



UNITED ARAB EMIRATES
MINISTRY OF CLIMATE CHANGE
& ENVIRONMENT

Drone-enabled Local Planting Project

Final report

**Seeding Drive to disperse millions of Ghaf
and Samar seeds across stretches of land**

Executive summery

Project Brief

Seeding Drive to disperse millions of Ghaf and Samar seeds across stretches of land. To quickly and efficiently disperse the seeds, MOCCAIE used drones with specialized seed-dispersing mechanisms. MOCCAIE spread the seeds across seven loca ons- the total area covered during seeding was 21 sqkm.

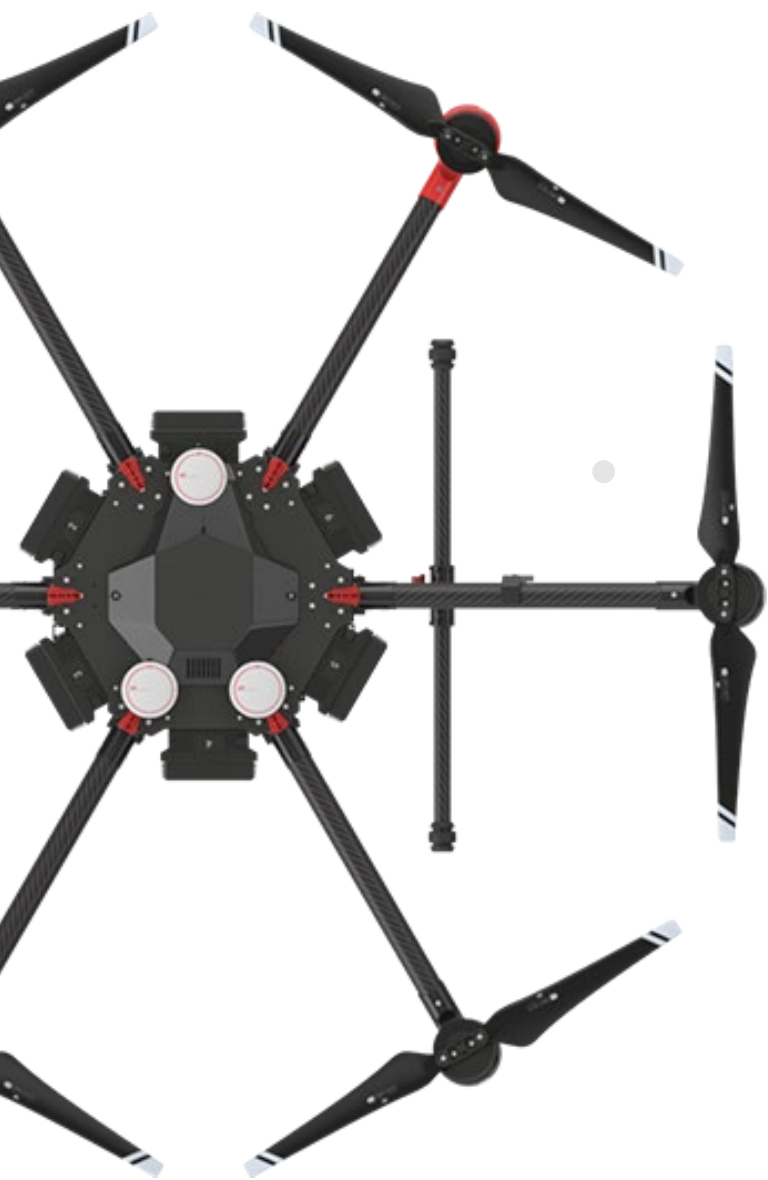
Results

- MOCCAIE dispersed approximately 6 million and follow up the important areas that have 1.3 million seeds, of which 338,000 seeds were Ghaf seeds, and 988,325 were Samar seeds. From our second scan, we can say that 13,320 Ghaf trees and 120,072 Samar trees have successfully taken root.

Impact

- carbon dioxide absorption
- Wildlife development
- Bee habitat development





- **FEDS-M600A2 :** Seeding Drone (VTOL UAV drone)
 - Altitude : 64 – 75 meters
 - Speed : 34 – 45 km/h
 - Seed Dispensing Rate : 5,000 – 10,000 seeds/minutes (500000 seeds daily)
 - Time consumed for spread : 13 days
 - Cost of the project: 637.500 AED



Our partners / responsibility

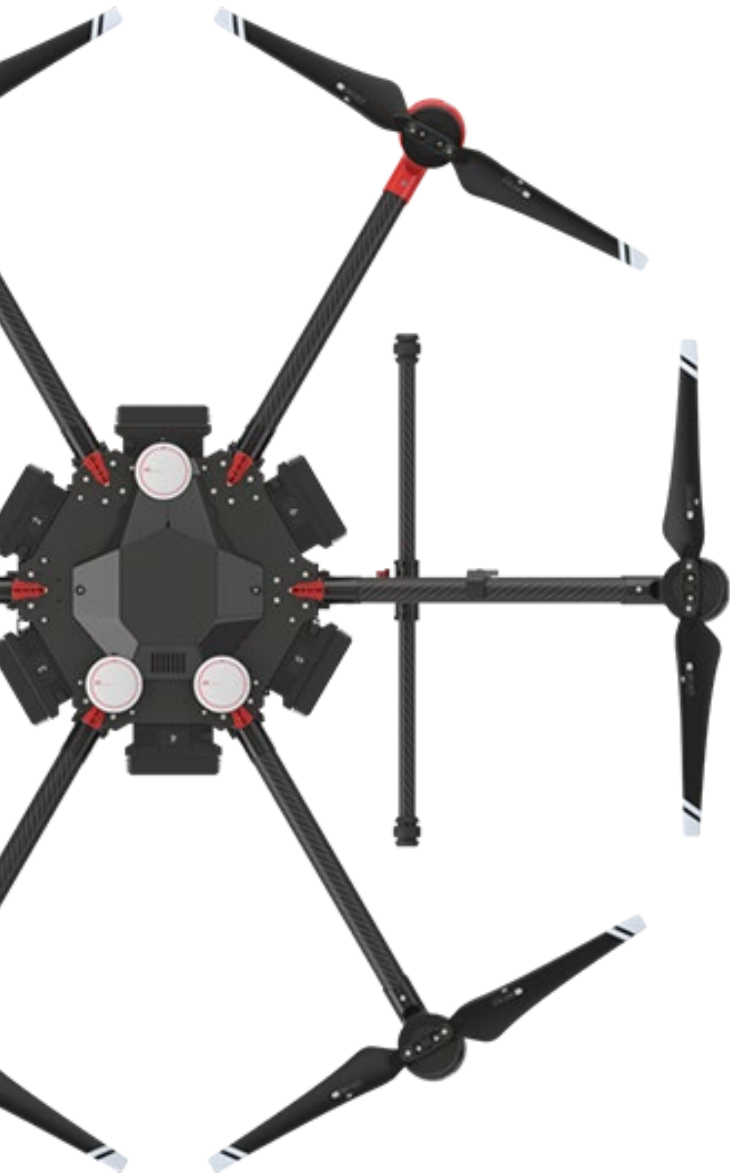


- **NIKI** - part of the cost
- **Falcon Eye** – follow up inspection for two rounds
- **Salem Al Qaydi** - Donate seeds
- **Abdallah Al Hay** - part of the cost



- **Project management** - Strategy & future dept.
- **Determine the seeding sites& locations** – region sector
- **Seeds Preparation method** - region sector
- **Beneficiary dept.-** Biodiversity dept.





Total Ghaf
Seed Dispersed **338,000**



Total Ghaf
Sapling found **13,320**



Total Samar
Seed Dispersed **988,325**



Total Samar
Sapling found **120,072**



Total Seed
Dispersed **1,326,325**



Total Seed
Sapling found **133,392**



Ghaf Average
Growth Rate **3.94%**



Samar Average
Growth Rate **12.19%**



Average
Growth Rate **10.05%**

Final Result



Detail Result

Location	Type of Seed	# Seeds Planted	Saplings Found	Growth %
Western Royda	Ghaf	338,000	13,320	3.94%
Siji 1	Samar	175,235	39,600	22.59%
Sehe Masafi RAK	Samar	63,085	16,800	26.63%
Wadi Sina	Samar	357,479	24,240	6.78%
Zakat	Samar	119,160	12,240	10.27%
Wadi Helou	Samar	217,291	13,464	6.19%
Blida	Samar	56,075	13,728	24.48 %

The growth rate varied across different areas. The advantage of drones is the ability to maintain a consistent seed per area count. Across all the Samar tree regions, drones dispersed seeds at the rate of 7,793 per sqkm- This helps us isolate and eliminate any variables like land size and number of seeds. Still, the varying growth rate suggests that environmental factors played a prominent role in the seeding's success rate. The environmental challenges that the seedlings face can be broken down into two categories- Natural and Artificial causes.

Detail Result 2021-2022

Location	2021		2022	
	Saplings Found	Growth %	Saplings Found	Growth %
Western Royda	18,900	5.59%	13,320	3.94%
Siji 1	43,650	24.90%	39,600	22.59%
Sehe Masafi RAK	12,617	20.00%	16,800	26.63%
Wadi Sina	26,820	7.50%	24,240	6.78%
Zakat	11,220	9.41%	12,240	10.27%
Wadi Helou	10,350	4.76%	13,464	6.19%
Bilda	9,000	16.04%	13,728	24.48 %

Challenges:



Floods: Wadi Helou and Siji are examples of saplings affected due to the rains.



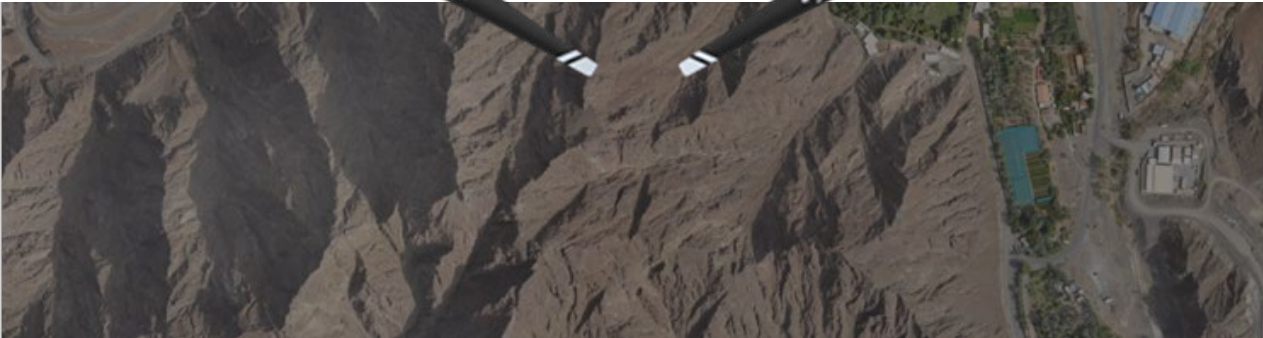
Sandstorms: damaged topsoil and uprooted seeds

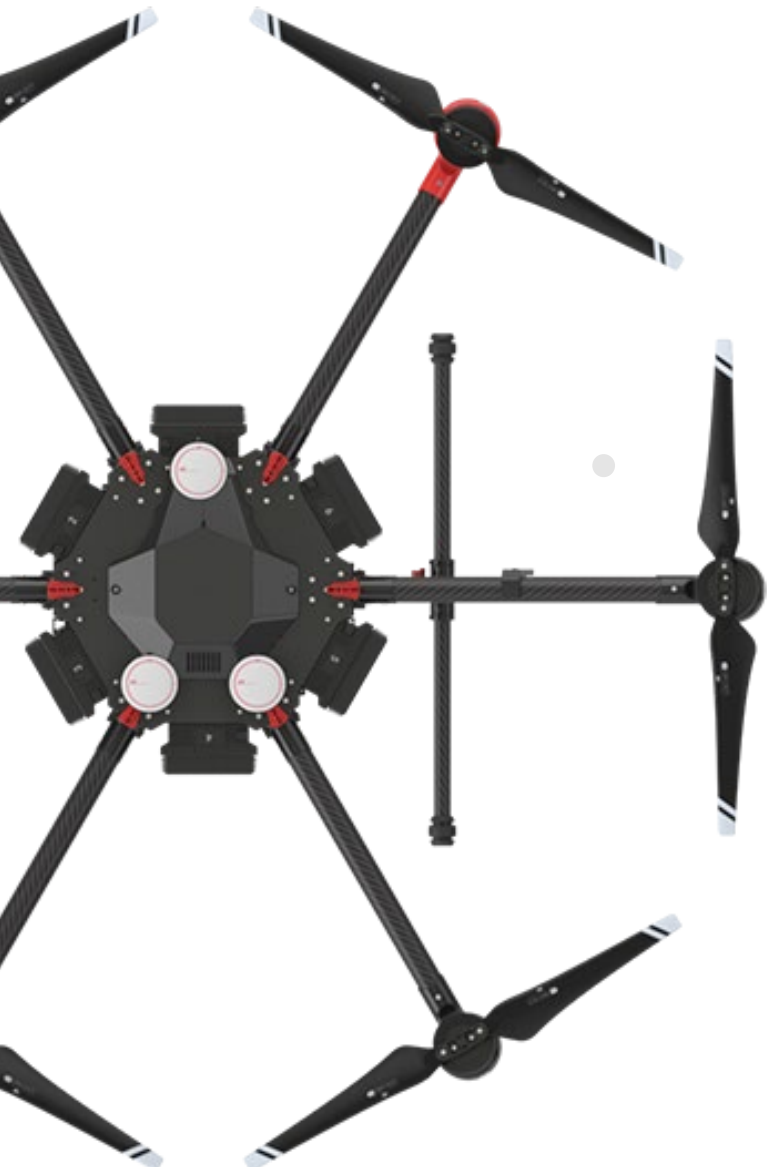


Geographical Limitations: large range of target areas, implementing effective monitoring and correction systems may be challenging.



Wildlife: Birds would consume the newly planted seeds, and animals would uproot and eat the growing saplings.





Recommendation



Ghaf

Need more experiments for Ghaf due to insufficient seed numbers and areas.



Samar

We can use drone to spread More Samar seeds over specific areas such as Sehe Masafi - RAK, Blida ,and Siji 1 Due to high growth rate

General recommendation

- Expand the use of drones in agriculture specially local seed at open areas .
- Choose locations far from private farms, animal root, rain torrential, and constructions.
- Choose to start spread the seeds beginning of winter and rain season
- More efforts to prepare the seeds before spread it over locations
- Publish this innovative project / experiment at OECD Observatory of Public Sector Innovation



Appendix

Extra information for each location

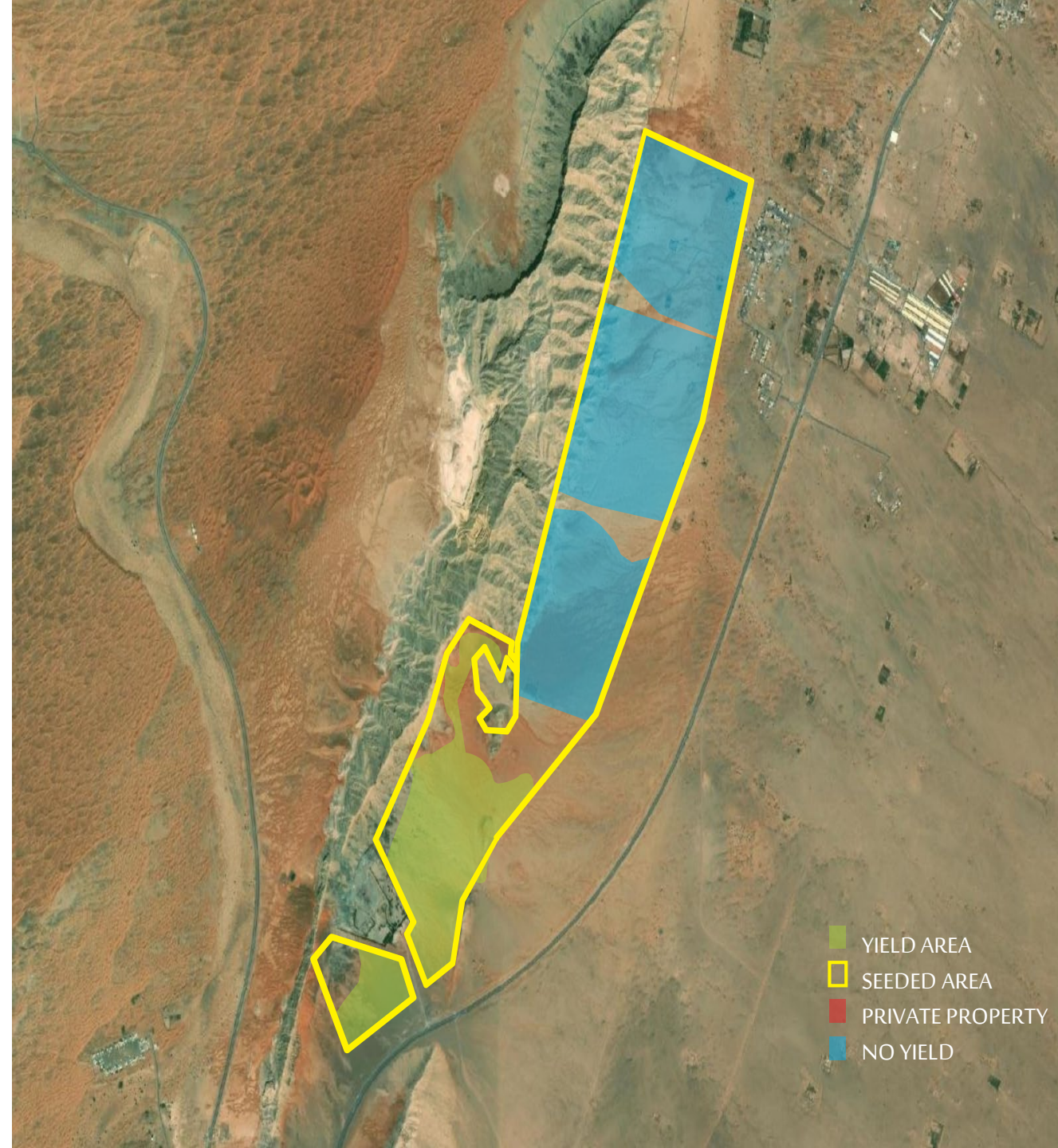
الروضة الغربية

Flying Altitude	: 65 - 75 Metres
Speed	: 35 - 45 Kmph
Seed Dispensing Rate	: 5,000 - 10,000 seeds/minutes
Sown Date	: 10 - 15 Feb 2020
Verified Date	: 13 May 2022
Location	: الروضة الغربية
No Of Seeds	: 338000
Seeded Area	: 7.3 Sqkm
Seed Type	: Ghaf
Approx. Yield	: 13,320

**Growth
Rate**



3.94%



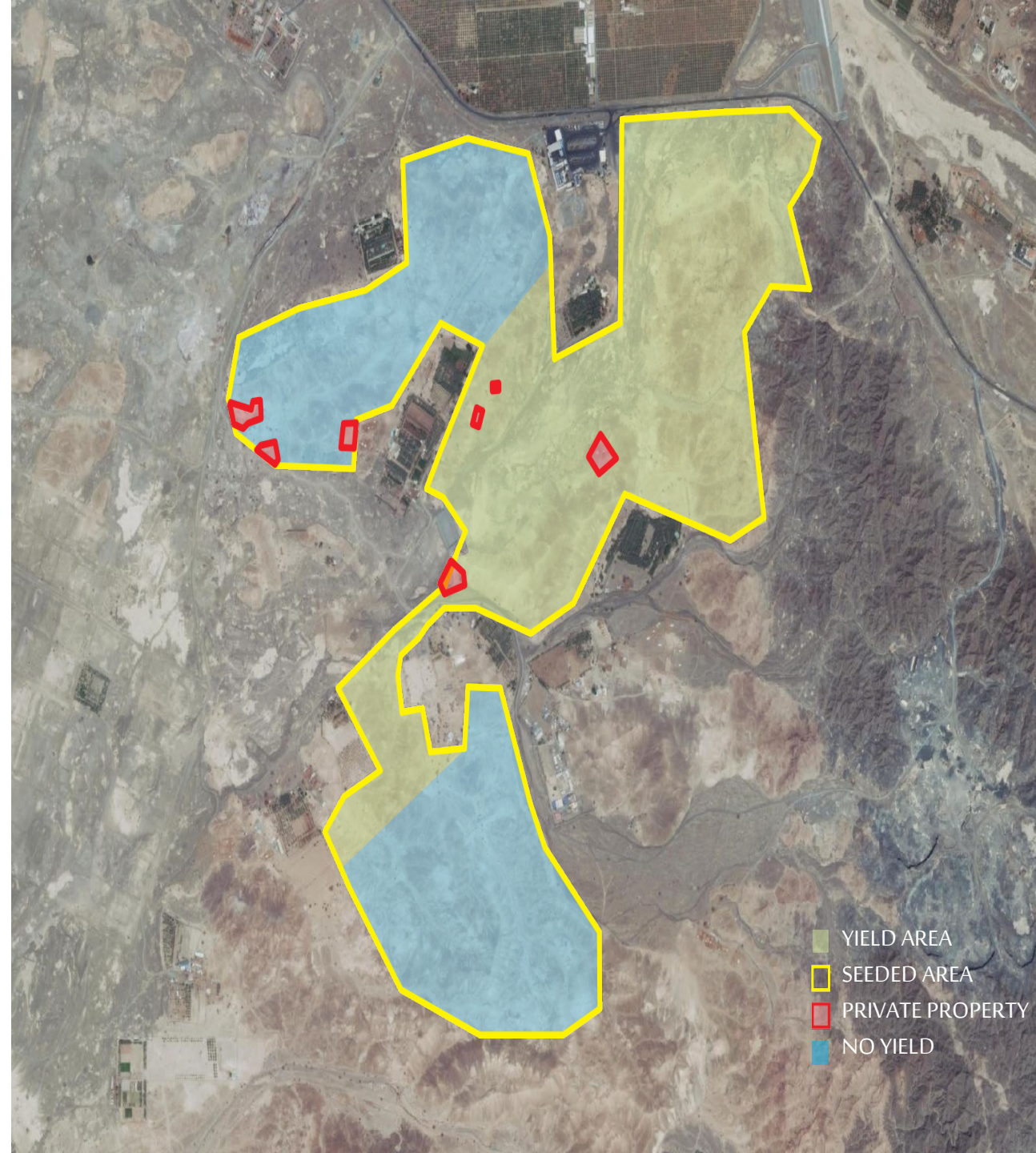
السيجي 1

Flying Altitude	: 65 - 75 Metres
Speed	: 35 - 45 Kmph
Seed Dispensing Rate	: 5,000 - 10,000 seeds/minutes
Sown Date	: 10 - 15 Feb 2020
Verified Date	: 17 May 2022
Location	: السيجي ١
No Of Seeds	: 175,235
Seeded Area	: 2.5 Sqkm
Seed Type	: Samar
Approx. Yield	: 39,600

**Growth
Rate**



22.59%



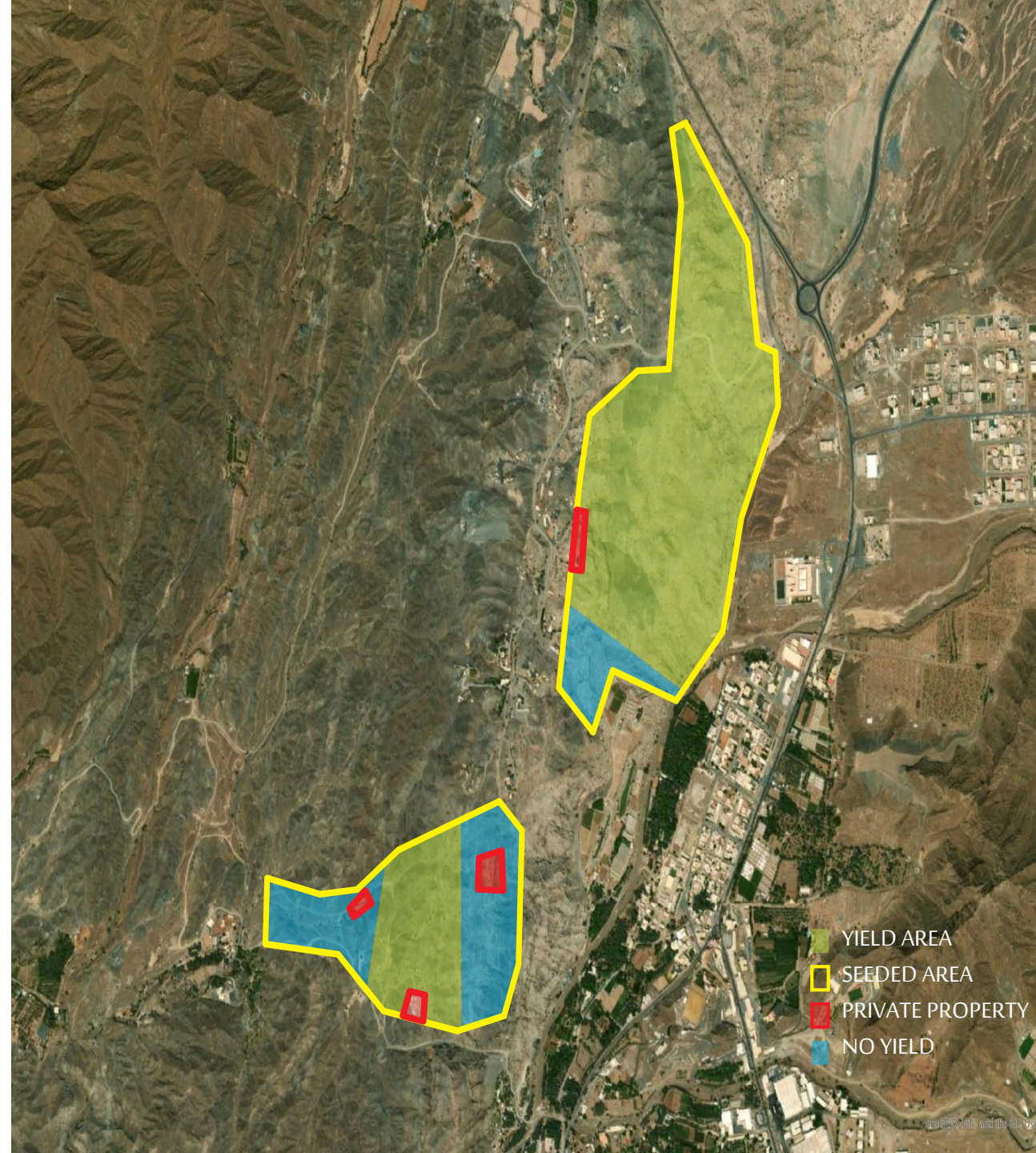
سيح مسافي

Flying Altitude	: 65 - 75 Metres
Speed	: 35 - 45 Kmph
Seed Dispensing Rate	: 5,000 - 10,000 seeds/minutes
Sown Date	: 10 - 15 Feb 2020
Verified Date	: 03 June 2022
Location	: سيج مسافي رأس الخيمة
No Of Seeds	: 63,085
Seeded Area	: 0.9 Sqkm
Seed Type	: Samar
Approx. Yield	: 16,800

Growth
Rate



26.63%



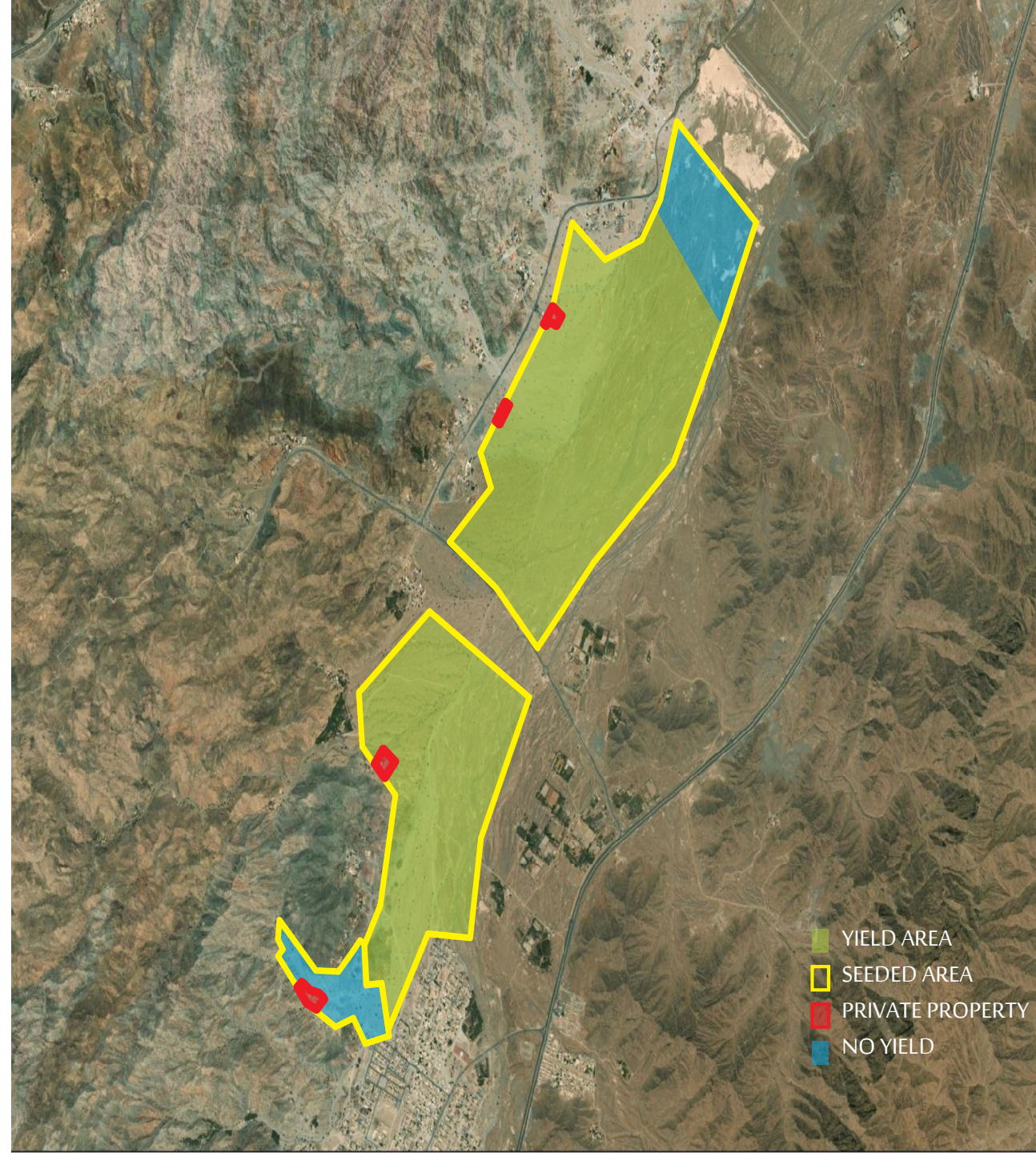
وادي سنة

Flying Altitude	: 65 - 75 Metres
Speed	: 35 - 45 Kmph
Seed Dispensing Rate	: 5,000 - 10,000 seeds/minute
Sown Date	: 10 - 15 Feb 2020
Verified Date	: 21 May 2022
Location	: وادي سنة
No Of Seeds	: 357,479
Seeded Area	: 5.1 Sqkm
Seed Type	: Samar
Approx. Yield	: 24,240

**Growth
Rate**



6.78%



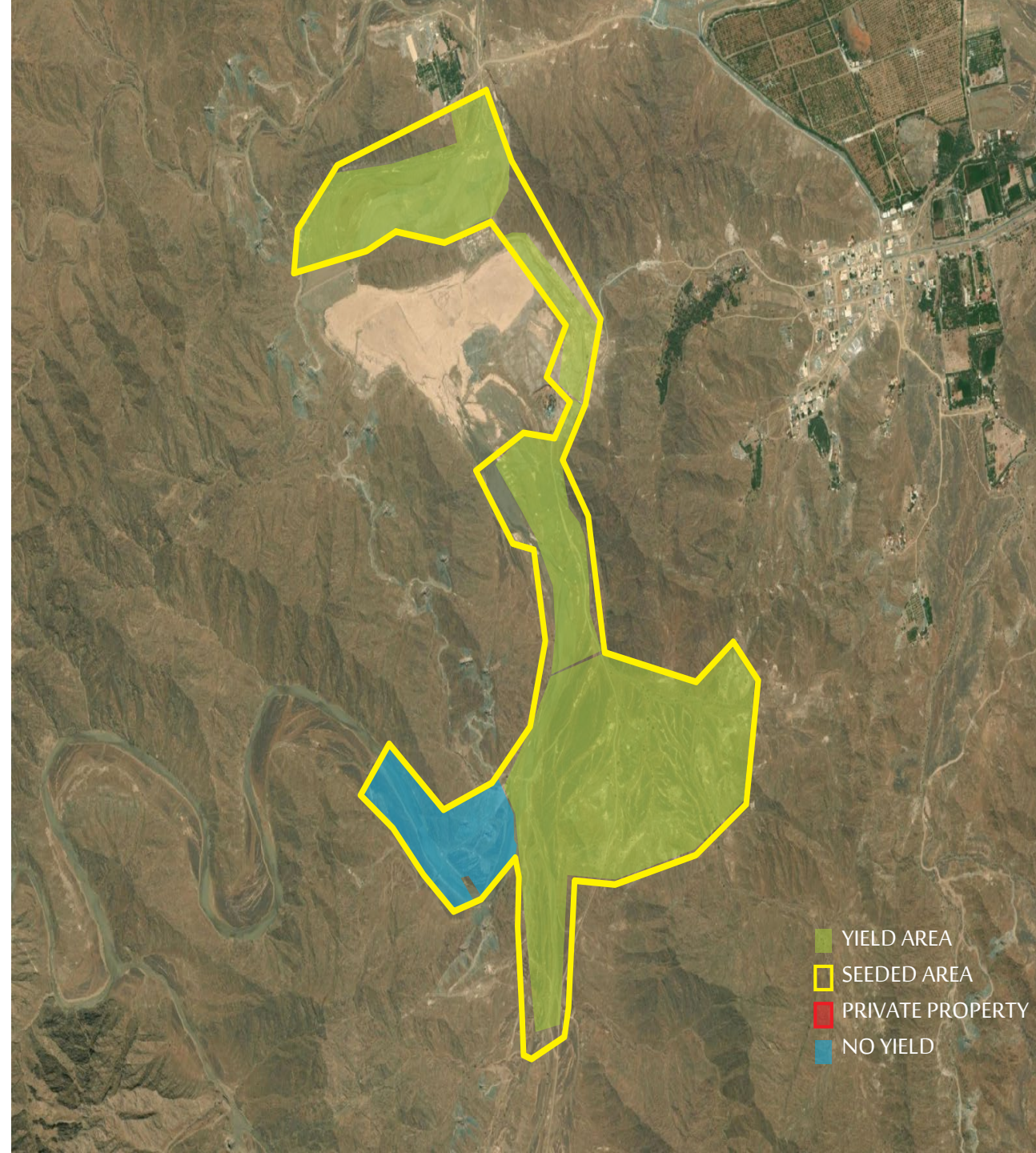
زكت

Flying Altitude	: 65 - 75 Metres
Speed	: 35 - 45 Kmph
Seed Dispensing Rate	: 5,000 - 10,000 seeds/minutes
Sown Date	: 10 - 15 Feb 2020
Verified Date	: 25 May 2022
Location	: زكت
No Of Seeds	: 119,160
Seeded Area	: 1.7 Sqkm
Seed Type	: Samar
Approx. Yield	: 12,240

Growth
Rate



10.27%



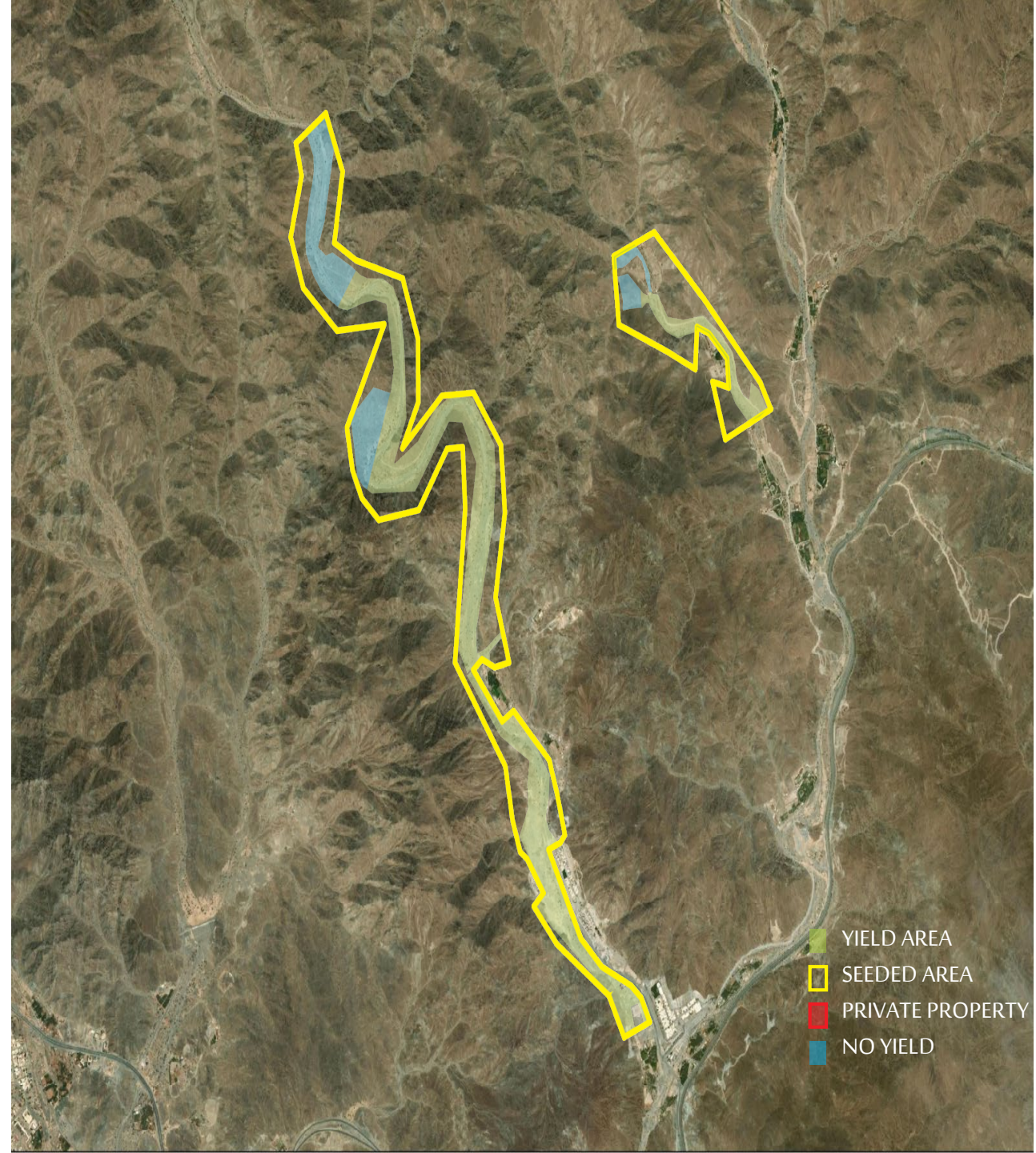
وادي الحلو

Flying Altitude	: 65 - 75 Metres
Speed	: 35 - 45 Kmph
Seed Dispensing Rate	: 5,000 - 10,000 seeds/minutes
Sown Date	: 10 - 15 Feb 2020
Verified Date	: 23 May 2022
Location	: وادي حلو
No Of Seeds	: 217,291
Seeded Area	: 3.1 Sqkm
Seed Type	: Samar
Approx. Yield	: 13,464

**Growth
Rate**



6.19%



البليلة

Flying Altitude	: 65 - 75 Metres
Speed	: 35 - 45 Kmph
Seed Dispensing Rate	: 5,000 - 10,000 seeds/minutes
Sown Date	: 10 - 15 Feb 2020
Verified Date	: 18 May 2022
Location	: البليلة
No Of Seeds	: 56,075
Seeded Area	: 0.8 Sqkm
Seed Type	: Samar
Approx. Yield	: 13,728

Growth
Rate



24.48%



Thank you!

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