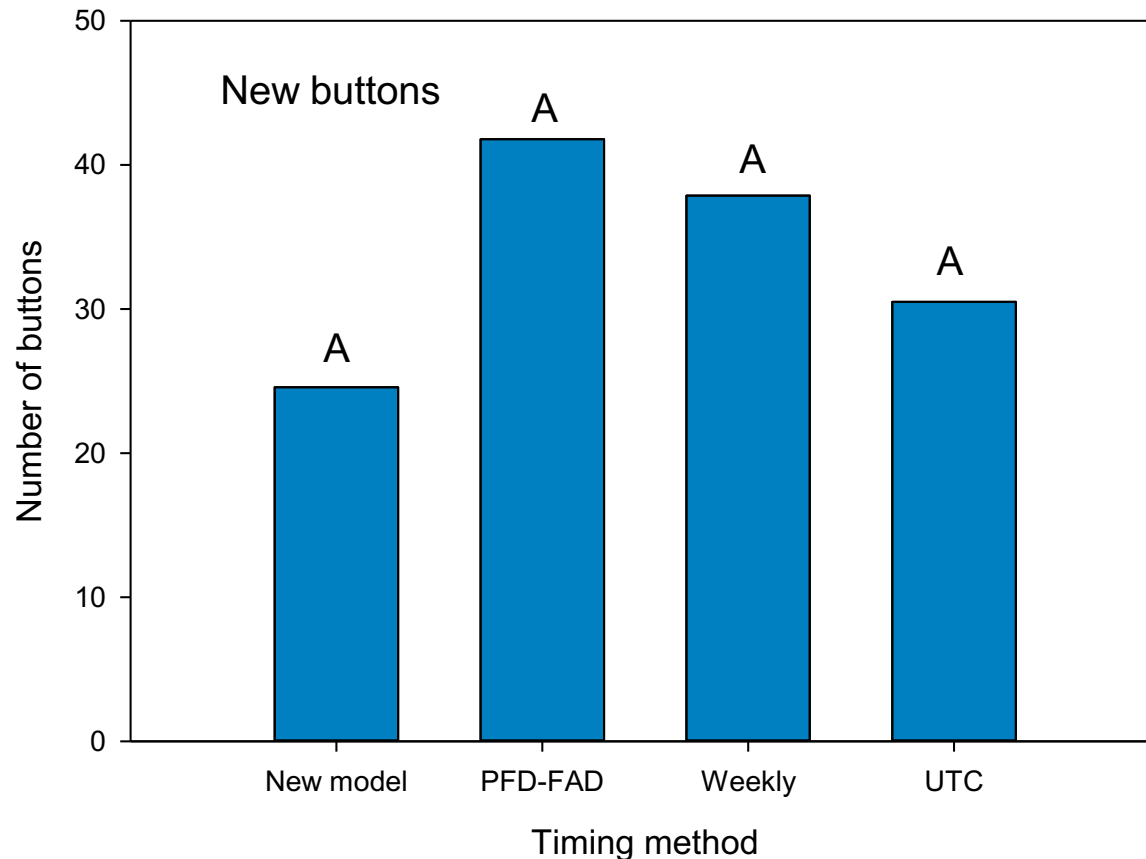
Flower incidence 2017

○ Data collected March 27th



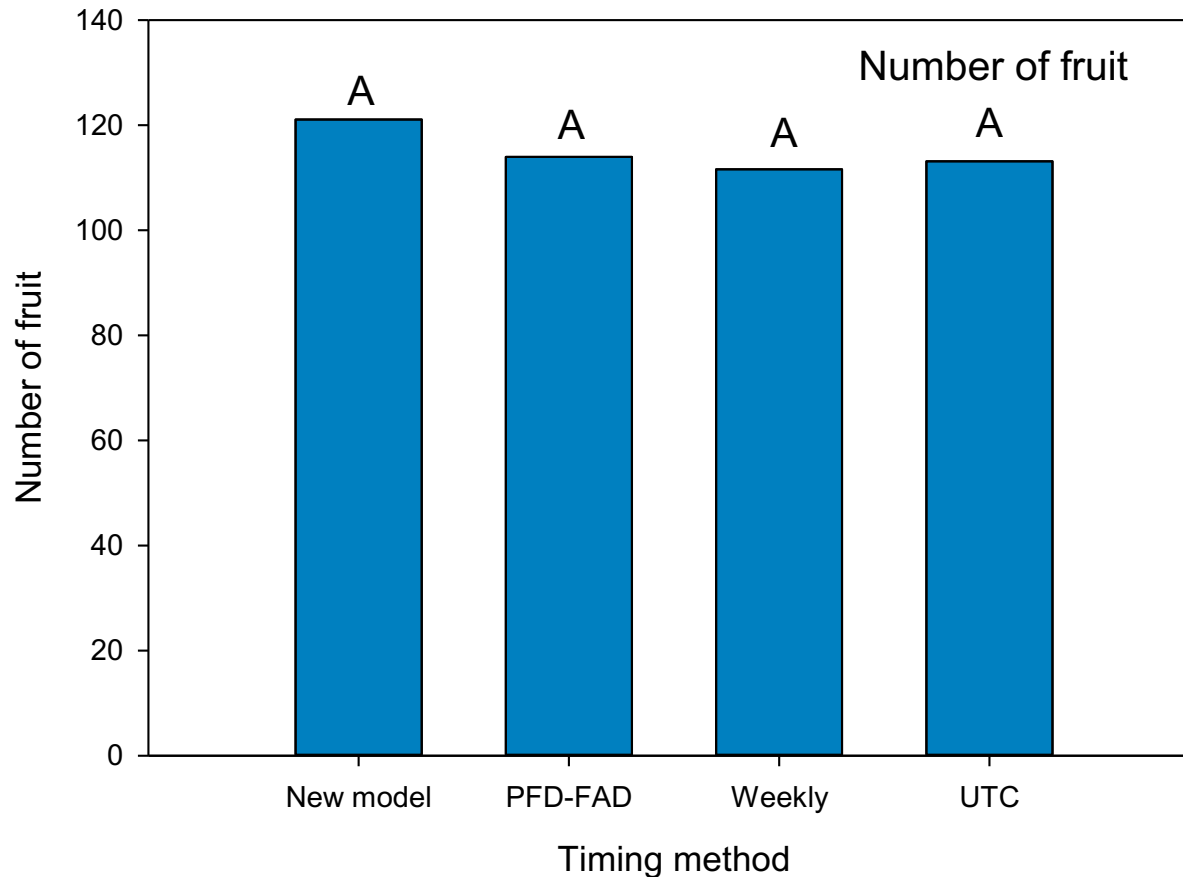
Post-application buttons 2017

- Button data collected June 8-9th



Number of fruit 2017

- Data collected July 20th

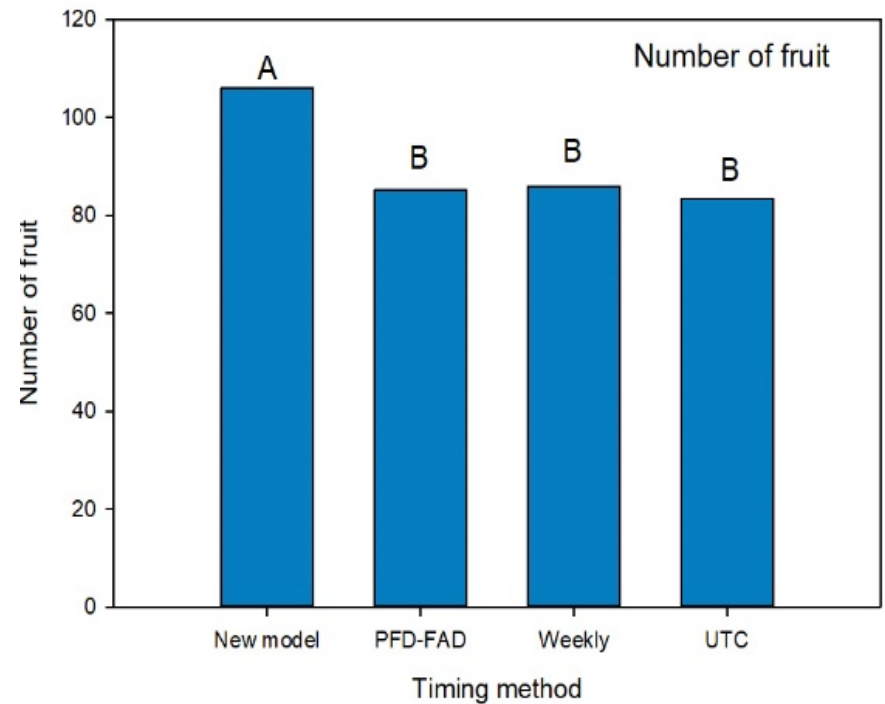
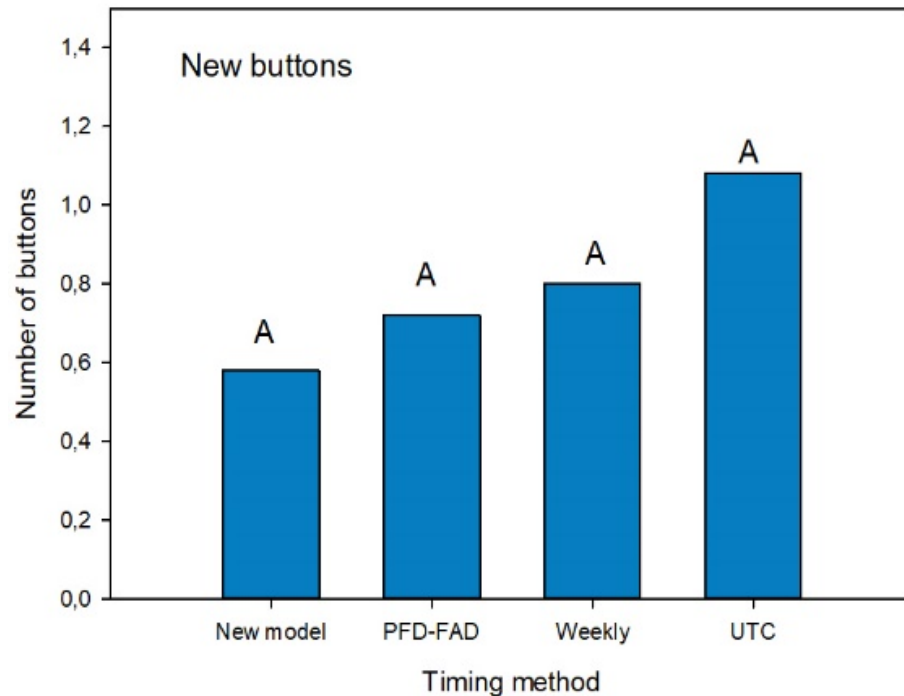


Application timings 2018?

- Fort Meade same as 2017
- Polk City grove
 - Navel on Swingle with history of PFD
 - Headline at 15.5 fl. oz./acre
- Four timing treatments:
 - No applications
 - Weekly for three applications
 - Feb 26th, March 5th, 13th Fort Meade
 - Feb 25th, March 5th Polk City
 - PFD-FAD (fungicide application decision)
 - Two apps recommended on Feb 26, March 7th Fort Meade
 - Two apps recommended on Feb 25th, March 7th Polk City
 - New PFD model
 - No applications recommended

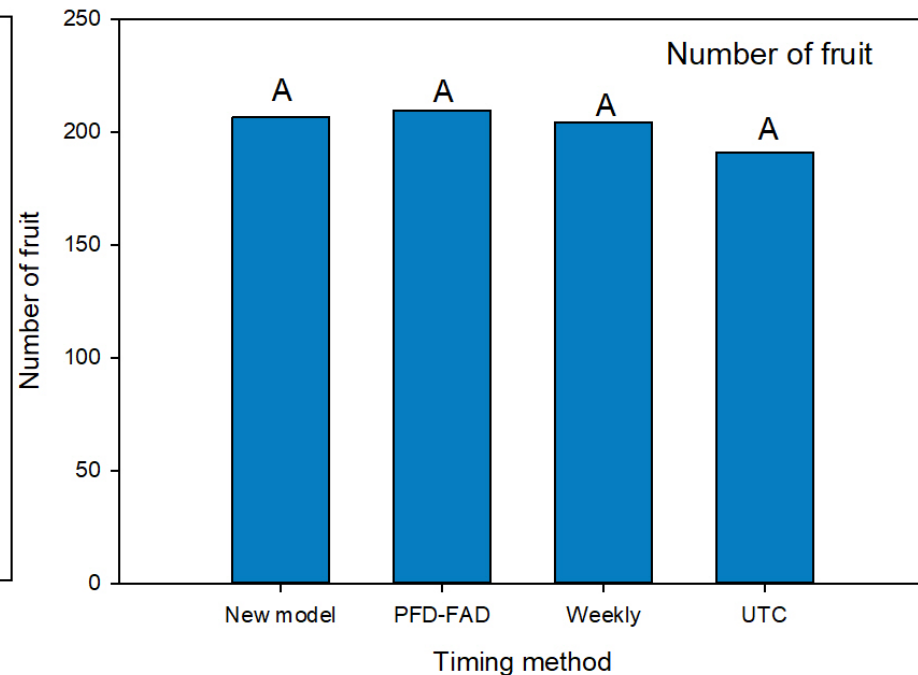
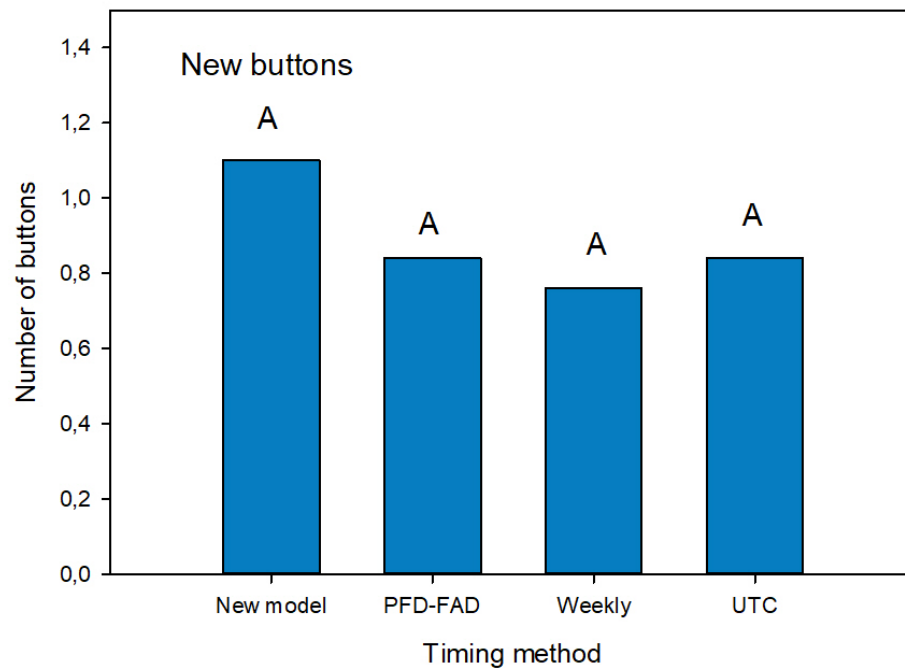
Polk City location 2018

- Data collected buttons: June 6
- Fruit: July 6



Fort Meade location 2018

- Data collected buttons: June 6
- Fruit: July 18



Model performance conclusions

- 2017 season had low PFD incidence
- New model did not recommend a spray
 - There were no disease intensity differences among treatments
 - Means that the ‘no application’ recommendation was correct
 - Cost savings of three applications compared to weekly applications
 - Repeating experiment in 2 locations in 2018
 - Validation is an important part of model design

Performance conclusions

- 2018 season was again light PFD year in Peace River
 - No applications predicted again correct outcome
 - No differences among treatments despite different number of applications
- In Polk City CAS treatment had significantly more fruit despite no treatments
 - No treatments again correct outcome
- Need a year with disease prediction to see if the positive predictions work as well

Acknowledgments

- Daniel Perondi
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- Funding sources:

Any Questions?

