

# Doubled haploidy for forage grasses

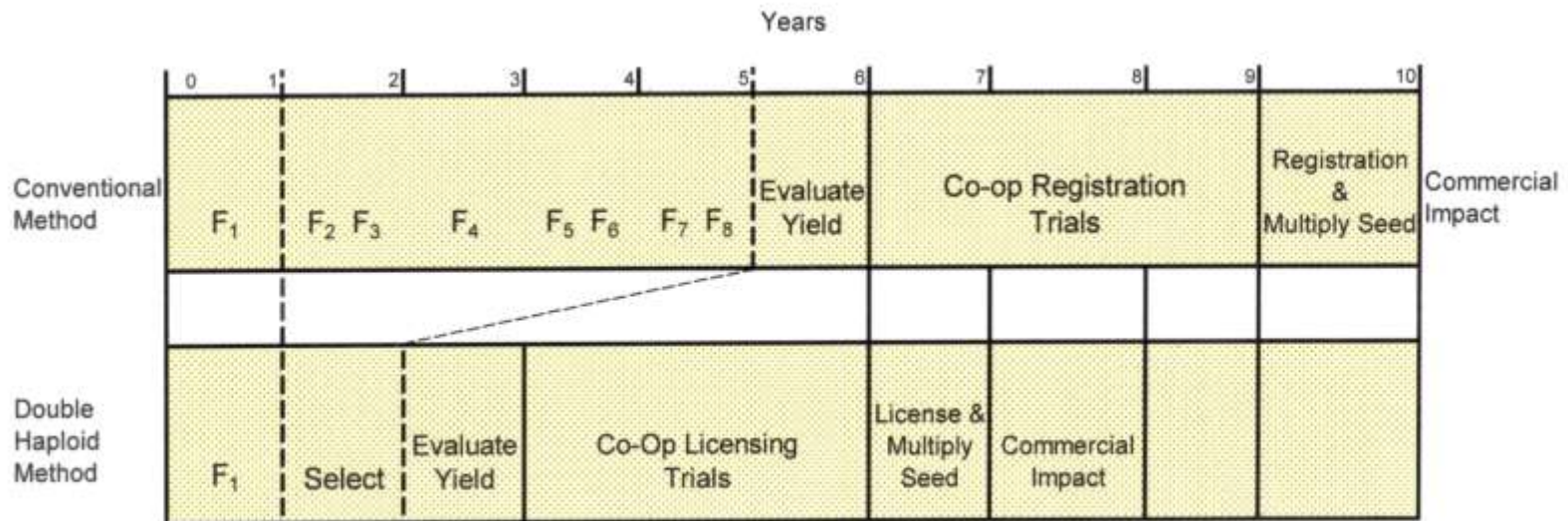
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Saskatoon, SK

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# Relative lengths of breeding programs

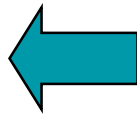
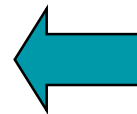
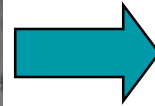
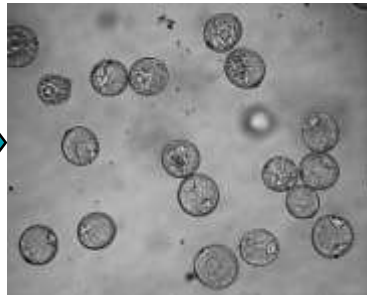
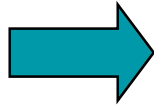


# Androgenesis

- **Anther, isolated microspores**
- **Guha and Maheshwari, 1964**
- **Solanaceae species**
- **250+ species**
- - very little response in forage grasses



# Microspore culture



# Plant production

**Genotype**

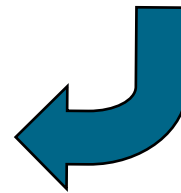
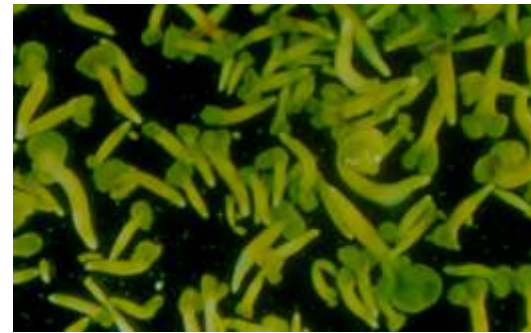
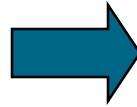
**Donor plant conditions**

**Developmental stage**

**Pretreatments**

**Media composition**

**Culture environment**



**Genotype**

**Embryo stage**

**Pretreatments**

**Media composition**

**Culture environment**



# DH – forage grasses

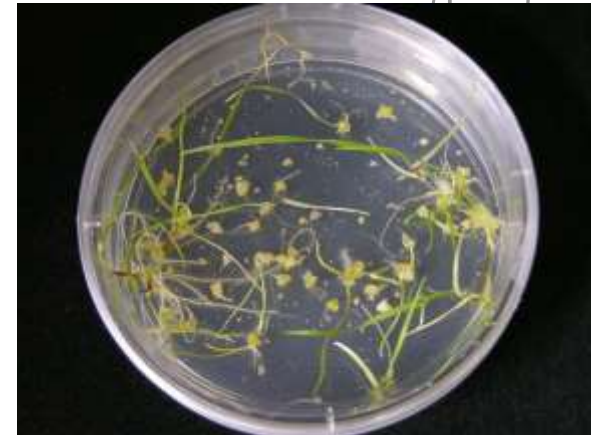
- **Crested wheatgrass**
- **Meadow bromegrass**
- **Hybrid bromegrass**

## **Methodology**

- 1. Screen using wheat protocol**
- 2. Evaluate factors influencing embryogenesis**
- 3. Regenerate green plants from embryos**

# Evaluation using wheat protocol

- **Response (embryos) from all 3 species**
- **Regeneration was poor**
- **Green plant production**



# Hybrid bromegrass

Effect of Trichostatin A on microspore embryogenesis of cv. AC Success.

Protocol	0.008 $\mu$ M TSA	Average number of embryos/spike	Average number of green plants/spike
Spring	+	39.78	0
	-	18.00	0





# Meadow bromegrass

Comparison of spring wheat protocol and winter wheat protocol, with and without Trichostatin A for meadow bromegrass cv. Fleet.

Protocol	0.008 $\mu$ M TSA	Average number of embryos/spike	Average number of green plants/spike
Spring	+	25.82	0.24
	-	33.78	0.58
Winter	+	43.88	0.26
	-	46.62	0.46



# Crested wheatgrass

Comparison of spring wheat protocol and winter wheat protocol, +/- Trichostatin A for crested wheatgrass cv. Kirk.

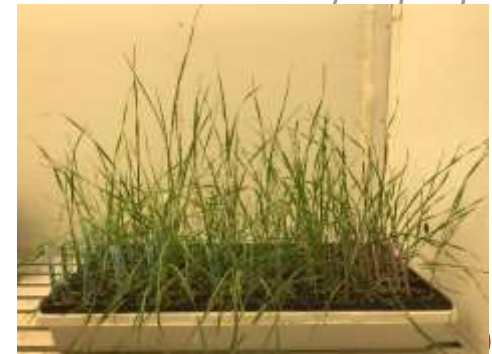
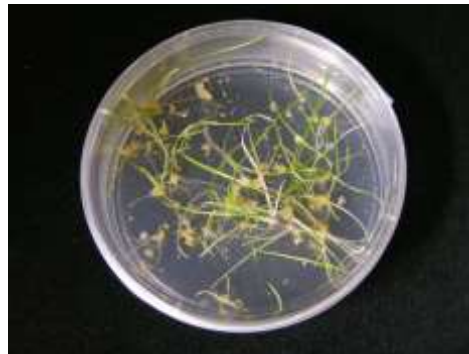
Protocol	0.008 $\mu$ M TSA	Average number of embryos/spike	Average number of green plants/spike
Spring	+	1490.96 b	0
	-	3158.15 c	0
winter	+	212.00 a	0
	-	441.84 a	0



# Crested wheatgrass

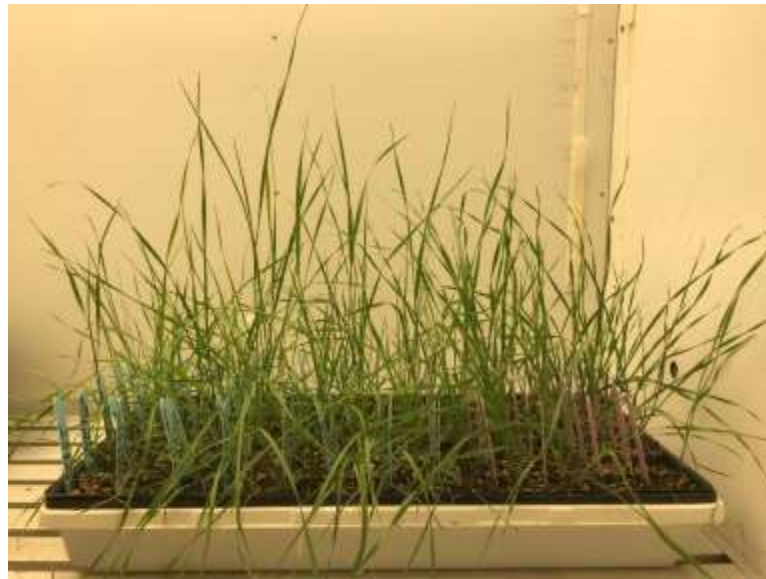
Effect of copper on microspore embryogenesis and green plant production

Protocol	Average number of embryos/spike	Average number of green plants/spike
No copper	1125.59	21.94
+ copper	1081.75	20.97



# Conclusions

- **Microspore culture response in all 3 species**
- **Green plant production in 2 species**
- **More experimentation to do!**



# Thank you

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