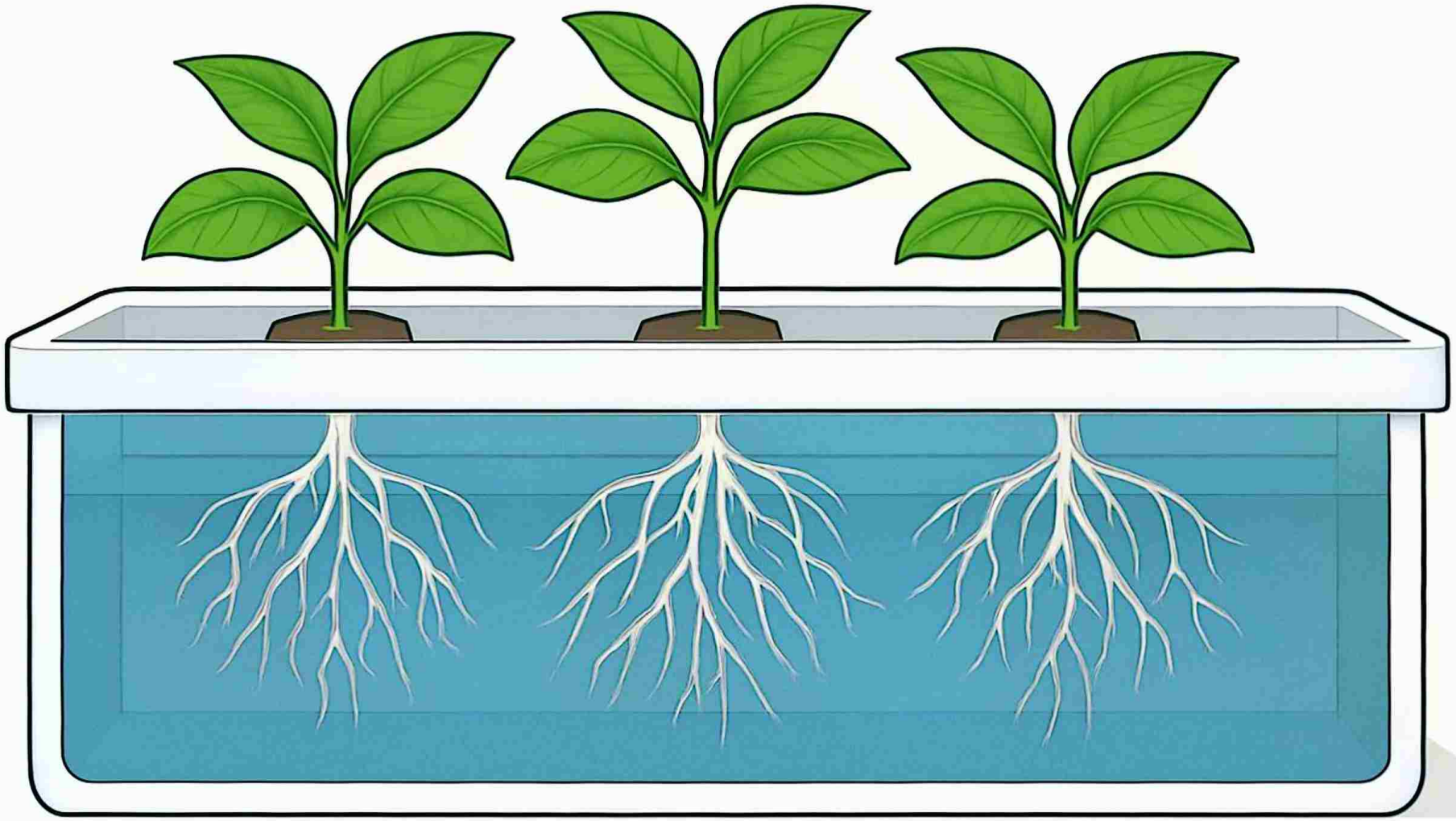
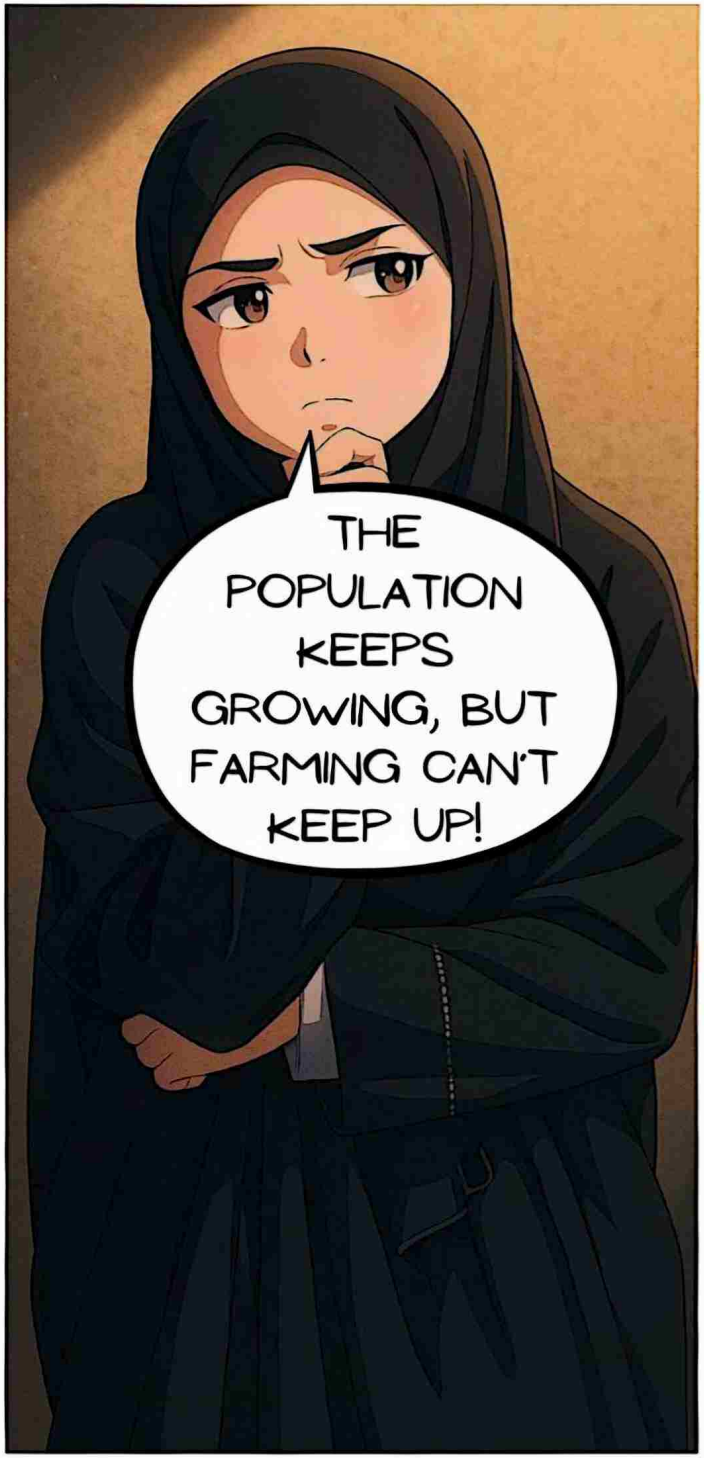
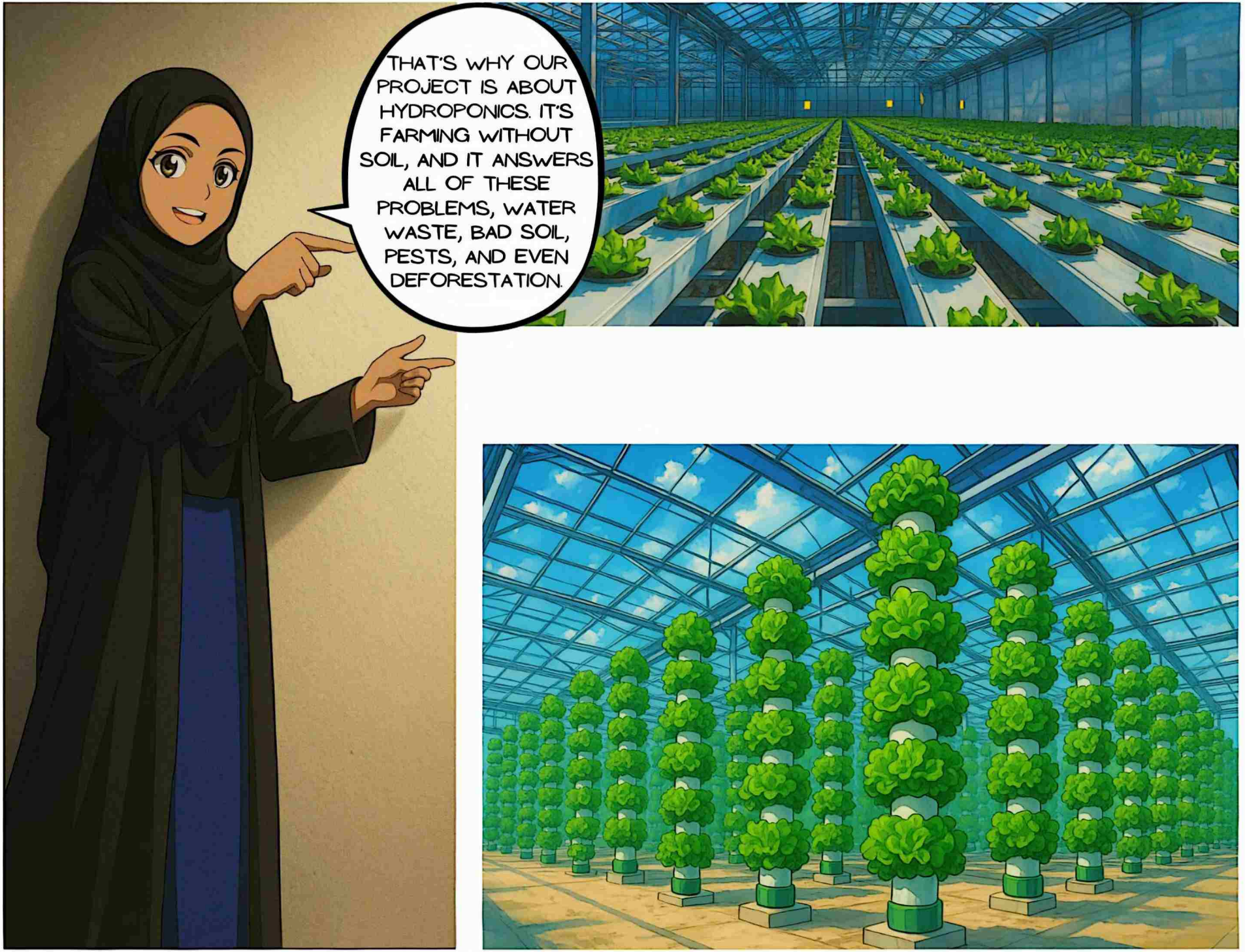
AQUA ROOTS

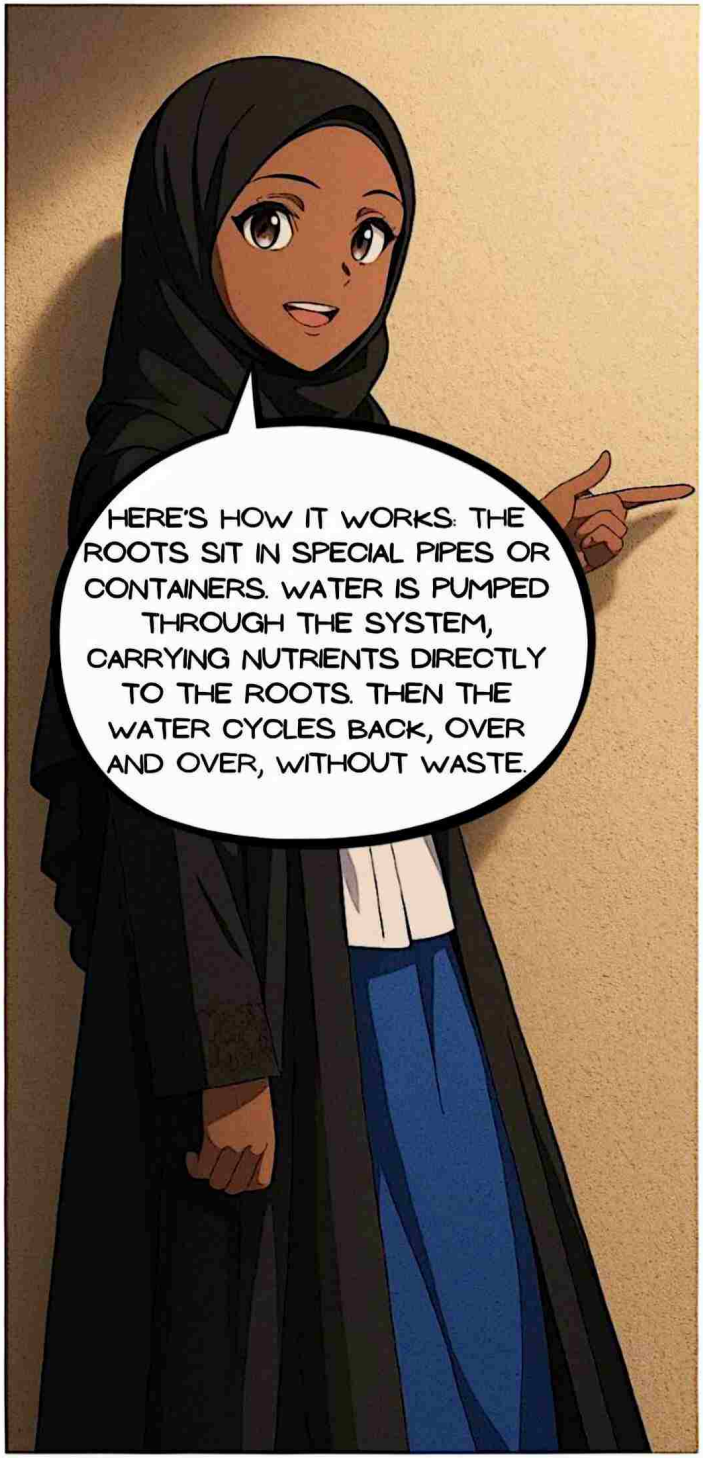


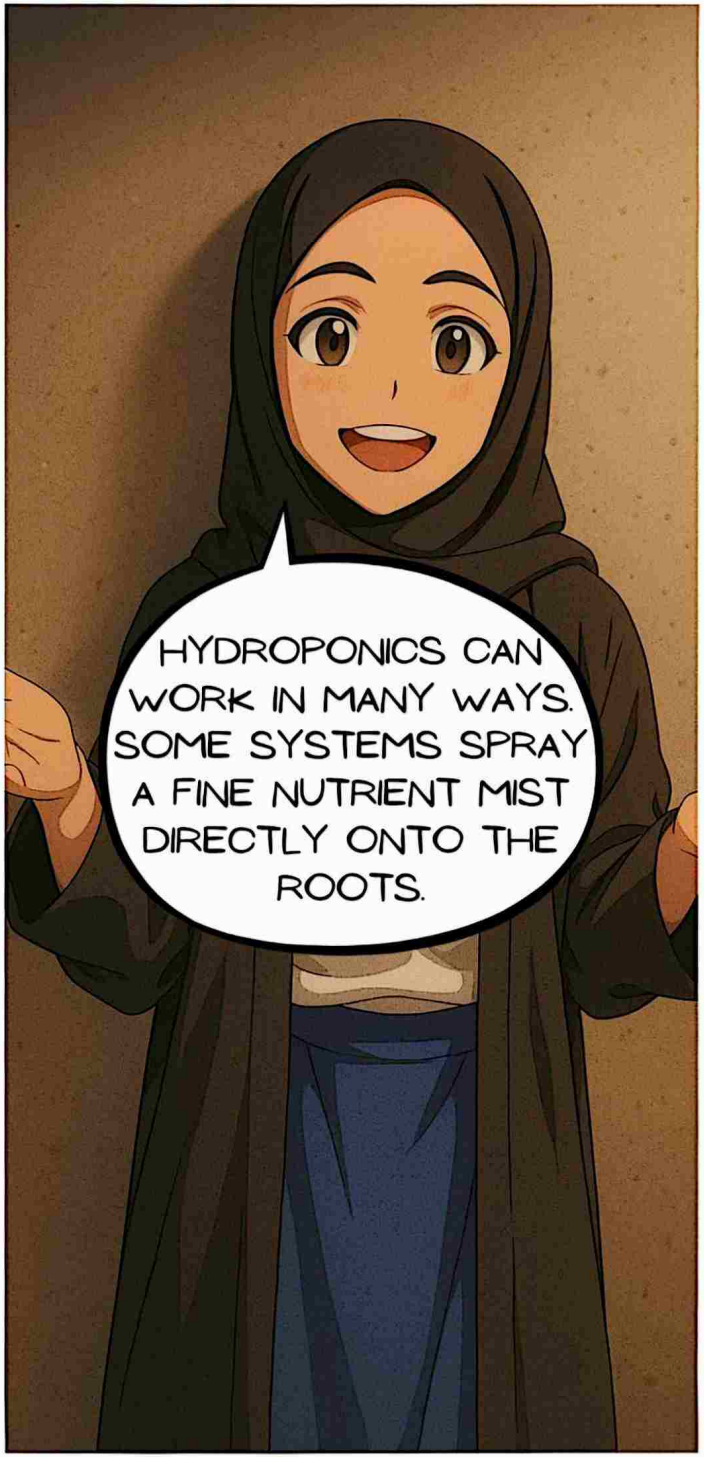

THE POPULATION KEEPS GROWING, BUT FARMING CAN'T KEEP UP!

TRADITIONAL FARMING TAKES TOO MUCH LAND AND WATER
AND FORESTS ARE BEING CUT DOWN JUST TO MAKE MORE FARMLAND. IT'S DESTROYING NATURE.

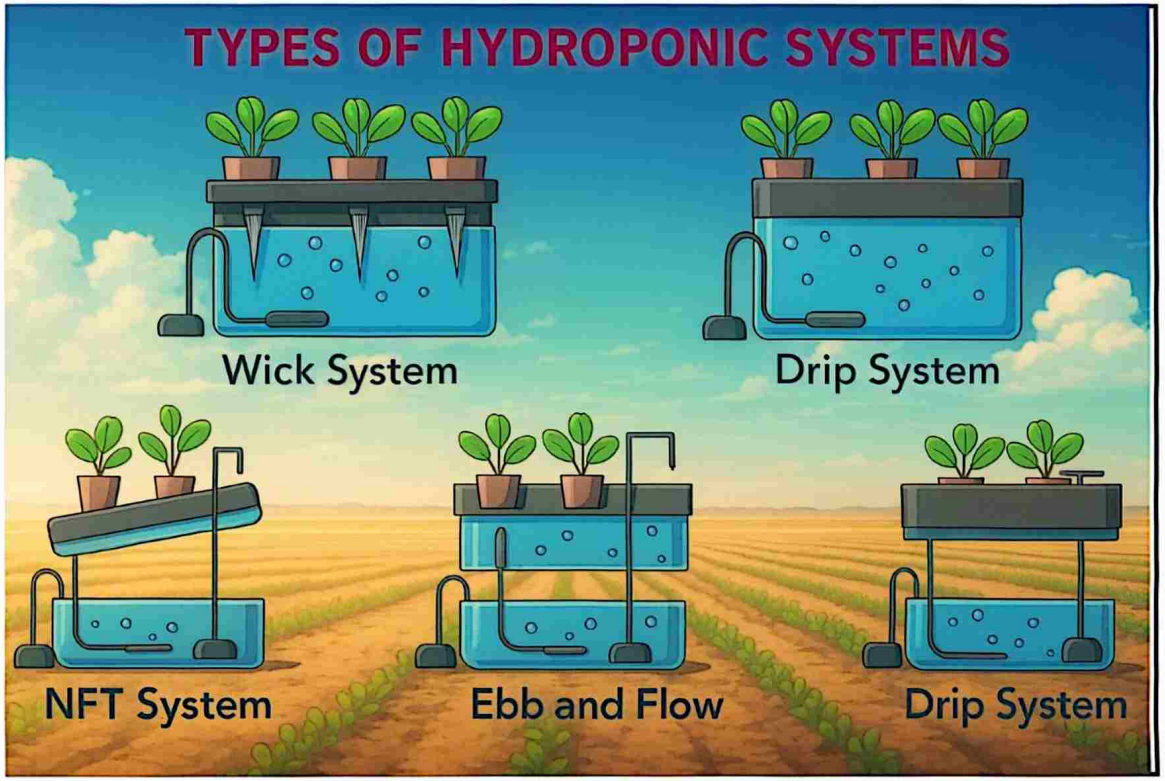
SOIL CAN BE WEAK, DRY, OR FULL OF PESTS. FARMERS ADD CHEMICALS, BUT THOSE HARM PEOPLE AND NATURE.

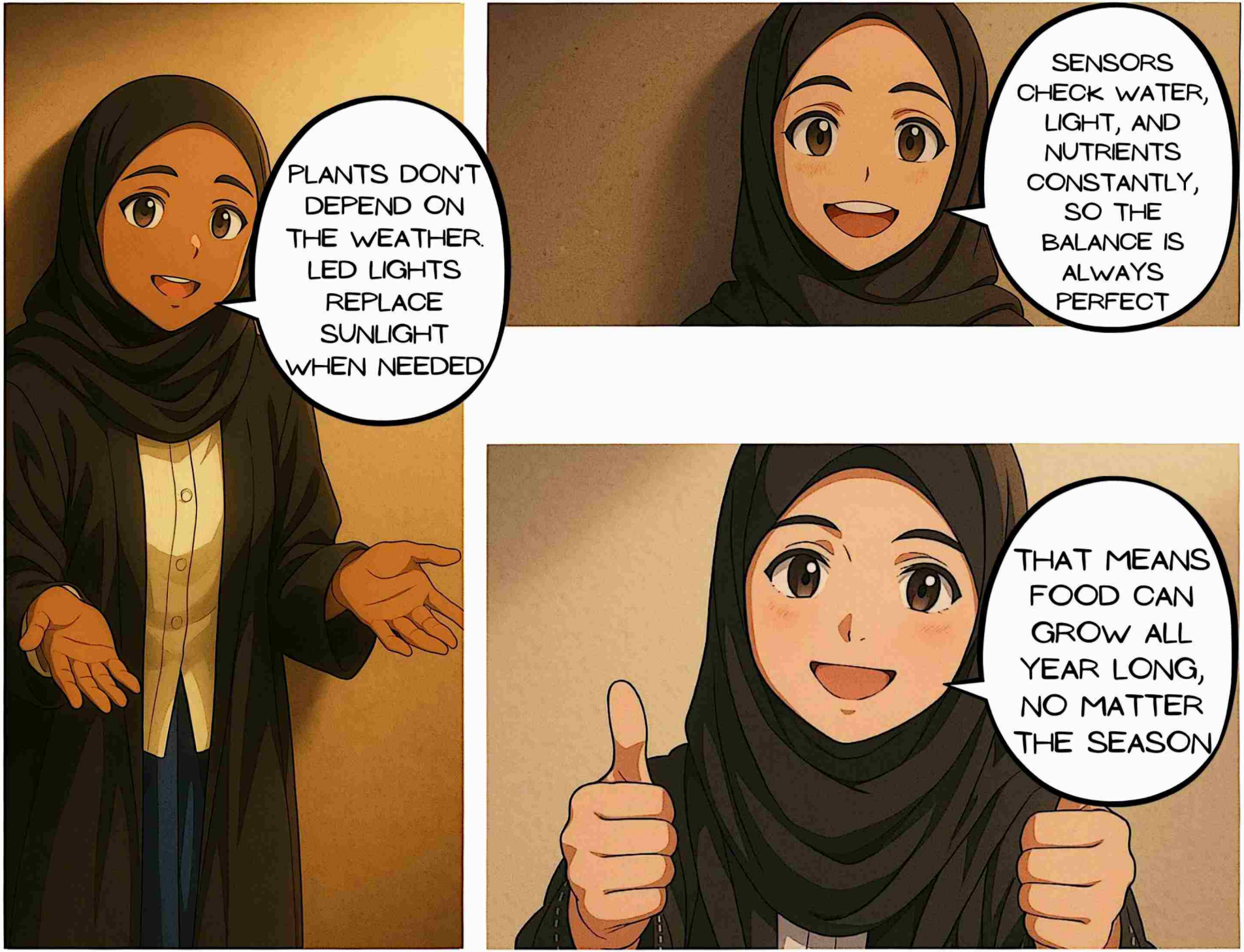

THAT'S WHY OUR PROJECT IS ABOUT HYDROPONICS. IT'S FARMING WITHOUT SOIL, AND IT ANSWERS ALL OF THESE PROBLEMS, WATER WASTE, BAD SOIL, PESTS, AND EVEN DEFORESTATION.

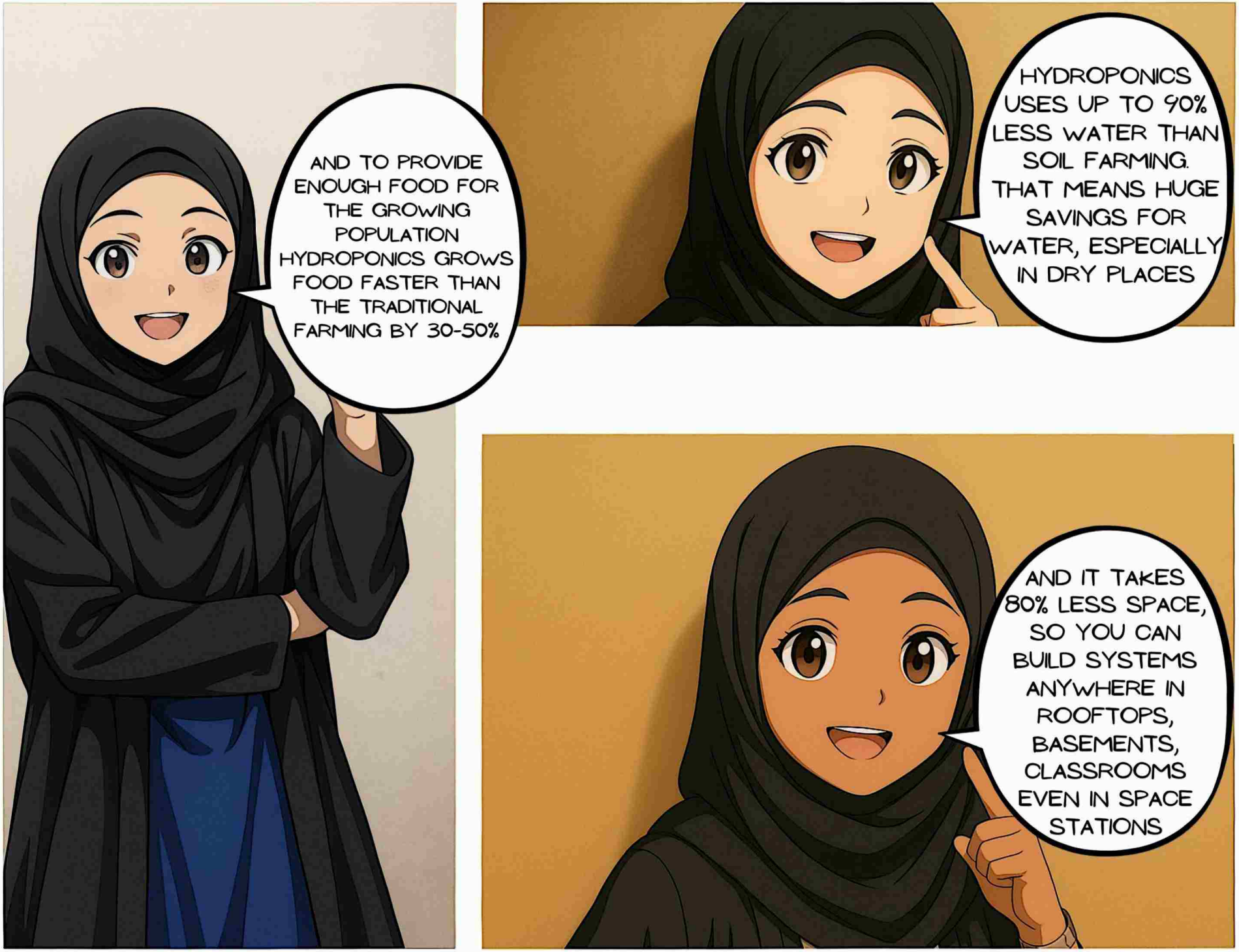

HERE'S HOW IT WORKS: THE ROOTS SIT IN SPECIAL PIPES OR CONTAINERS. WATER IS PUMPED THROUGH THE SYSTEM, CARRYING NUTRIENTS DIRECTLY TO THE ROOTS. THEN THE WATER CYCLES BACK, OVER AND OVER, WITHOUT WASTE.

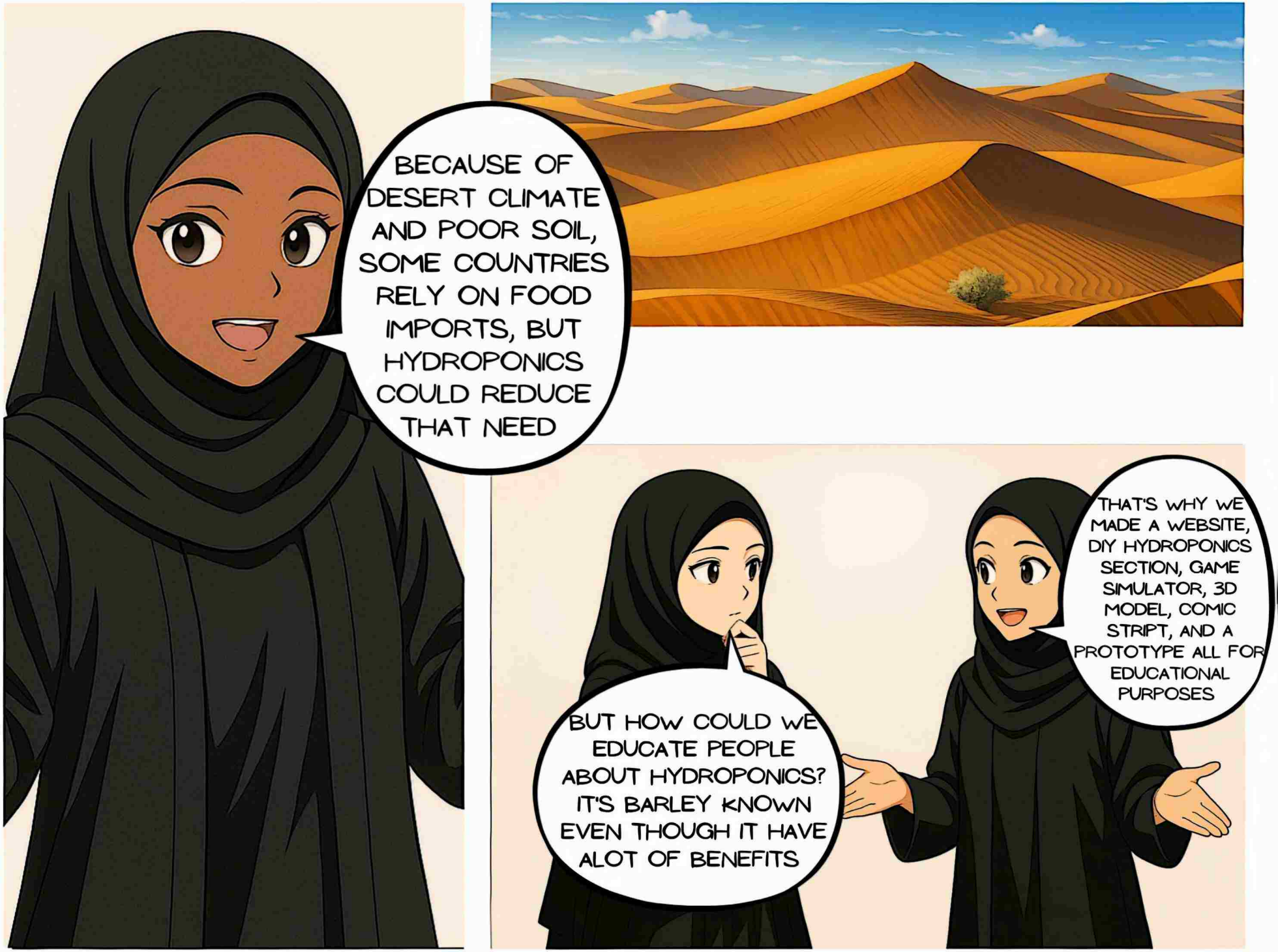

HYDROPONICS CAN WORK IN MANY WAYS. SOME SYSTEMS SPRAY A FINE NUTRIENT MIST DIRECTLY ONTO THE ROOTS.

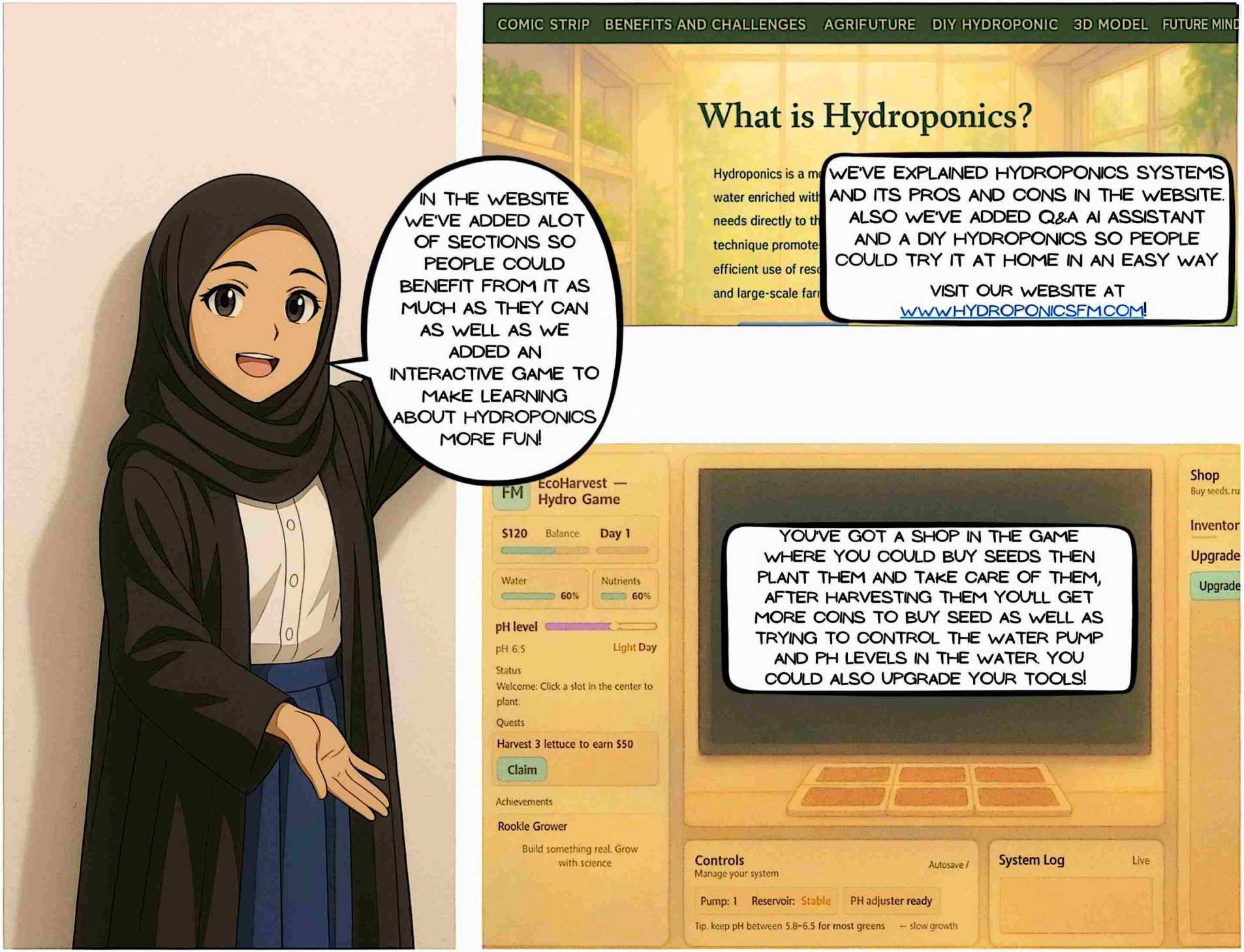
OTHERS LET THE ROOTS DANGLE IN FLOWING WATER, ABSORBING EVERYTHING THEY NEED WITHOUT SOIL

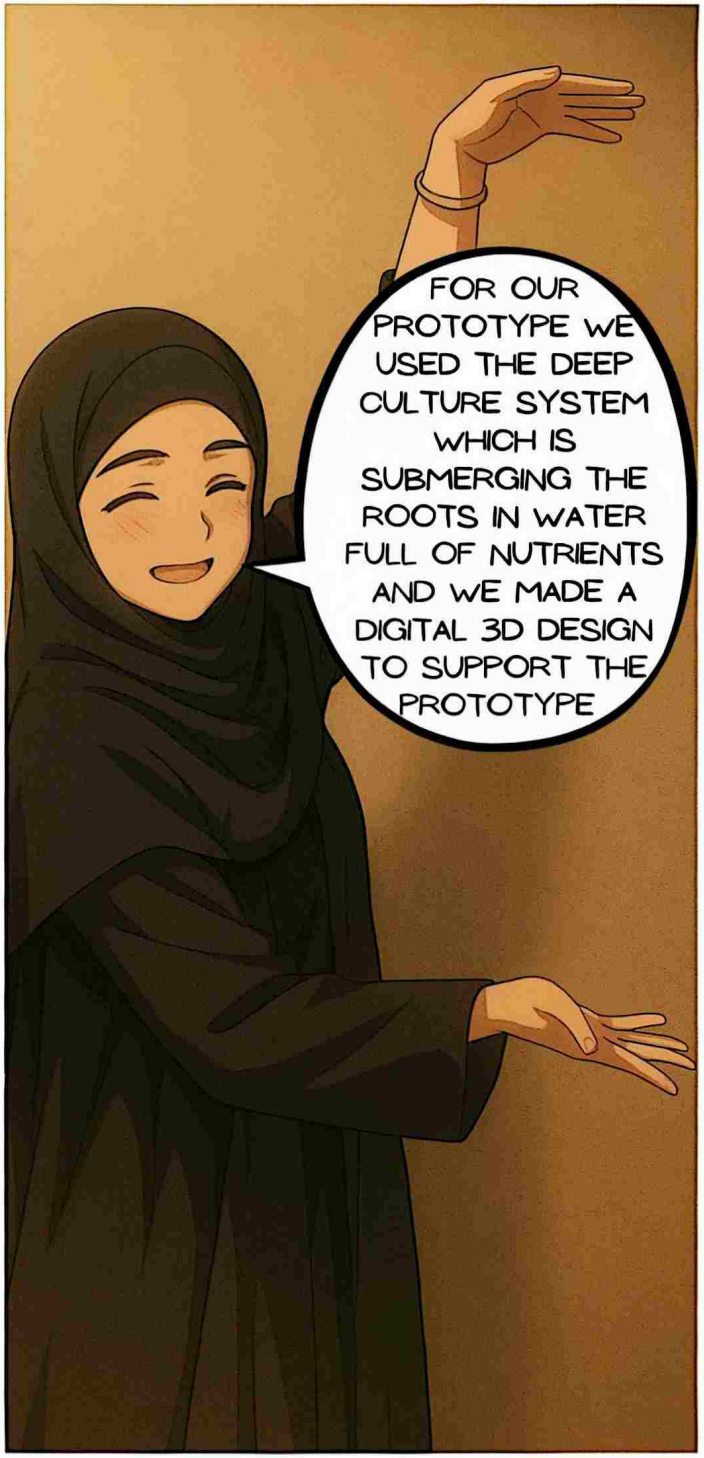

TYPES OF HYDROPONIC SYSTEMS
Wick System
Drip System
NFT System
Ebb and Flow
Drip System

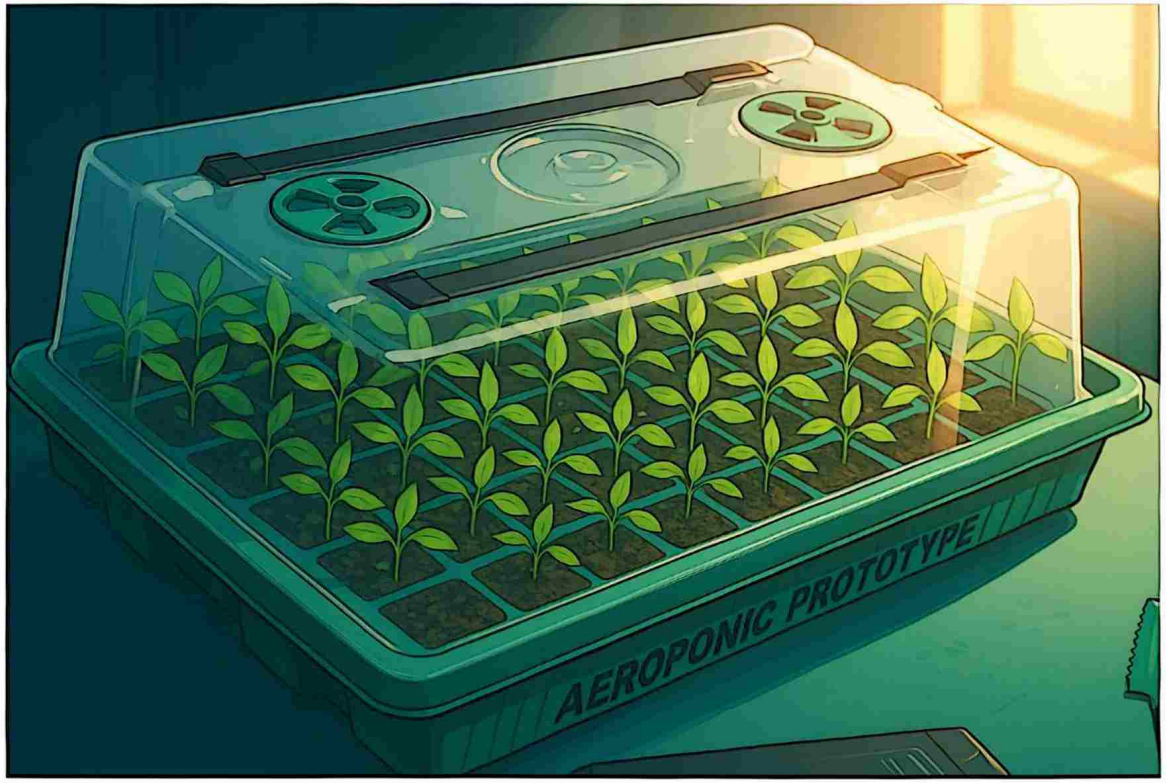

PLANTS DON'T DEPEND ON THE WEATHER. LED LIGHTS REPLACE SUNLIGHT WHEN NEEDED
SENSORS CHECK WATER, LIGHT, AND NUTRIENTS CONSTANTLY, SO THE BALANCE IS ALWAYS PERFECT
THAT MEANS FOOD CAN GROW ALL YEAR LONG, NO MATTER THE SEASON

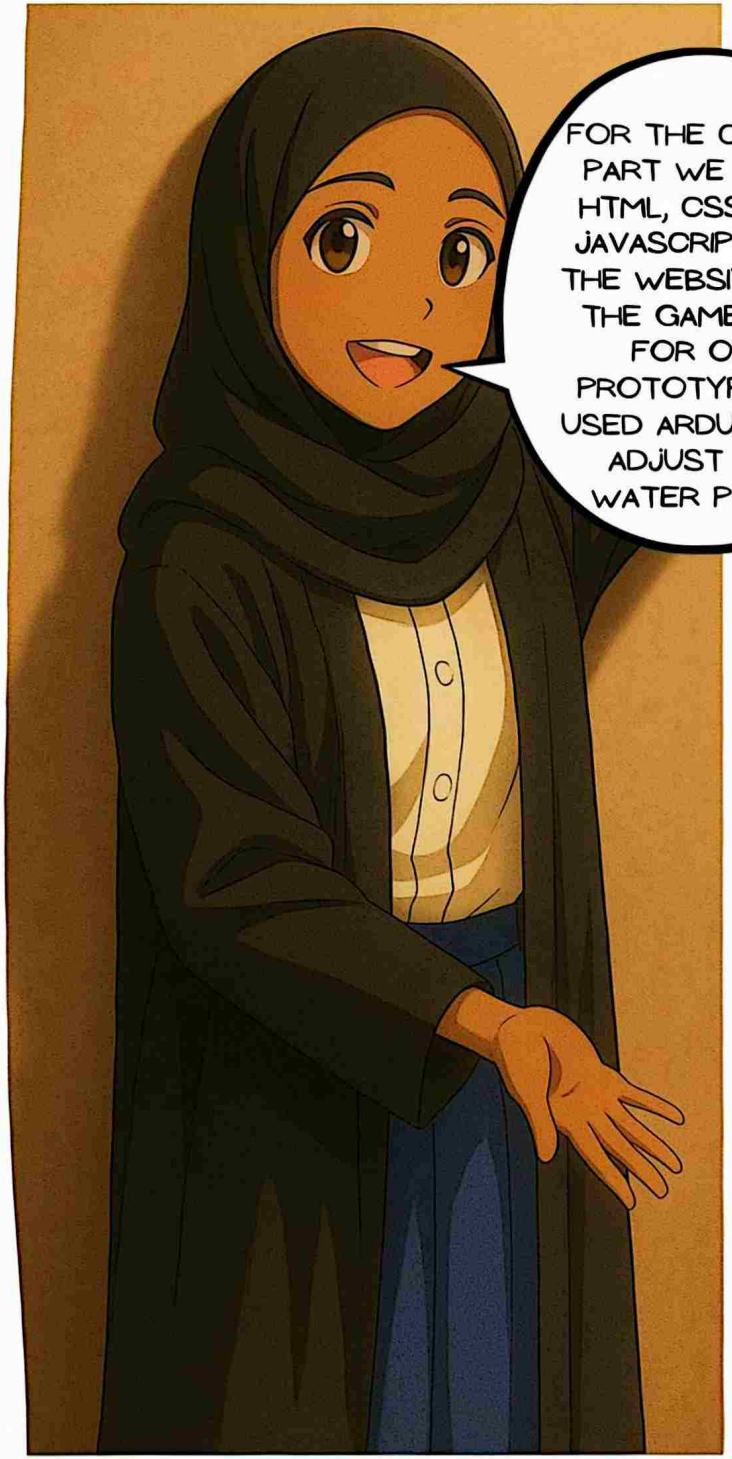

AND TO PROVIDE ENOUGH FOOD FOR THE GROWING POPULATION HYDROPONICS GROWS FOOD FASTER THAN THE TRADITIONAL FARMING BY 30-50%
HYDROPONICS USES UP TO 90% LESS WATER THAN SOIL FARMING. THAT MEANS HUGE SAVINGS FOR WATER, ESPECIALLY IN DRY PLACES
AND IT TAKES 80% LESS SPACE, SO YOU CAN BUILD SYSTEMS ANYWHERE 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!
COMIC STRIP
BENEFITS AND CHALLENGES
AGRIFUTURE
DIY HYDROPONIC
3D MODEL
FUTURE MIND
What is Hydroponics?
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!
FM
EcoHarvest — Hydro Game
$120
Balance
Day 1
Water
60%
Nutrients
60%
pH level
pH 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!
Shop
Buy seeds, ru
Inventor
Upgrade
Upgrade
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


FOR OUR PROTOTYPE WE USED THE DEEP CULTURE SYSTEM WHICH IS SUBMERGING THE ROOTS IN WATER FULL OF NUTRIENTS AND WE MADE A DIGITAL 3D DESIGN TO SUPPORT THE PROTOTYPE

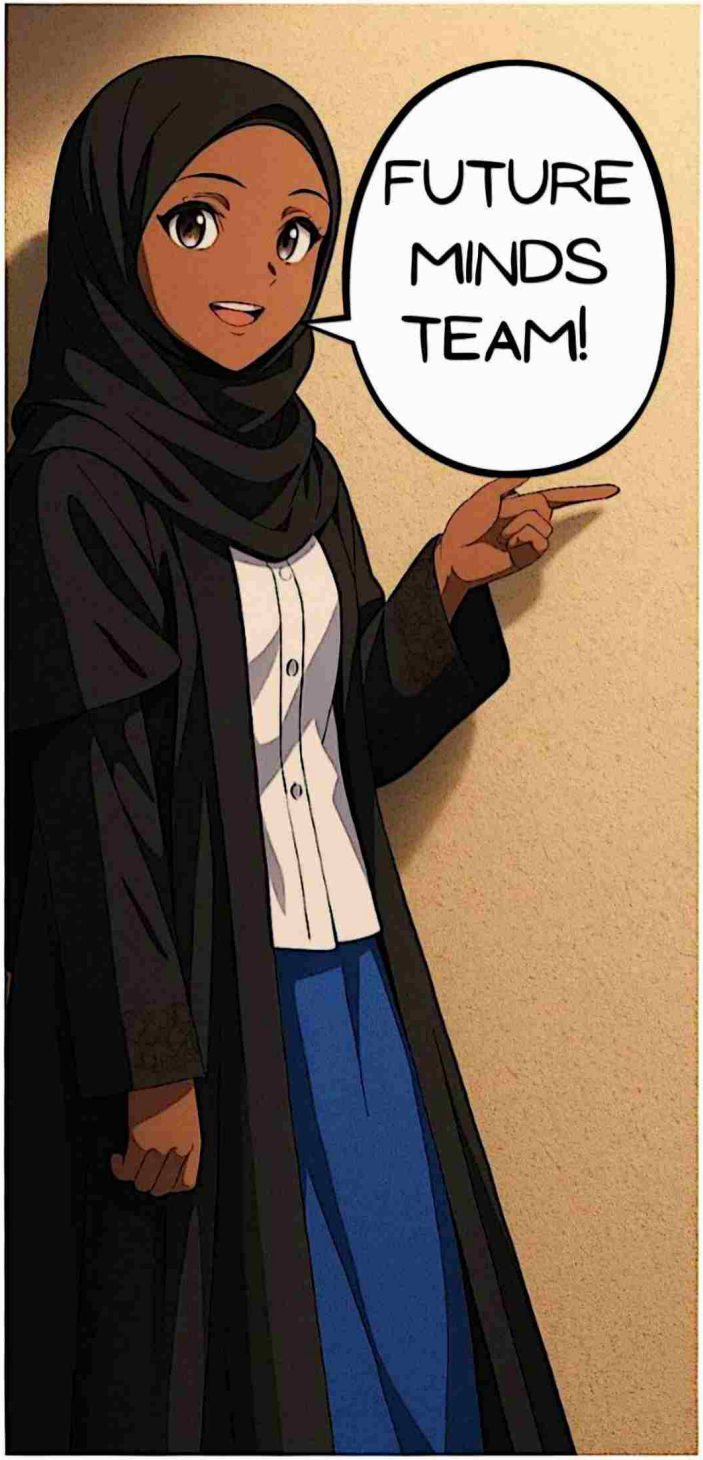
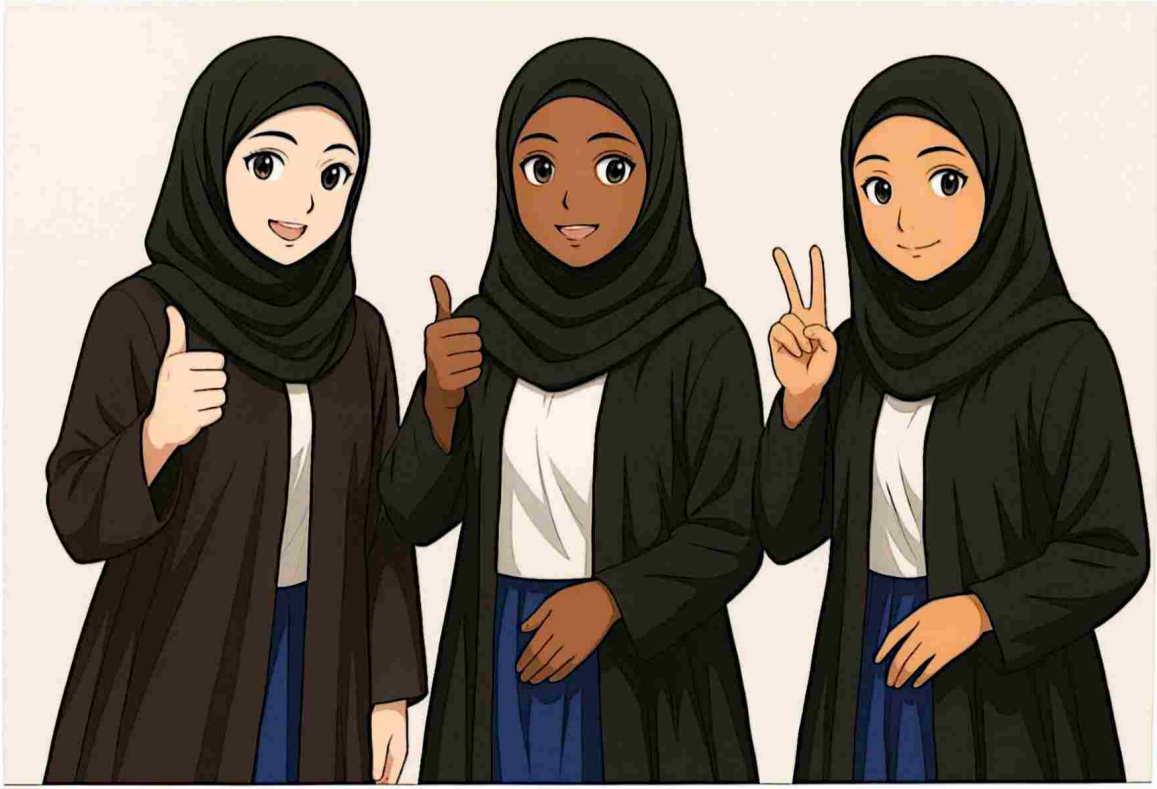

AEROPONIC PROTOTYPE




```
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)
}
```

```
function $id(q){return document.getElementById(q)}
function renderUI(){
  $id('money').innerText = game.money;
  $id('moneyMeter').style.width = Math.min(100, game.money/2) + '%';
  $id('waterMeter').style.width = game.water + '%';
  $id('nutrMeter').style.width = game.nutrients + '%';
  $id('waterCnt').innerText = Math.round(game.water) + '%';
  $id('nutCnt').innerText = Math.round(game.nutrients) + '%';
  $id('phVal').innerText = parseFloat(game.ph).toFixed(1);
  $id('day').innerText = game.day;
  $id('dayMeter').style.width = Math.min(100, game.dayTime) + '%';
  $id('lightState').innerText = game.dayTime < 50 ? 'Day' : 'Night';
  $id('pumpLvl').innerText = game.pumpLevel;
  $id('plantedCount').innerText = game.slots.filter(s=>s.plant).length;
  $id('resTxt').innerText = game.tankSize > 150 ? 'Large' : (game.tankSize>100 ? 'Medium'
  $id('inv').innerHTML = '';
  // inventory UI
  for(const s in game.inventory.seeds){
    const count = game.inventory.seeds[s]||0;
    const item = document.createElement('div');
    item.className='shop-item';
    item.innerHTML = `<div>${game.plantsDef[s].name} seeds <div class="small">x${count}</d
                      <div><button class="btn" data-buy="${s}">Plant</button></div>`;
    $id('inv').appendChild(item);
    item.querySelector('[data-buy]').addEventListener('click',()=>plantFromInv(s));
  }
  // shop
  const shop = $id('shop');
  shop.innerHTML = '';
  const store = [
    {id:'lettuceS', name:'Lettuce seeds (x3)', seed:'lettuce', price:12, qty:3},
    {id:'basilS', name:'Basil seeds (x2)', seed:'basil', price:22, qty:2},
    {id:'nut', name:'Nutrient pack', price:30, give:{nutrient:1}},
    {id:'seedpack', name:'Surprise Seed Box', price:45, give:{seeds:{lettuce:1,basil:1}}},
```


FUTURE MINDS TEAM!