

#### **COMPUTER SCIENCE** UNIVERSITY OF MARYLAND

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### Problem Definition



Pesticide information is often hard to find, forcing farmers to spend hours searching through documents just to find the information they need. When this information is not easily available, it leads to mistakes, overuse, and misuse of pesticides, harming their crops, the environment, and the farmers themselves. Farmers need easier access to pesticide information in an app that will help them plan and log their pesticide use while giving tips on how to cut down on their usage.















On the **Product Search page** users can search for pesticides to use, filtering by crop type, target pest, and organic products.

# Project PESTICIDES: AgriTrack

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# **Prototypes and Design Calculations**

Products

Our first models were created with drawings, allowing us to explore different workflows.

> Page ? = Products search Favorites Filter Product 1 Product 2 PSP

• We chose to code in Flutter due to its smooth UI, cross-platform, and fast development.

• Google Maps Flutter plugin allows interactive maps, so we could display farm locations. • The Pesticide Data team's database will provide

pesticide information that the app will display.

# Final Design

The **Product** 

Search	Favori
	F
Trade Name Mod	le of Action
Aprovia F	RAC 7
Aprovia Top F	RAC 7, 3

Each user's farm information and spray programs will be stored in a database hosted in a virtual machine so that users can log in from multiple devices.

• The app will download each user's spray program information for offline use.

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Deta	<b>ils page</b> has detailed	pesticide		The <b>Calc</b>	ulations Page helps
ludir	g safety and first aid	d information,	,	users know	v what they'll need fc
s, and	l tips for resistance r	nanagement.		their pes	sticide applications.
erss	← Blocks Selected:		Cuprofix Ultra 40 Dispe	erss PD	
S #	Block 3 05/02/25	Trade Na Active In	gredient Basic Copper Sulfate	perss e (CAS # 1344-7:	Selected Rate (qt/acre)
gram	Trade NameTotal WaterTotal ProductSelectionMastercop30.00595.008.50	Iected Rate     Targets       50     Date/Time	Basic Copper Sulfate 2025-04-23 16:00:00	e (CAS # 1344-7: .000	Gallons (gal/acre)
klist	04/28/25	Mode of Selected	Action N/A Rate 8.5		Tank Volume (gal)
irt and long	Trade NameTotal WaterTotal ProInspire Super®20.00255.00	8.50 Acreage	20.0 acres 5.0		Acres
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fate (CAS #	04/23/25 Trade Name Total Water Total	Product S			
%	Cuprofix Ultra 40 Disperss 10.00 255.0	8			Total Product (qt): 400.00
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~					Tanks: 15
~			dit Spray Calc	ulations	Product Per Tank (qt/tank): 26.00
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	On the <b>Spray Progr</b> ation their pesticide apple exported into a	<b>am page</b> user ications. Spra	f s can sch ay progra mer's rec	nedule out ms can be cords.	



Our next models had very basic page layouts so we could finalize workflow, page navigation, and what information to display.

 Farm
 Products
 Spray Program
 Calculations

 Image: Product state
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Our final models had more advanced page designs so we could finalize the layouts.

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Trade Names	Mode of Ac	tions REI ho	ours	Favorites	
		Add Filter			
Recents					
Mode Of Action	FRAC 7	Mode Of Action	IRAC 3A	Mode Of Ac	
Time MOA Applied	4	Time MOA Applied	2	Time MOA Ap	
REI	12 Hours	REI	8 Hours	REI	
PH	21 Days	PH	14 Days	PH	
Efficacy	****	Efficacy	****	Efficacy	
Benzovindiflupyr Aprovia		Beta cyfluthri	Captan		
		Baythroid	Capta		
Mode Of Action	FRAC 7,3	Mode Of Action	IRAC 3A	Mode Of Ac	
Time MOA Applied	0	Time MOA Applied	2	Time MOA Ap	
REI	12 Hours	REI	8 Hours	RE	
PH	21 Days	PH	14 Days	PH	
Efficacy	**	Efficacy	***	Efficacy	
Difenoconazole		Beta cyfluthri	Mefentr		
Aprovia Top		Baythroid	Cevya		

• We will develop a command-line interface tool for an admin to modify/view all account information.





#### Results

AgriTrack allows farmers easier access to clearer pesticide information. Farmers can use that information to plan out their pesticide usage with only the pesticides best suited for their farms. These features can help farmers reduce risk, maximize efficiency and productivity, and protect crops.

According to the NIH, 16% of US farmers have experienced an unintentional pesticide poisoning. We believe that the clear and accurate information that AgriTrack provides could cut that down by at least half.

The US uses over 1 billion pounds of pesticides per year, and we believe that with AgriTrack's unique capabilities, this app has the potential to noticably decrease the country's annual pesticide usage.







