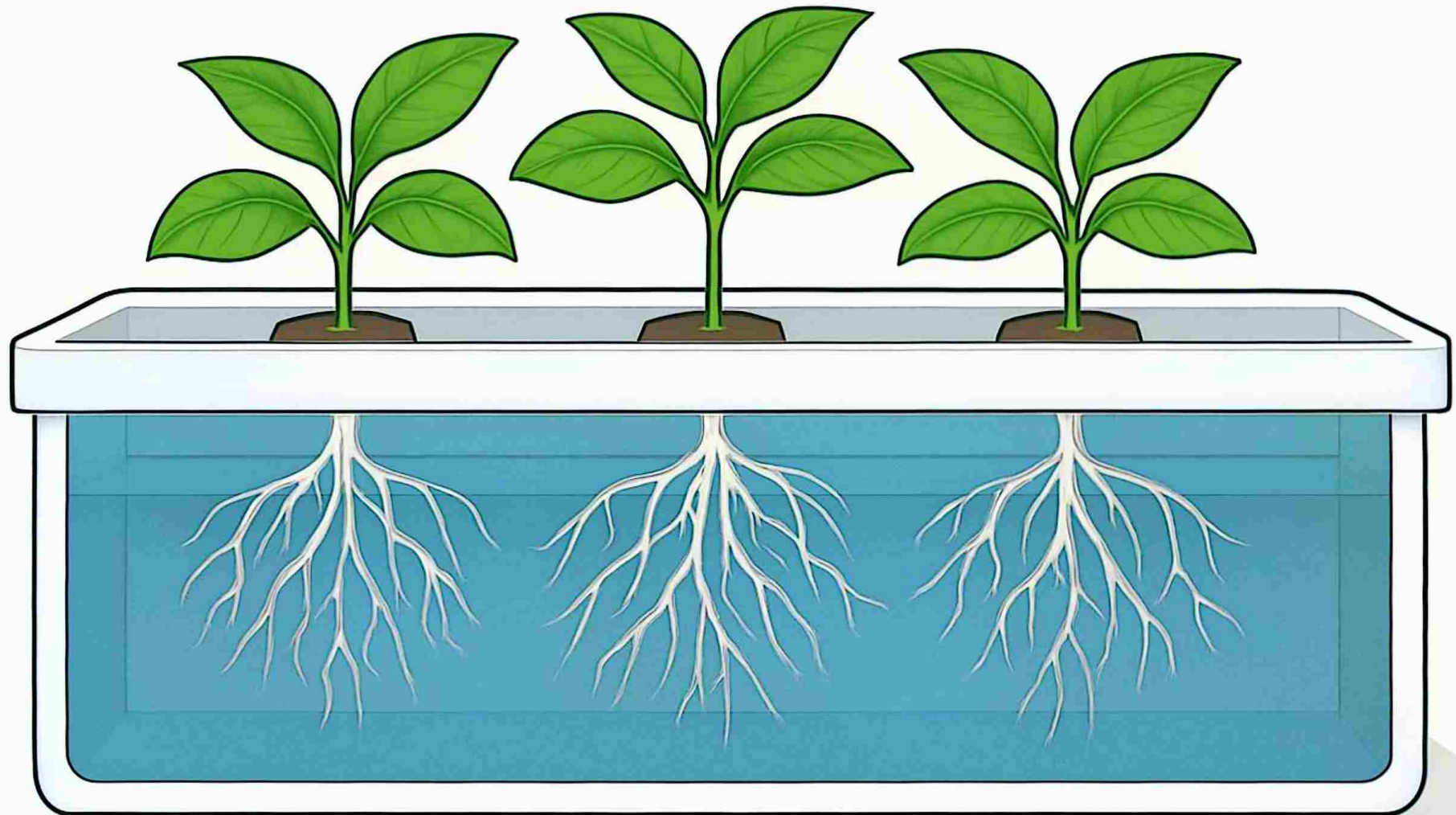


AQUA ROOTS

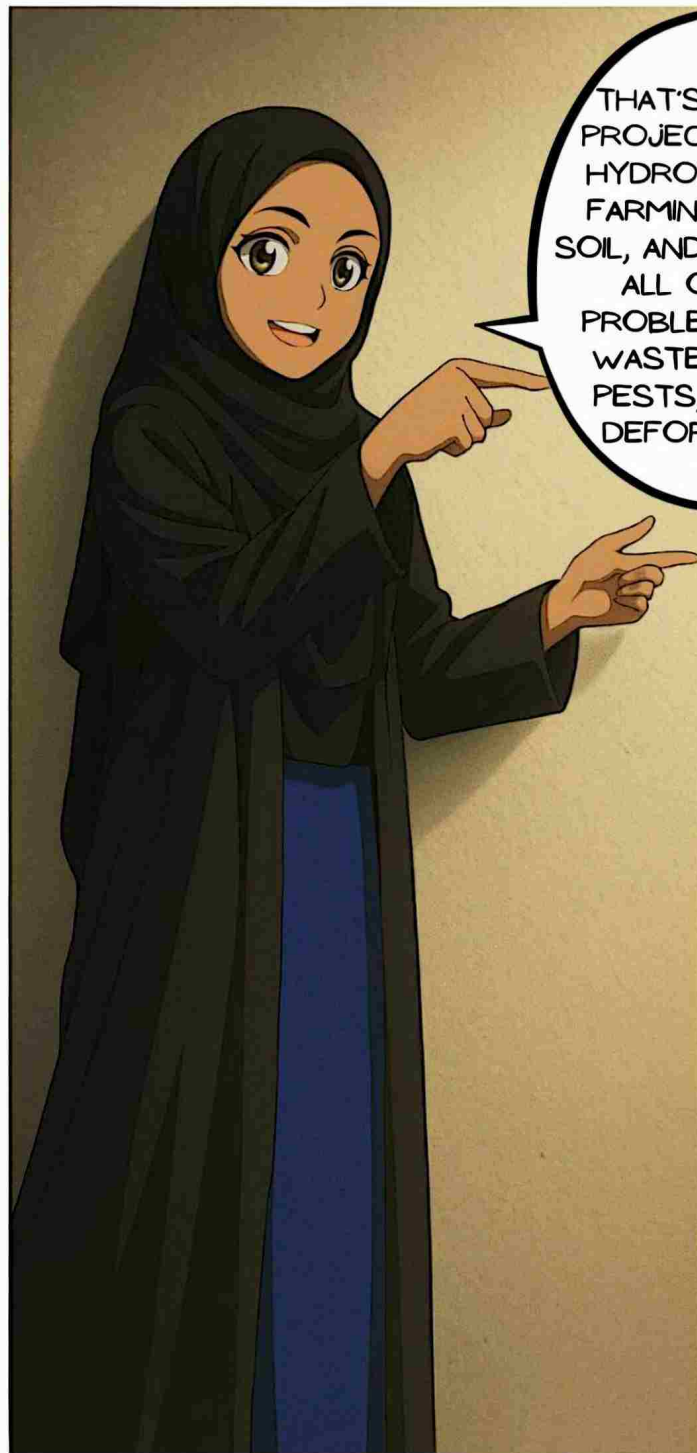






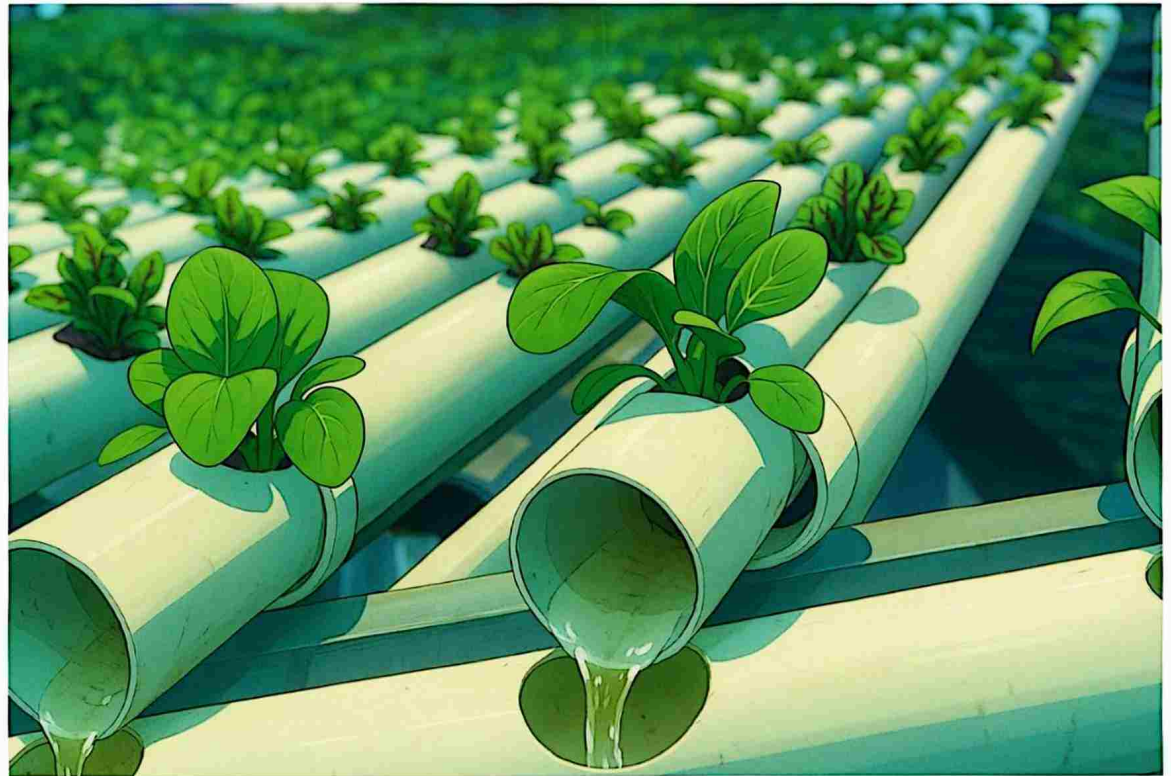
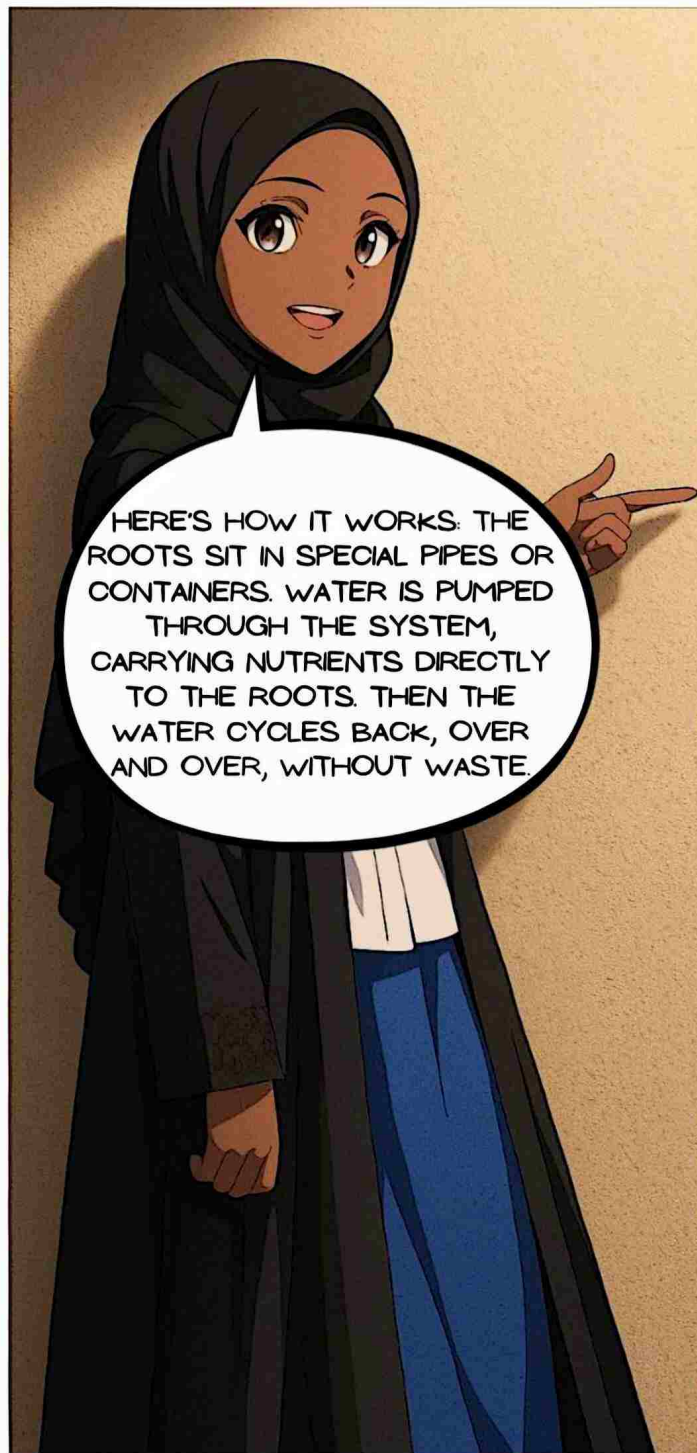
SOIL CAN BE
WEAK, DRY, OR
FULL OF PESTS.
FARMERS ADD
CHEMICALS, BUT
THOSE HARM
PEOPLE AND
NATURE.

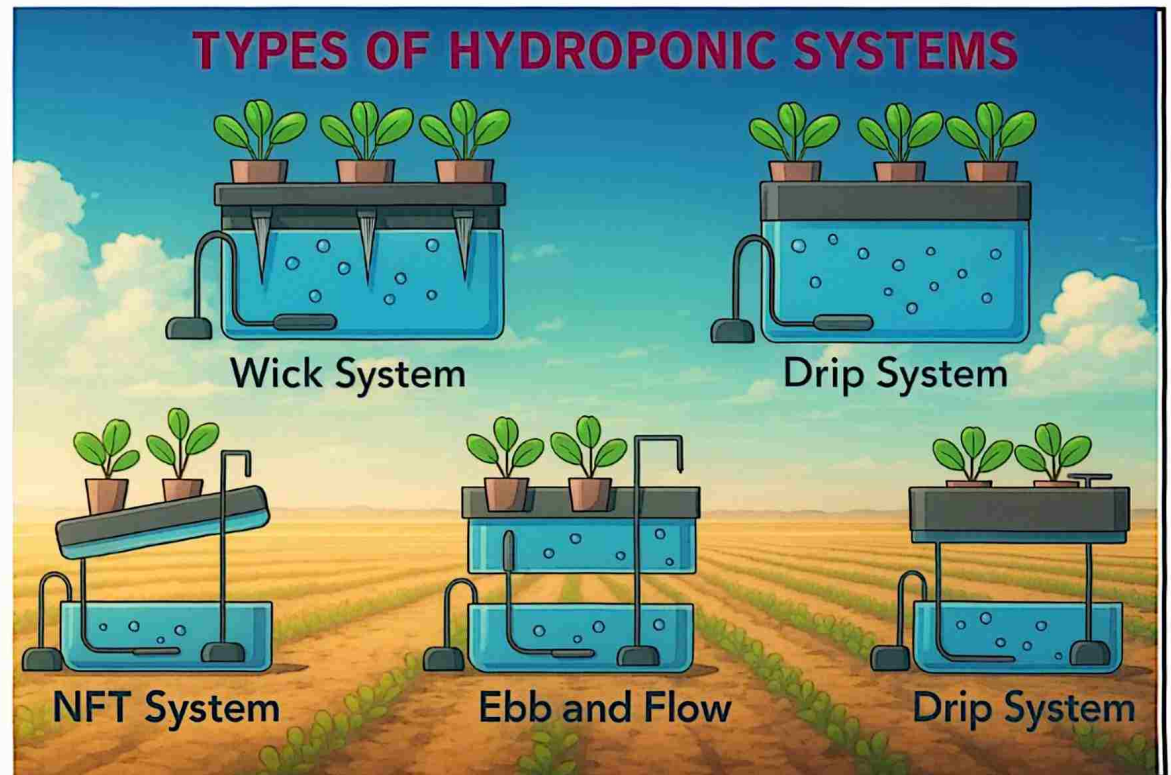
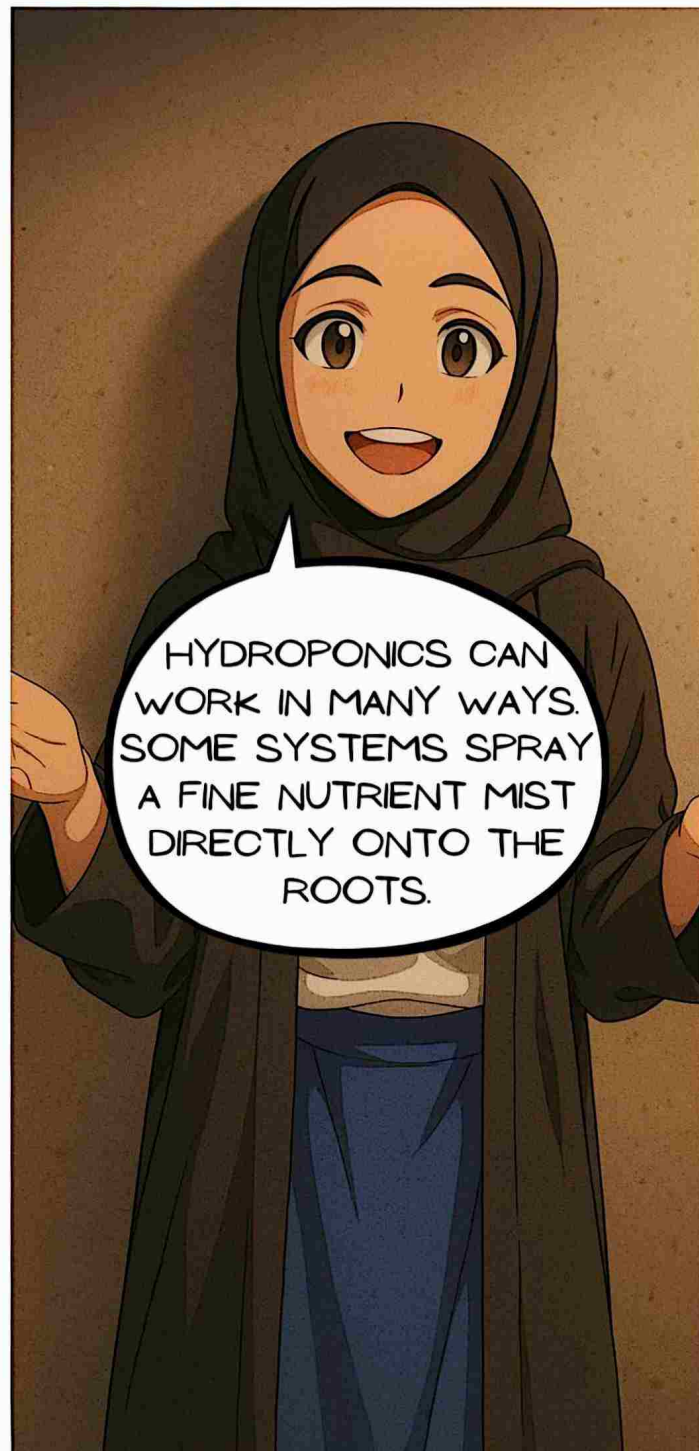




THAT'S WHY OUR
PROJECT IS ABOUT
HYDROPONICS. IT'S
FARMING WITHOUT
SOIL, AND IT ANSWERS
ALL OF THESE
PROBLEMS, WATER
WASTE, BAD SOIL,
PESTS, AND EVEN
DEFORESTATION.

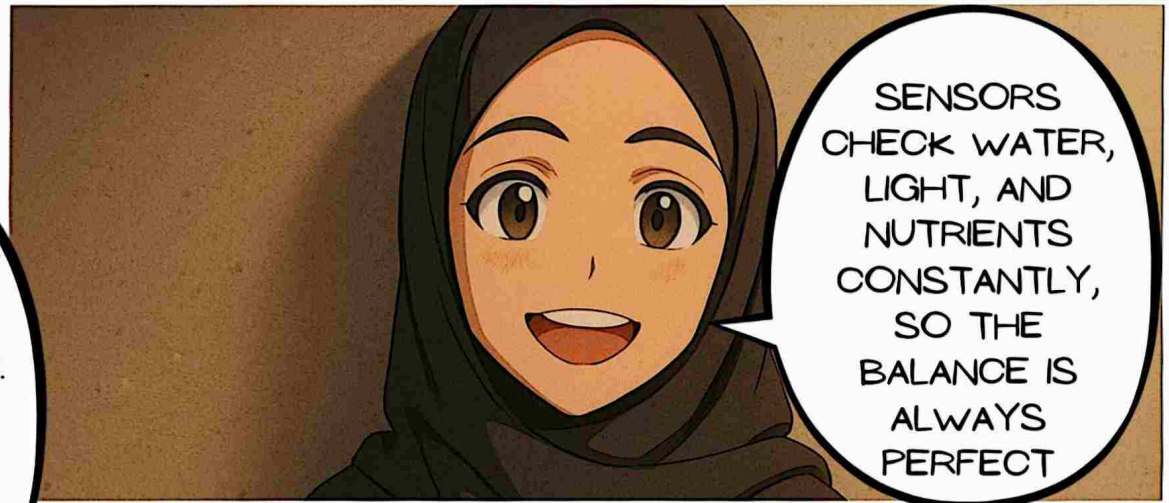




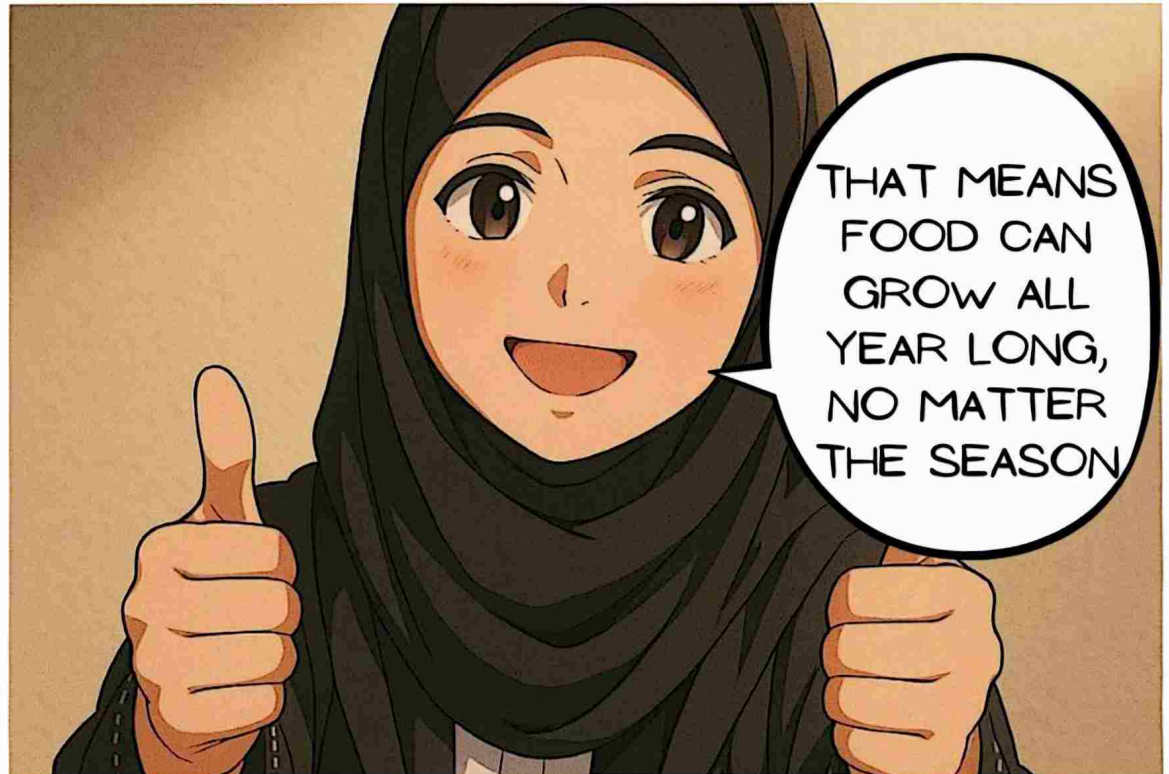




PLANTS DON'T
DEPEND ON
THE WEATHER.
LED LIGHTS
REPLACE
SUNLIGHT
WHEN NEEDED



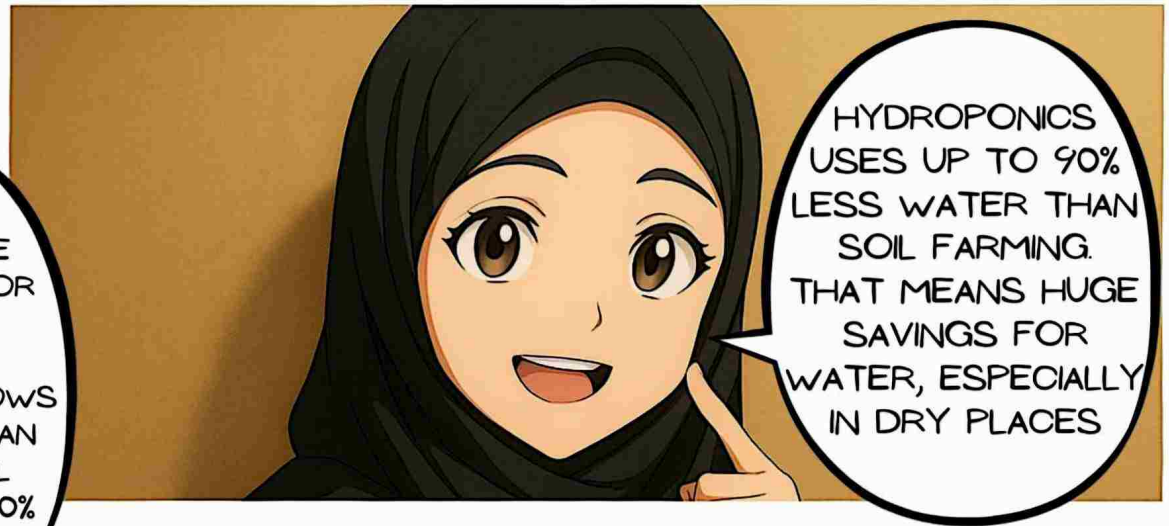
SENSORS
CHECK WATER,
LIGHT, AND
NUTRIENTS
CONSTANTLY,
SO THE
BALANCE IS
ALWAYS
PERFECT



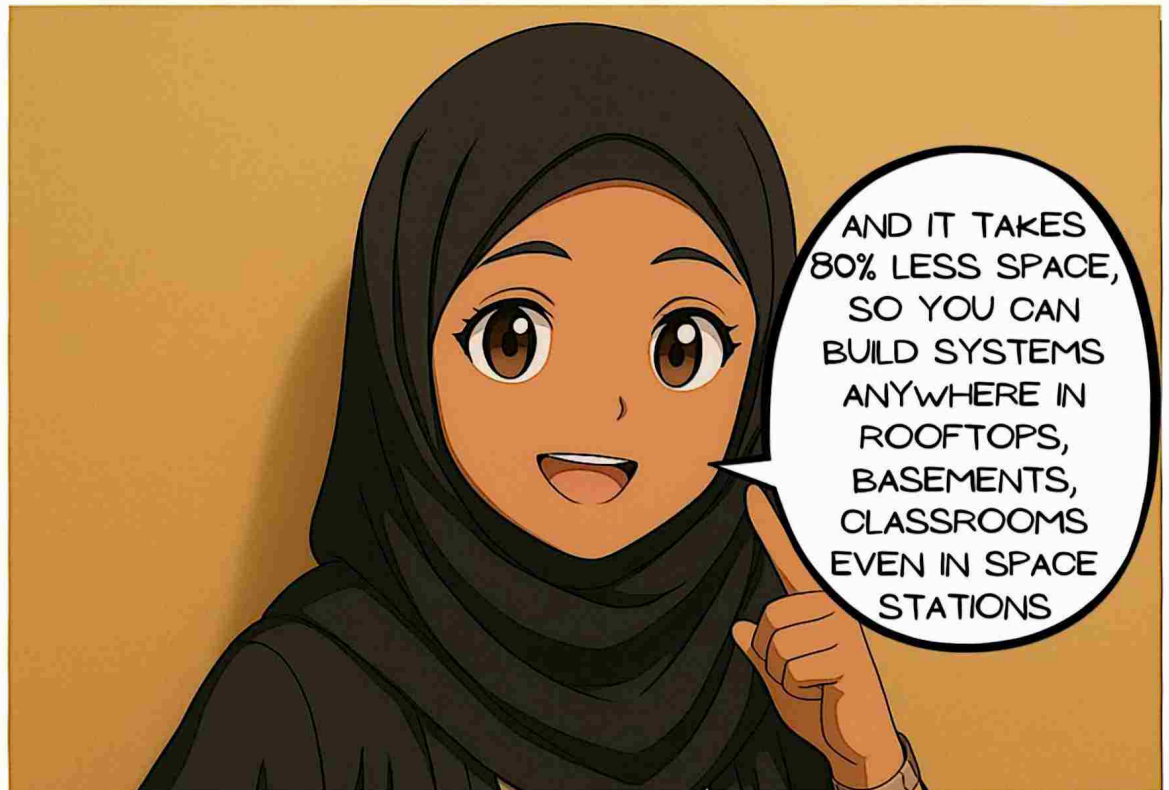
THAT MEANS
FOOD CAN
GROW ALL
YEAR LONG,
NO MATTER
THE SEASON



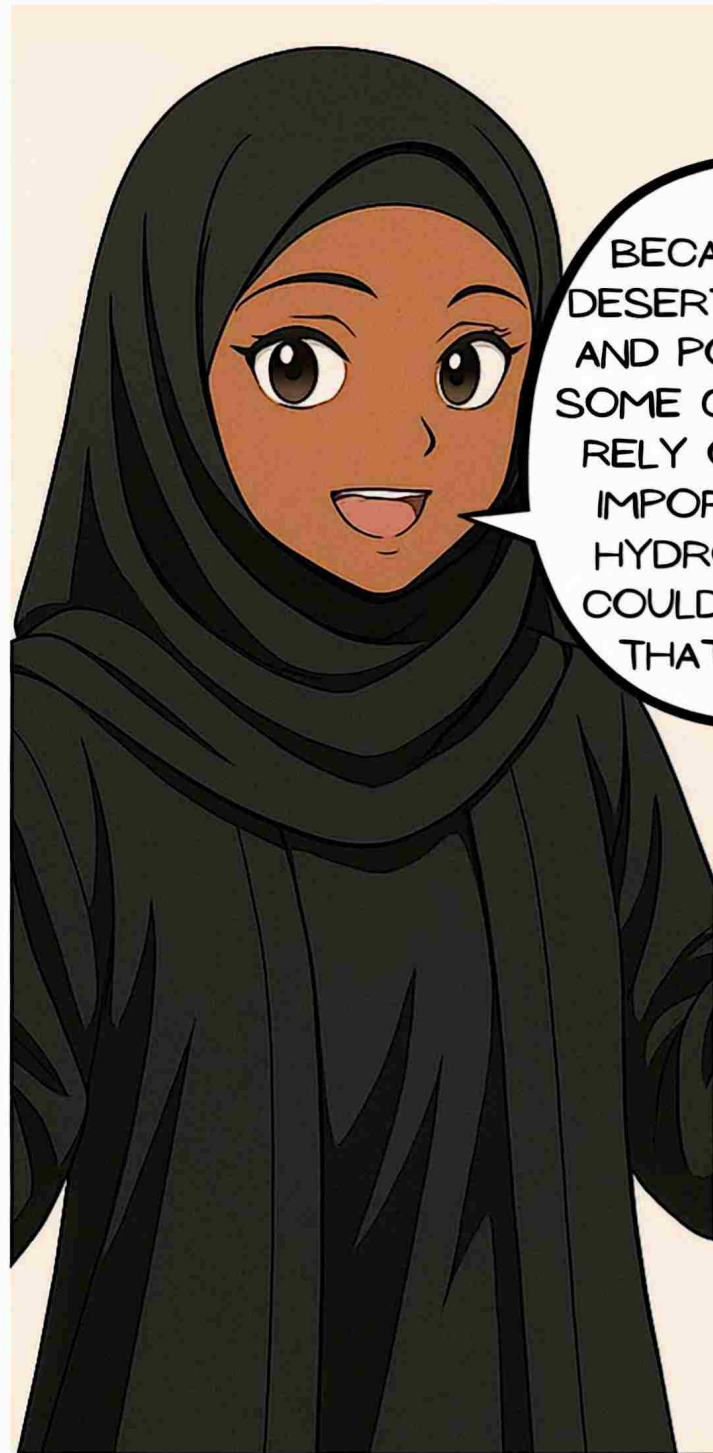
AND TO PROVIDE
ENOUGH FOOD FOR
THE GROWING
POPULATION
HYDROPONICS GROWS
FOOD FASTER THAN
THE TRADITIONAL
FARMING BY 30-50%



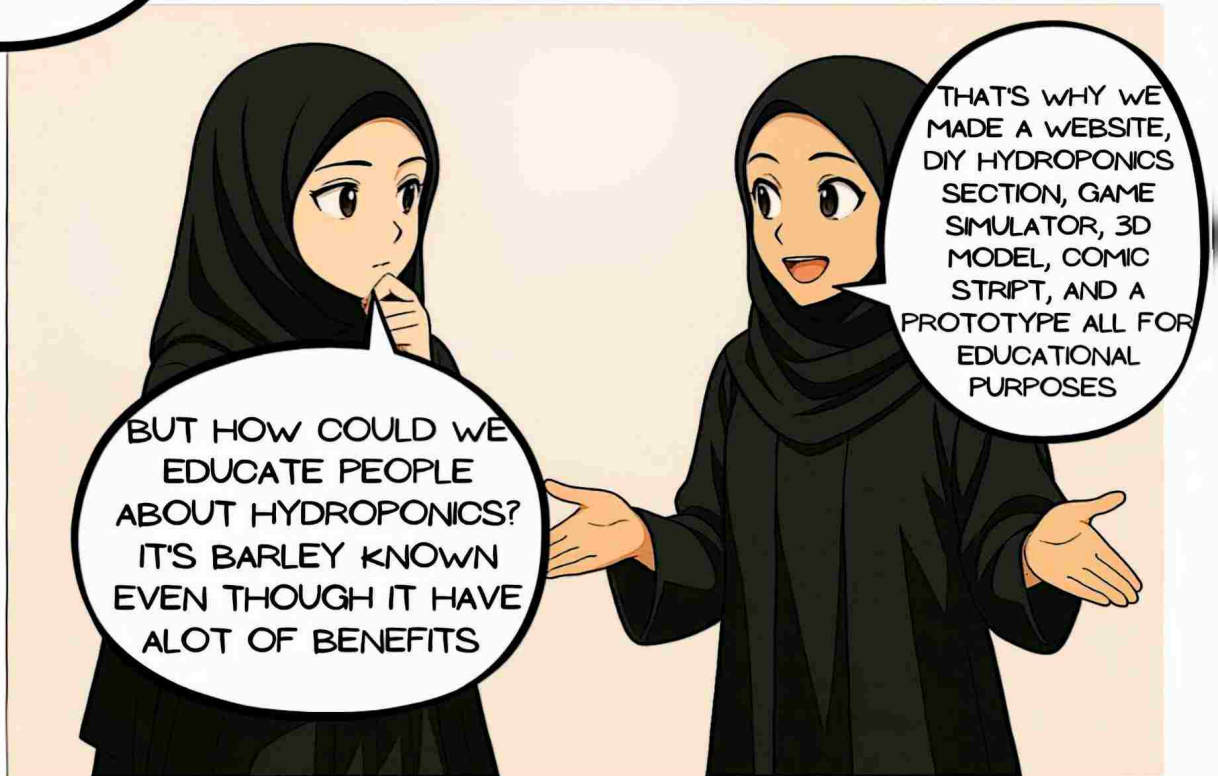
HYDROPONICS
USES UP TO 90%
LESS WATER THAN
SOIL FARMING.
THAT MEANS HUGE
SAVINGS FOR
WATER, ESPECIALLY
IN DRY PLACES



AND IT TAKES
80% LESS SPACE,
SO YOU CAN
BUILD SYSTEMS
ANYWHERE IN
ROOFTOPS,
BASEMENTS,
CLASSROOMS
EVEN IN SPACE
STATIONS



BECAUSE OF
DESERT CLIMATE
AND POOR SOIL,
SOME COUNTRIES
RELY ON FOOD
IMPORTS, BUT
HYDROPONICS
COULD REDUCE
THAT NEED



BUT HOW COULD WE
EDUCATE PEOPLE
ABOUT HYDROPONICS?
IT'S BARLEY KNOWN
EVEN THOUGH IT HAVE
ALOT OF BENEFITS

THAT'S WHY WE
MADE A WEBSITE,
DIY HYDROPONICS
SECTION, GAME
SIMULATOR, 3D
MODEL, COMIC
STRIPT, AND A
PROTOTYPE ALL FOR
EDUCATIONAL
PURPOSES



IN THE WEBSITE
WE'VE ADDED ALOT
OF SECTIONS SO
PEOPLE COULD
BENEFIT FROM IT AS
MUCH AS THEY CAN
AS WELL AS WE
ADDED AN
INTERACTIVE GAME TO
MAKE LEARNING
ABOUT HYDROPONICS
MORE FUN!

What is Hydroponics?

Hydroponics is a method of growing plants in water enriched with nutrients. It meets the needs directly to the plants, and the technique promotes the efficient use of resources and large-scale farming.

WE'VE EXPLAINED HYDROPONICS SYSTEMS AND ITS PROS AND CONS IN THE WEBSITE. ALSO WE'VE ADDED Q&A AI ASSISTANT AND A DIY HYDROPONICS SO PEOPLE COULD TRY IT AT HOME IN AN EASY WAY

VISIT OUR WEBSITE AT
[WWW.HYDROPONICSFM.COM!](http://WWW.HYDROPONICSFM.COM)

FM EcoHarvest — Hydro Game

\$120 Balance Day 1

Water 60% Nutrients 60%

pH level 6.5 Light Day

Status
Welcome: Click a slot in the center to plant.

Quests
Harvest 3 lettuce to earn \$50

Claim

Achievements

Rookie Grower

Build something real. Grow with science

YOU'VE GOT A SHOP IN THE GAME WHERE YOU COULD BUY SEEDS THEN PLANT THEM AND TAKE CARE OF THEM, AFTER HARVESTING THEM YOU'LL GET MORE COINS TO BUY SEED AS WELL AS TRYING TO CONTROL THE WATER PUMP AND PH LEVELS IN THE WATER. YOU COULD ALSO UPGRADE YOUR TOOLS!

Controls
Manage your system

Autosave /

Pump: 1 Reservoir: Stable PH adjuster ready

Tip: keep pH between 5.8-6.5 for most greens → slow growth

System Log

Live

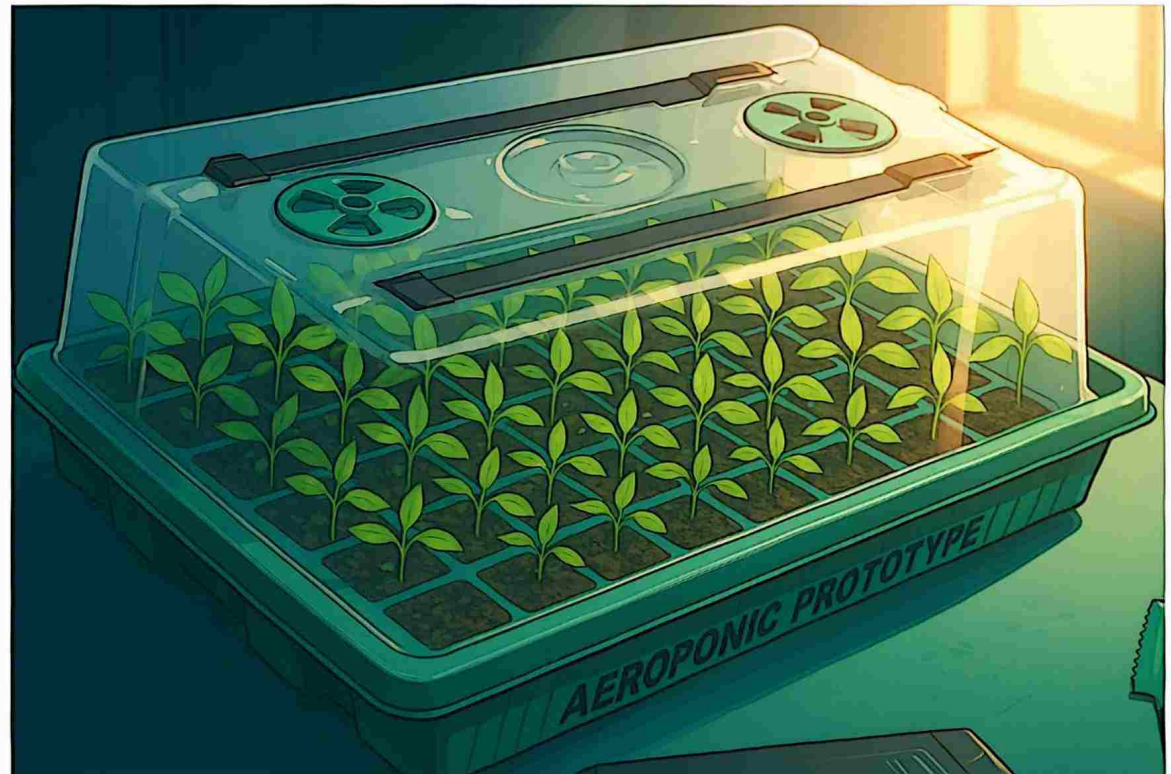
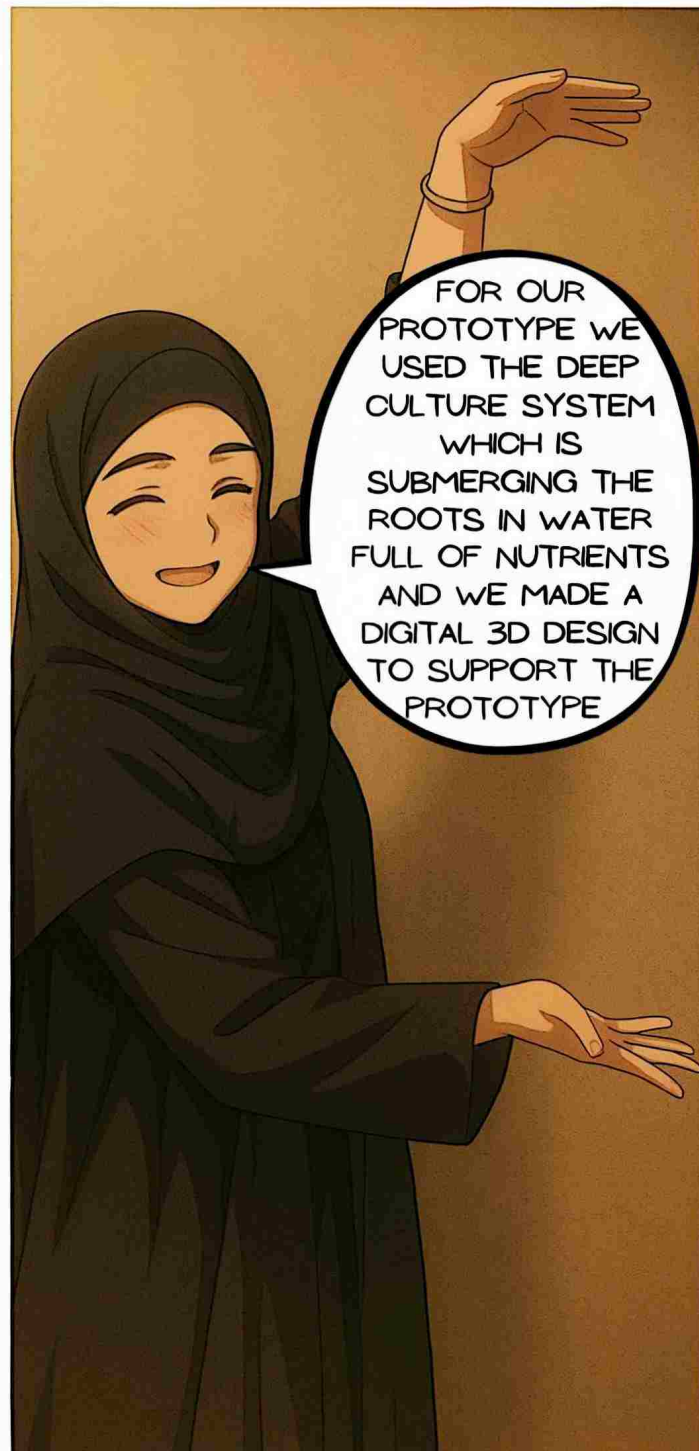
Shop

Buy seeds, ru

Inventor

Upgrade

Upgrade



FOR THE CODING PART WE USED HTML, CSS, AND JAVASCRIPT FOR THE WEBSITE AND THE GAME, BUT FOR OUR PROTOTYPE WE USED ARDUINO TO ADJUST THE WATER PUMP.

```
void loop() {
```

```
// تشغيل الريلاي لمدة 10 ثوانٍ
```

```
digitalWrite(relay, HIGH);
```

```
delay(10000); // تأخير لمدة 10 ثوانٍ
```

```
// إيقاف الريلاي
```

```
digitalWrite(relay, LOW);
```

```
delay(300000); // تأخير لمدة 5 دقائق (300000 مللي ثانية)
```

```
315 function $id(q){return document.getElementById(q)}
316 function renderUI(){
317   $id('money').innerText = game.money;
318   $id('moneyMeter').style.width = Math.min(100, game.money/2) + '%';
319   $id('waterMeter').style.width = game.water + '%';
320   $id('nutrMeter').style.width = game.nutrients + '%';
321   $id('waterCnt').innerText = Math.round(game.water) + '%';
322   $id('nutCnt').innerText = Math.round(game.nutrients) + '%';
323   $id('phVal').innerText = parseFloat(game.ph).toFixed(1);
324   $id('day').innerText = game.day;
325   $id('dayMeter').style.width = Math.min(100, game.dayTime) + '%';
326   $id('lightState').innerText = game.dayTime < 50 ? 'Day' : 'Night';
327   $id('pumpLvl').innerText = game.pumpLevel;
328   $id('plantedCount').innerText = game.slots.filter(s=>s.plant).length;
329   $id('resTxt').innerText = game.tankSize > 150 ? 'Large' : (game.tankSize>100 ? 'Medium'
330   $id('inv').innerHTML = '';
331   // inventory UI
332   for(const s in game.inventory.seeds){
333     const count = game.inventory.seeds[s][0];
334     const item = document.createElement('div');
335     item.className='shop-item';
336     item.innerHTML = `<div>${game.plantsDef[s].name} seeds <div class="small">x${count}</div>
337     <div><button class="btn" data-buy="${s}">Plant</button></div>`;
338     $id('inv').appendChild(item);
339     item.querySelector('[data-buy]').addEventListener('click',()=>plantFromInv(s));
340   }
341   // shop
342   const shop = $id('shop');
343   shop.innerHTML = '';
344   const store = [
345     {id:'lettuceS', name:'Lettuce seeds (x3)', seed:'lettuce', price:12, qty:3},
346     {id:'basilS', name:'Basil seeds (x2)', seed:'basil', price:22, qty:2},
347     {id:'nut', name:'Nutrient pack', price:30, give:{nutrient:1}},
348     {id:'seedpack', name:'Surprise Seed Box', price:45, give:{seeds:{lettuce:1,basil:1}}},
```