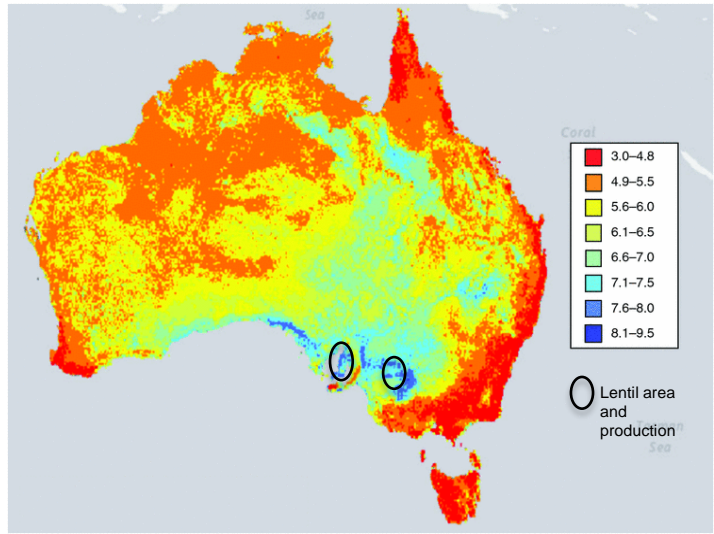


High Throughput Aluminum Toxicity Tolerance Screening In Lentil To Expand Production Area

Vani Kulkarni

Acid Soil Limits Lentil Production

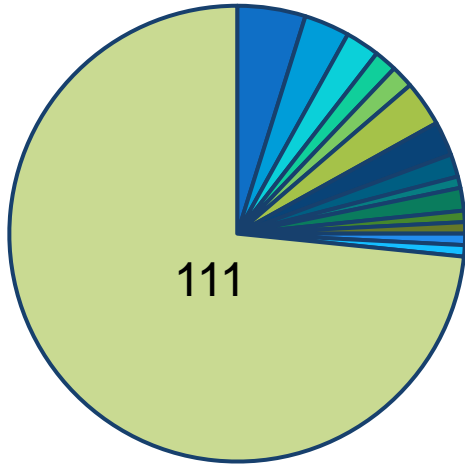


(Ref: Ryan PR (2018), ABARES (Feb.2019))

- ~50 Mha of the agricultural soil have a surface pH <5.5
- Acid soils: High H⁺ ion
Deficiencies of P, Mg and Mo
Toxicities of Mn, Aluminium(Al)
- Expand cultivation area by using Al toxicity tolerant varieties

Aim: Development of Al toxicity tolerance screening method and identification of the tolerant accessions

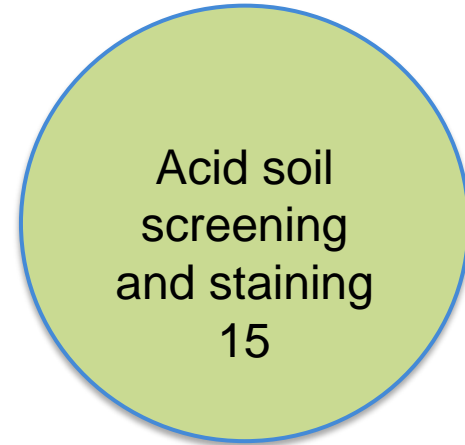
Hydroponic Screening Of Lentils For Al Toxicity Tolerance



Accessions
from AGG

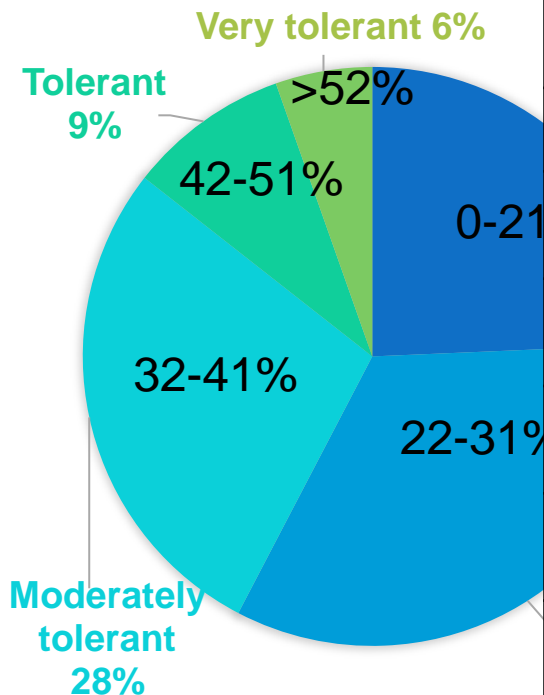


4-day old seedlings
screened at pH4.5 + 5 μ M Al
for 3-days
Al tolerance: Relative root growth
(RRG%)



Accessions
selected

AI To

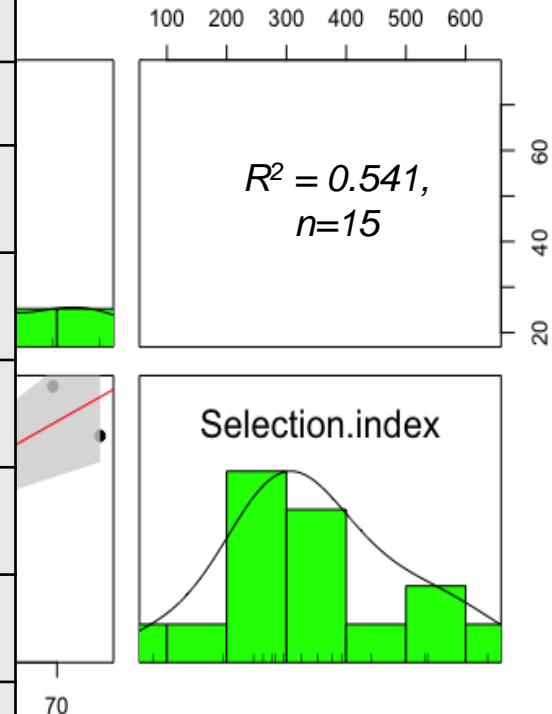


~ 23% of accessions higher RRG

1. Hydroponics RRG

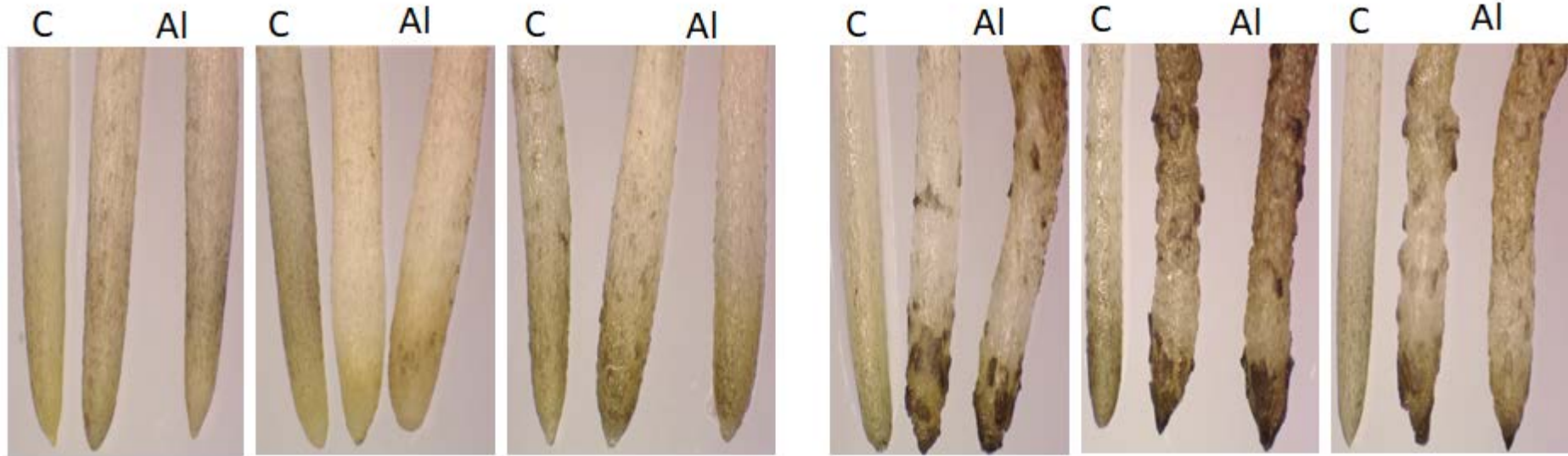
Tolerance class	Accessions
VT	Northfield
VT	AGG70137
T	AGG70281
MT	AGG70561
S	AGG74341
S	AGG70334
S	AGG74367
VS	PRECOZ

Lentils



I screening

Haematoxylin Staining



Northfield

AGG70137

AGG70281

AGG74367

AGG70530

PRECOZ

Tolerant
accessions

Sensitive
accessions

Conclusions

- Developed hydroponic screening method can be used for screening breeding populations and germplasm accessions
- Identified tolerant and moderately tolerant accessions can be used in pre breeding
- Further selected accessions could be tested in acid field conditions

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