

The Green Thumb Design Research

By: Becky McConnell, Timothy Childers, Colin O'Connell

Part 1: Design Research Summary

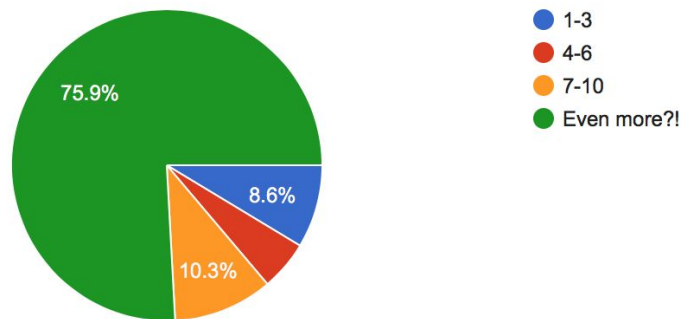
Data Collection Method 1: Questionnaire

We created an online survey for people who love plants. Our responses came from a variety of people who own house plants. The majority of our responses came from reddit and some from students. This survey was posted on both /r/samplesize, a subreddit for surveys, and /r/houseplants, a subreddit for people who love houseplants.

Over 75% of the people who filled out our survey own more than 10 plants.

How many Plants do you own?

116 responses



Pothos, snake plants, and zz plants seem to be very easy to take care of.

Which of your plants is easiest to take care of?

116 responses

Pothos (8)
Snake plant (4)
Succulents (3)
Zz plant (3)
Spider plant (3)
ZZ plant (2)
Spider plants (2)
Pothos (2)
Jade (2)
snake plant (2)
Pothos plants (2)
Aloe Vera (2)

People wanted to learn more about all kinds of plants.

Which plants do you want to know more about?

116 responses

All of them (4)
Hoyas (3)
succulents (3)
Carnivorous plants (2)
Orchids (2)
All of them (2)
Rubber tree (2)
Succulents (2)
All (2)
Philodendron
Maranta (Prayer Plant)
Calathea, ferns

From the findings already listed, we learned that the app needs to be well-organized, and plant information needs to be easily accessible.

We also got a list of features and information that people think would be nice to have for their plants. This will help us know what would be good to include in our app.

Becky, Colin, and Timothy all worked on the questionnaire and sent it out.

Data Collection Method 2: Individual Research

Each of us conducted online research for specific questions regarding plantcare in order to hear from experienced houseplant owners. These questions were more direct to allow us to come up with better questions for the Questionnaire. The resources we used included websites such as Quora and housekeeping magazines such as Bob Villa and Better Homes and Gardens. Listed below are some questions we researched.

- What plants are the easiest to take care of?
 - Pothos
 - Snake Plant
 - Jade Plant
 - Lucky Bamboo
 - Succulents
 - Cacti
 - Peace Lily
- Why are they easy to take care of?
 - Most commonly: Will survive drying out, or lack of watering
 - Low light
- What plants are the most difficult to take care of?
 - Flowering Plants
 - Orchids
 - Fiddle Leaf Fig
- What makes taking care of these plants so difficult?
 - Specific Needs
 - Light sensitivity
 - Temperature and Humidity sensitivity
 - Nutrients and PH
 - Pests
- What's the most important thing for new gardeners to learn about?
 - Learning the essentials of what a plant needs - Sun, water, plants, nutrients
- What would you say the easiest way to kill a plant is?

- The “easiest” way to kill a plant (unintentionally) is neglect - which can include under-watering, over-watering, and not providing the correct sunlight or soil environment.
- When it comes to taking care of plants, generally speaking, what’s the most important thing to keep in mind: sunlight, water, fertilization, soil type, soil chemistry, or something else? (by soil chemistry, I mean things like pH, calcium content, etc...)
 - Water intake is probably the most important thing to keep in mind for plant care, although sunlight and nutrients are close behind
- Out of that list, what’s the least important thing to keep in mind?
 - The least important is probably fertilization as water, sunlight, and good soil are its primary needs
- How important is the climate for certain plants over others?
 - It’s important for all plants- it just seems to be more important for plants that need humid air. House systems tend to circulate dry air in both the summer and the winter, so plants that thrive in dry air are easier to take care of. Mistifiers and humidifiers can be used, though, to help plants that prefer humid air.
- How important is it whether the plant is an indoor plant vs. an outdoor plant?
 - Most plants can be grown indoors, given the right conditions, but plants that like full sun can be harder than others to grow indoors. It’s fairly common to move potted plants indoors during the autumn and winter if they can’t survive it, but they do need to be acclimated properly.
- Do you have any other tips about taking care of plants?
 - Make sure they have the right amount of light and water- too much or too little can kill them.
 - Keep plants clean from dust, dead leaves/flowers, etc.
 - Avoid drafts
 - Watch for general problems- insects, mold, etc.
 - You can root and propagate some plants, like spider plants, strawberry begonia, and pothos
 - If you need to repot a plant to give it more room, spring or summer is the best time.
 - Deadheading and pruning is good to keep your plant healthy.
 - Fertilizing is good in moderation, but it can be hard to know how much, what kind, or what time to do it.

These results helped guide our questionnaire, but also allowed us to think of features our app may need that we wouldn’t have thought of before. For instance, knowing which plants can propagate from cuttings or about pruning, are things we didn’t consider.

Part 2: Group Reflection

After we conducted both research methods, we found that a lot of our findings matched up. Generally, the answers to the individual portion of research was the same as the answers we received in the questionnaire with little if any disagreement.

We found that people tend to have more than just a few plants. Our app needs to be well-organized and have easy ways to search and filter for plants to accommodate for this. Also, some people seemed to care a lot about having reminders, but others didn't feel the need for reminders, so they should be optional. Some also asked for a calendar to help keep track of watering and care. It would also be helpful to suggest plants to people based on their needs, such as sun, water, and humidity, as well as perceived difficulty to grow. This information, as well as if a plant is or isn't pet-safe, should be included in the plant's information page. Light and water seem to be the most important things for plant growth, so this info should be dominant on the page. Some people also wanted to track the progress of their plants' growth, so some sort of log feature could be appealing. A more difficult feature to implement, but one that would be very nice, would be an image recognition feature, where you take a picture of your plant and the app tells you what it thinks it is. Community features, such as troubleshooting and chats, would also be helpful and fun, but adding articles to help with troubleshooting would also be good.

The questionnaire was the most helpful, because we were able to gather a lot of information in a timely manner from a large group of people. Getting a lot of different opinions was also very nice- we had over 100 responses, so we could see a lot of diversity of opinion! On the other hand, research was more in-depth, but much harder to do.

We believe we collected sufficient data from both research methods in order to begin designing a useful application. However, further research will be needed regarding layout and design to better suit the needs of its users.

We met two times- first, to discuss our research methods, we met on 10/23 at 5PM in the Norlin Library. All members were there. We agreed to work together on making and sending out a questionnaire to gather data, and we also agreed to do some standard research on the web- we were all very busy with exams and work, and other methods of observation would be hard to do with our topic. We met again on 10/26 at 9AM (due to our recitation being canceled) to discuss our findings. Becky and Timothy were there. We discussed the results of the survey so far, and wrote up notes for the group reflection.

Part 3: Appendix

Questionnaire Google Form:

https://docs.google.com/forms/d/e/1FAIpQLScsqatwOhw8utzP0VgEJZEI99MwFZo9pSJT_YXwykw5zh2tZw/viewform?usp=sf_link

Online Resources:

- <https://greatist.com/connect/beginners-guide-to-gardening>
- <https://www.proflowers.com/blog/12-ways-you-kill-your-houseplants>
- <https://www.hunker.com/13427956/5-things-a-plant-needs-to-survive>
- <http://planttalk.colostate.edu/topics/houseplants/1317-houseplants-temperature-humidity/>
- <https://www.bhg.com/gardening/houseplants/care/tips-for-moving-plants-indoors/>
- <https://www.hgtv.com/outdoors/flowers-and-plants/houseplants/houseplant-care-8-keys-to-success>
- <https://www.bhg.com/gardening/houseplants/care/houseplant-care-guide/>

Questionnaire Results Screenshots

102 responses

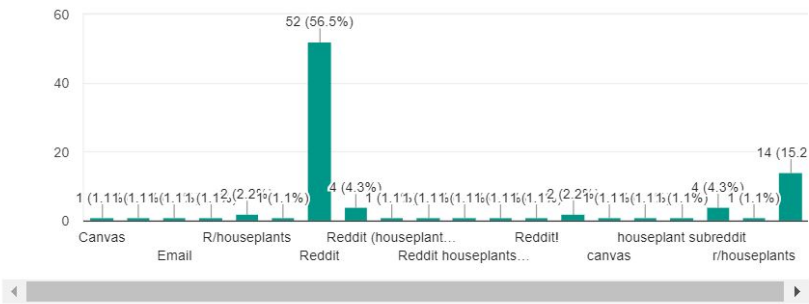


SUMMARY INDIVIDUAL

Accepting responses ☒

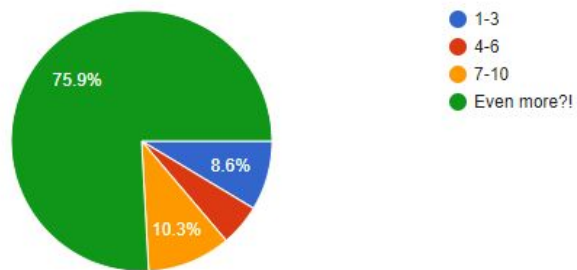
Where did you get this survey link from? (optional)

92 responses



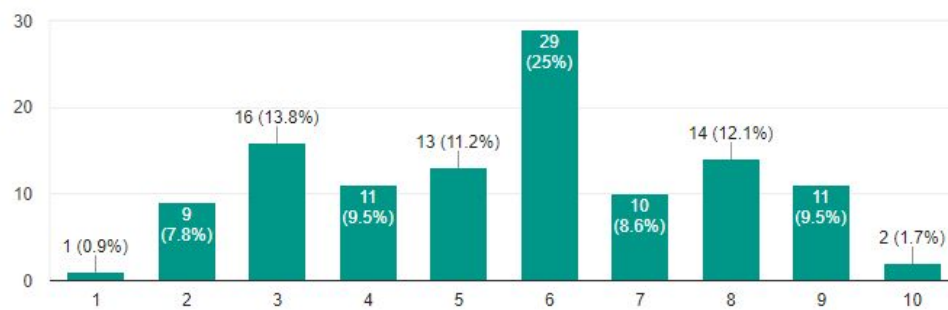
How many Plants do you own?

116 responses



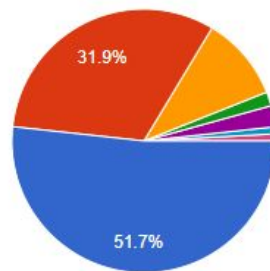
On a scale of 1-10, how experienced of a gardener are you?

116 responses



How many hours per week do you spend caring for your plants?

116 responses



- 0-2
- 3-5
- 6-8
- 9-11
- 12+
- In winter maybe 2 h in summer much more because they need more water and fertilisation.
- Depends on the season...probably 8 for the summer but 1 for the winter.

Please list what plants you own:

116 responses

So many
Fiddle leaf fig
Rubber tree
Dragon tree
Umbrella tree (2)
Jade (2)
Burro's Tail
UFO plant
Ponytail palm (2)
Various succulents (10)
Snake plant (3) (2)

Pothos, snake plants, prayer plants, ivy, tree ivy, arrowhead plant, rubber tree, I think that's all

What is your favorite plant?

116 responses

Prayer plant (2)
Snake plant (2)
Jade (2)
Pothos (2)
I can't choose!
Dracaena Lemon Lime
Plumosa fern or philodendron selloum
Citrus trees
Rhynchorides Bangkok Sunset
ZZ plant
Monstera
I love my Chinese Evergreen and pothos plants.

Which of your plants is easiest to take care of?

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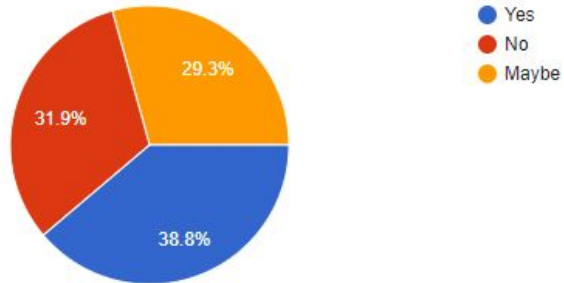
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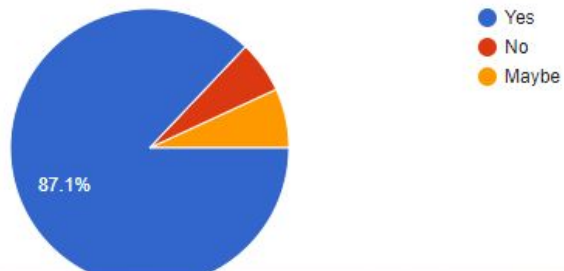
Would you find it to be helpful to have reminders for taking care of your plants?

116 responses



Would you find it to be helpful to have an app with a knowledge base on a wide variety of plants?

116 responses



What kind of features would you want in a mobile app for plant care reminders combined with a knowledge base?

116 responses

Seasonality plus reminders (2)	▲
An easy way to identify plants	
Allow me to log my care routines and then for it to make a care sheet I can leave for a plant-sitter.	
User generated tips, details on soil, watering schedules, growth trackers	
None- frankly I do not have a need for this	
Accurate cultural info (humidity % and temperature ranges, medium recommendations)	
Plant recommendations based on varieties I have currently, plant recommendations based on the lighting I have, care tips	
-Scientific name -Temperature and light requirements -Soil requirements -An ID function that works like an identification book ie: does it have a central stalk? Yes: flip to p. 5, No: flip to p. 106. Does it have serrated leaves? Yes: flip... And so on until you've narrowed down the possibilities. (In my experience, the 'take a picture of you succulent and the app will ID it' thing almost never works and I'm so tired of people asking Reddit communities for an ID)	
Seasonal care, watering levels per pot size, types of soil	▼

In your opinion, what is the most important aspect of plant care?

116 responses

Watering (3)	▲
Light (3)	
Watering (2)	
Patience! (2)	
watering (2)	
not killing it (2)	
Watering frequency	
Understanding when to water.	
Sunlight. 😊	
Observational skills- identifying a problem in the early stages	
Watering/fertilizing regimen	
That the plant is healthy and happy!	▼