

**Nate Hegyi: You know the type of suburbs that tend to wind around golf courses? The ones with big houses whose windows must break all the time from wayward golf balls?**

**That's Rio Verde. It's a suburb in Scottsdale, Arizona. Built in 1973 to attract retirees:**

*[Clip from YouTube ad](#): Our 20,000 ft country club is the center of our community.*

**They've got pickleball... tennis courts...**

*We host twilight golf events... Dinner dances... concerts and jazz events.*

**But what they DON'T have right now... is a reliable source... of running water.**

*[Good Morning America Clip](#): The taps are dry in Rio Verde foothills*

**Since January 1st, people there have been skipping showers, eating off paper plates and when it's yellow... letting it mellow.**

*[ABC News Clip](#): Residents getting creative...I'm happy I have a pool...because every time it rains at least I can sipher that. We use it mostly for showering, for washing clothes, the bathrooms.*

**Rio Verde's longtime water supplier turned off the tap because of the severe drought that has gripped Arizona and the rest of the West for the past two decades.**

*[CBS News clip](#): A water crisis is unfolding in the nation's southwest, as the mighty CO river begins to dry up as a result of over consumption and climate change.*

**Farmers have been forced to fallow fields. [Reservoirs are disappearing](#). [A major dam could stop producing power as early as this summer](#).**

**And it's raising questions – about who gets to use Arizona's diminishing water supply, and for what...**

**ONE company IN PARTICULAR... has gotten a lot of flack.**

*[ABC15 Arizona clip](#): A dairy company based in a country known for its huge oil supplies, is after something more precious in AZ. Water.*

*Almarai, one of the largest dairies in the world recently bought 15 square miles of farmland. ABC's 15 Joe Bartells went to that facility today.*

**Almarai is a Saudi Arabian dairy company. In 2015, they bought some land in Arizona and began pumping out a massive amount of groundwater... to grow feed.... for their cows... back in Saudi Arabia.**

**A local tv news reporter recently interviewed people who live near the farm.**

*[NBC12 News clip](#): They got a lot of straws, they've been drilling since they showed up. // And i started*

*getting complaints from residents about their wells  
running dry // It's completely unfair, it's criminal*

**For townspeople who don't have enough water to flush the toilet... the company has become a easy scapegoat. A foreign invader featured in the local news slurping up the last gulps of Arizona's water, for a farming operation in another desert half a world away.**

**But the truth is way more complicated.**

**[THEME MUX IN]**

**<<NUTGRAF>>**

**I'm Nate Hegyi, this is Outside/In, and today on the show we're talking with Natalie Koch, she's a professor of geography and author of the book Arid Empire, The Entangled Fates of Arizona and Arabia.**

**Turns out these two desert regions have been intertwined for nearly two hundred years. They shared the same goal – making the desert bloom at whatever the cost.**

**And now, both of them are struggling to keep it that way.**

**Stay tuned for a tale of dates, dairy cows, and who is REALLY to blame for the West's water crisis.**

**<<FIRST HALF>>**

*Nate Hegyi: And is it pronounced Hi Jolly? Or Haji Ali?*

*Natalie Koch: Um...I just have been saying, Hi Jolly. But his name was originally Filippo Teodoro or something. And then he changed his name after doing the Hajj.*

*Nate Hegyi: Hi Jolly...Hi Jolly...*

**So that's Natalie Koch. She's the geography professor who is gonna help me understand how Arizona and the Arabian Peninsula became so intertwined. It's a tale that starts with camels... and a guy named... Hi... Jolly.**

*Natalie Koch: He was always sort of described in, in a way, as a kind of wily man, having curly, like, dark curly hair, sharp dark eyes.....*

**It's the mid-1800s. Photographs have just been invented, the American Civil war is still a few years away, and Hi Jolly has recently returned to his homeland of Turkey after a stint in the French Army. He's feeling kinda antsy, when...**

*Natalie Koch: He happens to meet, this American military agent who's basically taking this ship, uh, around the Middle East, looking for camels....*

*[MUX / BOAT SFX]*

*and so he jumps aboard the boat with a bunch of camels, and they are brought back to, uh, to the United States.*

*They land in Indianola, uh, Texas*

*[MUX OR BOAT SFX FADE OUT]*

*and he gets tasked with, uh, helping transport these camels and manage them, essentially wrangling them.*

*where the US Army can't manage this themselves because they know nothing about camels.*

**Hi Jolly was part of a US Army campaign. The US had just signed a treaty with Mexico. It ending the Mexican-American war in 1848 and giving half of Mexico's territory to the US – including present-Day California, New Mexico, Utah... and Arizona.**

**This land became US soil on paper. But in reality, the US Army had no easy way of taking control of it.**

*in large part because of course there weren't roads. Uh, and the desert, the desert was really difficult to, to traverse.*

**Enter Hi Jolly's camels – these iconic beasts of burden that settlers would've been familiar with from biblical stories of the old world desert...here come to help conquer the new world desert.**

**They seemed like a sure-fire win. Camels can survive more than two weeks without water, they can carry thousands of pounds of gear...**

*Natalie Koch: And importantly, they, they, they could just eat anything on the way, like shrubs and anything along the side of the, of the trail. So the camels seemed to be a sort of miracle solution if they could manage it.*

**IF they could manage it. Maybe there is an alternate reality where cowboys are riding around on camels, Hollywood Westerns with chase scenes on camel-back... .**

**But in our reality... the so-called Camel Corps - and yes that was really their name - got a lot of heat from folks in the Army. They hated them. They thought the animals were awkward looking... hard to wrangle.**

*Natalie Koch: There were even some stories about them getting accidentally pushed over some cliffs*

**But the big reason we don't have camels in the West anymore is because of the Civil War. Once it started the government lost interest and the Camel Corps lost its funding.**

*Natalie Koch: most eventually sort of died off or were sold to a circus or a few other random projects.*

**[LONG MUX SHIFT INDICATING A NEW BEAT]**

**After the Civil War ended... the colonization of the West ramped up – albeit without camels. It was a violent military operation that displaced and murdered Indigenous people.**

**And the U.S. government then enticed white folks to replace them with promises of cheap land they could farm.**

**But this wasn't ideal farmland. ...it was the desert southwest.**

*Natalie Koch: the colonizers, the East Coast settlers, they didn't have they didn't have any firsthand experience working in a desert or doing desert agriculture. So a lot of people started to think, okay, well, how how did the people in the Middle East, how did they approach agriculture?*

**The answer... was dates.**

*Natalie Koch: dates were, were very much sought after and a loved American fruit in the in the 1800s into the early 1900s.*

**Dates were having a moment. They were especially popular around the holidays. And most of them were imported from the Middle East, where date palms have been cultivated for thousands of years.**

*Natalie Koch: there were even newspapers that sort of made this big spectacle around the date import. It was called the big date race. Which boat was it going to be? The boat from Basra or the boat from Muscat that was going to arrive first for the holidays. And it was yeah, it was it was something that that people really saw as a valuable and that you could make a lot of money from it.*

**That's what the new farmers in Arizona were thinking.**

**They started talking to the newly-minted University of Arizona, which had this agricultural experiment station. Kind of like a lab. And their first big project was growing date palms.**

**And I'll save you the suspense - the secret to desert farming is pretty simple: It's irrigation.**

**They built elaborate canals, pipelines and pumping networks to draw water from faraway or deep, down under the ground. Wherever they could find it.**

*Natalie Koch: They eventually figured out, oh, we can produce dates all year round . And so it, it sort of, uh, it, it sort of took off and, and became, um, uh, an important part of the domestic production*

**[MUX]**

**Ironically, once American farmers got good at date farming, the holiday spectacle around them died away. Dates had lost their exotic allure.**

**But at the same time, the region had gained a special status - as a sort of proving ground for desert agriculture.**

**And all that knowledge and technology that they had developed farming dates - the US would soon export it to the kingdom of Saudi Arabia.**

**MUX**

**So let's flash forward to the early 1940's.**



*[American Bombers over North Africa clip](#): General Eisenhower has mentioned the devastating attacks of our aircraft as one of the major factors in the Tunisian victory. Here our planes of a northwest African strategic airforce...*

**It's World War II. The Americans were waging a war against the Nazis in North Africa.**

**They really wanted to build airfields in nearby Saudi Arabia. But first they had to convince the king there to let them in. So they contacted one of his royal advisors... a thin-framed, mustachioed American named Karl Twitchell. Just so happens... he was from Arizona.**

*Natalie Koch: his argument to the US government was, an easy way to do that would be to help them develop their farm. And then maybe the king will give us access to the airfields.*

**The population of Saudi Arabia was growing and the king was worried about food shortages – especially with the millions of people that also came there every year for the Hajj. The king wanted more local farms. Problem was... the Arabian Peninsula is one of the largest, driest deserts in the world. It only gets four inches of rain a year. I mean, there's a whole region there known as the Empty Quarter – one of the biggest contiguous area of sand on earth.**

**Finding enough water for farms there was very, very hard.**

*Essentially what they were doing before they had these donkey powered, um, pulling mechanisms to pull the buckets of water out, uh, rather than a, a machine essentially, which is what the Americans could bring.*

**So to get into the king's good graces, the U.S. had Karl and a team of Arizona farmers help with their irrigation problem.**

*Natalie Koch: The biggest thing that they promised was the technology to pump water.*

**Even deserts have underground aquifers. The new technology helped create an American-style farm on royal land about fifty miles from the country's capital. They grew melons. Tomatoes. Cucumbers. Squash. There was even a glowing story about it in a local paper back in the U.S. They said the Arizona farmers QUOTE "made the desert bloom."**

**The Americans also invited the Saudi king to make a trip to Arizona. And when he was there... he visited some ranches and dairy farms.**

**And he was SUPER. DUPER. IMPRESSED. It was all he could talk about when he got back home. He'd be driving around at the royal farm... saying to the managers:**

*Natalie Koch: I want my own dairy, like what I saw in Arizona, quote unquote, grade a dairy. And there wasn't there wasn't any history of of of commercial dairy production within the Arabian Peninsula at this time.*

**One of the royal farm managers was actually an American... from Texas... so he imported a bunch of dairy cows from the Lone Star State.**

**Of course, the cows needed something to eat... and that is where alfalfa comes in.**

## **MUX**

**Now you might think of alfalfa as the sprouts you put on your salad at whole foods. But it's actually a member of the pea family. It grows about three feet high and has these purple flowers and leaves that look like clover.**

**Alfalfa is superfood for cows. It's got a lot of protein and calories to fatten cattle up quickly. Which means they can make more milk.**

**And Turns out, Saudi Arabia was a great place to grow this crop. .**

*Natalie Koch: it does super well with sunshine as long as you've got the water for it.*

**And because of all that new Arizona technology... the Saudi farmers had the water for all that alfalfa.**

**Over the next few decades, Dairy boomed in Saudi Arabia. The milk was turned into creme caramel and laban, which is like a yogurt drink. Folks there loved it.**

**At one point, Saudi Arabia was home to one of the largest dairy farms in the world! 29,000 dairy cows.**

**The country was also growing other stuff, like barley and wheat.**

*Natalie Koch: I mean, Saudi Arabia at one point in time was one of the largest wheat exporters in the world. This . In terms of physical geography and water resources, this does not make sense.*

**It does not make sense, Because Saudi Arabia is still a desert. So even if they had a bunch of fancy Arizona straws slurping up water... the cup they were slurping from was running out.**

**This started happening in the mid-2000's. Farms collapsed. Reservoirs turned into sand pits.**

**So in 2015 the Saudi government took a drastic step. It banned the domestic production of wheat and green forage, like alfalfa, for feeding livestock.**

**That means they needed to grow it... somewhere else.**

**Which brings us back to present day Arizona.**

*News anchor: So you may have heard of the Alfalfa Farm in Western Arizona run by a Saudi Arabian company, now the Arizona Republic is revealing that the Saudis got a sweetheart deal to rent that land, and get the water...*

**[MUX BEAT LONG]**

**That's coming up after the break, but first: If you're digging the show, leave us a review on Apple. Heck, even if you hate it leave us a review – or you know, send us an email. [outsidein@nhpr.org](mailto:outsidein@nhpr.org). We love to hear from you. Tell us about some of the stories you want to hear more of.**

**We'll be right back.**

<<MIDROLL BREAK – SECOND HALF>>

Welcome back to Outside/In, I'm Nate Hegyi.

As an environmental reporter who lives in the West... I am obsessed with alfalfa. I think it's one of the hidden keys to understanding the region's water crisis.

We often complain about how much water get used on lawns... or golf courses or those fountains outside of Las Vegas casinos. But if we're going to play the blame game, at least one finger should really be pointed at alfalfa farmers.

That little pea, along with a few other choice crops, slurp up almost half of all the water in the southwest. Ranchers and farmers grow a ton of alfalfa to feed their cattle. Because remember... it's a superfood. Americans even export it overseas to countries like China to feed *their* cows.

Here's the thing.

It's been really easy to grow alfalfa in states like Arizona. Not because there's enough water to grow it sustainably – there isn't – but because the water there is cheap and mostly unregulated for farmers.

Here's Natalie Koch, the geography professor. She points to some laws that were passed in the 1980's.

*Natalie Koch: the general idea was that, Groundwater needed to be managed, in particular in the cities, but the rest of the state, uh, was not*

*designated as being subject to an ama, an active management area.*

*Uh, so the, the laxness is essentially in 80% of the state that does not have to comply with any groundwater, uh, management policies.*

*agriculture has always been, uh, an important political force within the state. And agricultural actors have really successfully lobbied to make sure that outside of the cities, they can do what they want with the land and the water.*

*Politicians have been wary to, to push back against that, uh, very directly.*

*Nate Hegyi: So if I was a, farmer, are you essentially saying that I could put my, well tap it in like a big straw into the aquifer and just suck as much water as I want?*

*No rules. It's a free for all. I can just take as much water as I want.*

*Natalie Koch: provided you are outside of an active management area. Yes.*

*Nate Hegyi: which is most of the state*

*Natalie Koch: which is most city of the state.*

**And this is a big reason why Almarai, the Saudi dairy company, showed up in Arizona. Remember, Saudi Arabia needed a new source of alfalfa because production had been banned back at home.**

**Big businesses like Almarai don't just quit when a local supply disappears – they go shopping.**

**And companies this size have the money to drill really deep wells that can cut into nearby water supplies.**

*other farmers and like even, you know, just any person who just has a house in the area, they don't have the money to drill such deep wells. These things are very expensive. Um, so that, that the theoretically, if you've got the capital to have that straw, then, then you can do that.*

**It reminds me of that movie, there will be blood.**

***I drink your milkshake***

**Except instead of oil, the beverage this time is plain old H2O.**

**[long sluuuuuurp] *I drink it up!***

**[LONG MUX]**

**Almarai moved into Arizona in 2015. But it's taken until this year for politicians to really do anything about it.**

*Natalie Koch: this is my own reading of the interviews that I did with people in arizona, that there was just a sense of political paralysis. That*



*you couldn't really change anything, even if you knew something was, was not a good, um, a, a good deal or a good thing to have in the state, nobody was gonna go out and do anything about it.*

*So, whereas they, the Saudis had seen protests, like mass protests from farmers, uh, in, in Africa, they weren't going to experience that in, in arizona.*

**[LONG MUX]**

**Nate Hegyi: In the past, the Kingdom of Saudi Arabia has been very frank about their approach to oil.**

*the Saudi energy minister, uh, in 2021 said that Saudi Arabia was never gonna stop drilling oil, that it was gonna drill to the last molecule.*

**And Natalie says, that same point of view applies to water.**

*I feel like this is more or less the attitude about the, the Almarai farm in arizona. And I don't think though that it, it's just Saudi. I think that it is actually, arizona's agricultural establishment writ large has a very similar attitude. Um, it's, it's as if they're not necessarily thinking about what's tomorrow.*

*They just are concerned to get to the last molecule and whatever happens after that, um, maybe that's somebody else's problem, but they can go somewhere else.*

**They can just go... somewhere else. The Saudis have no stake in the future of Arizona's water table, or the people who rely on it.**

**So it's up to the people who live there to make sure their water costs what it's worth.**

**But there are forces in the state that are focusing exclusively on the Saudi farm.**

**Just recently, the Arizona Attorney General revoked two new drilling permits to Almarai.**

*Natalie Koch: Also some of the Republican, um, lawmakers in the state are now trying to pass, uh, a ban on foreign land ownership and targeting the Saudis.*

*That's great, but that doesn't change the, the way that these water laws are being, uh, exploited by commercial farmers from other states, from within the us.*

**As Natalie alluded there... Almarai isn't the only one taking advantage of Arizona's lax groundwater rules. [There's another company from the United Arab Emirates that's doing the same thing](#). Then there's the [mega-dairy from Minnesota](#), the multi-national ag company from North Carolina. All drinking up what's left of Arizona's water.**

*Natalie Koch: farmers are not paying very much to have these wasteful water practices. Um, and so if you then actually charge people a much higher rate than growing alfalfa and having. 7, 10, 11, you*

*know, up to up to 10 or 12 cuts per year, that's going to be very expensive. Uh, so if if there's a way to increase the price and use the price mechanism to, to change that, then then perhaps alfalfa will just naturally leave, um, because it's just unaffordable.*

*Nate Hegyi: Turning back to Almarai, um, what do you think politicians in the media get wrong about what's happening, uh, there in arizona? .*

*Natalie Koch: I think the bigger challenge with this whole story is that it, it can feel sometimes like just, um, a scapegoat the country just has this sort of cache in, in the American imagination that other countries in the Arabian Peninsula don't necessarily have.*

*So the Emirates has a farm next door to the Saudi farm, but we never hear about it. Right. Um, and there's, there's a reason for that. if you really want to think about environmental sustainability and, and water resources in the future, you have to look at the bigger pattern of the laws that allow this.*

*Um, so I think it's fine to focus on the Saudis as long as it is, is a tool to open up the conversation about, um, reforming Arizona's water laws, which are completely absurd. And of course, not just Arizona, but the entire Colorado River Basin and, and the US Southwest.*

[mux]

**Nate Hegyi: That was Natalie Koch – her book is called Arid Empire, the Entangled Fates of Arizona and Arabia.**

**If you want to learn more about the megadrought, there are a couple of new podcasts out from Colorado Public Radio and KUNC. They are called Parched and Thirst Gap. Check ‘em out.**

**This episode was produced by Felix Poon and me Nate Hegyi.**

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