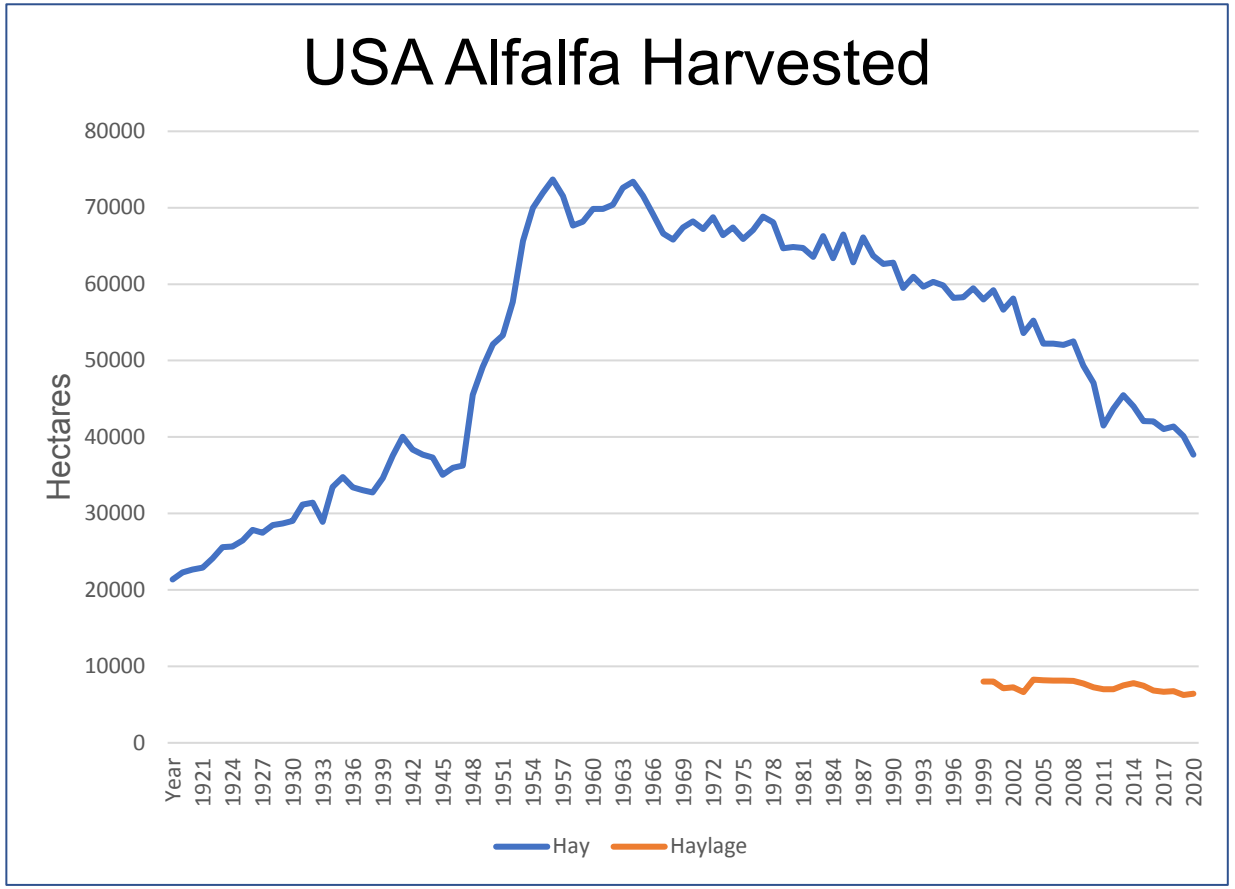
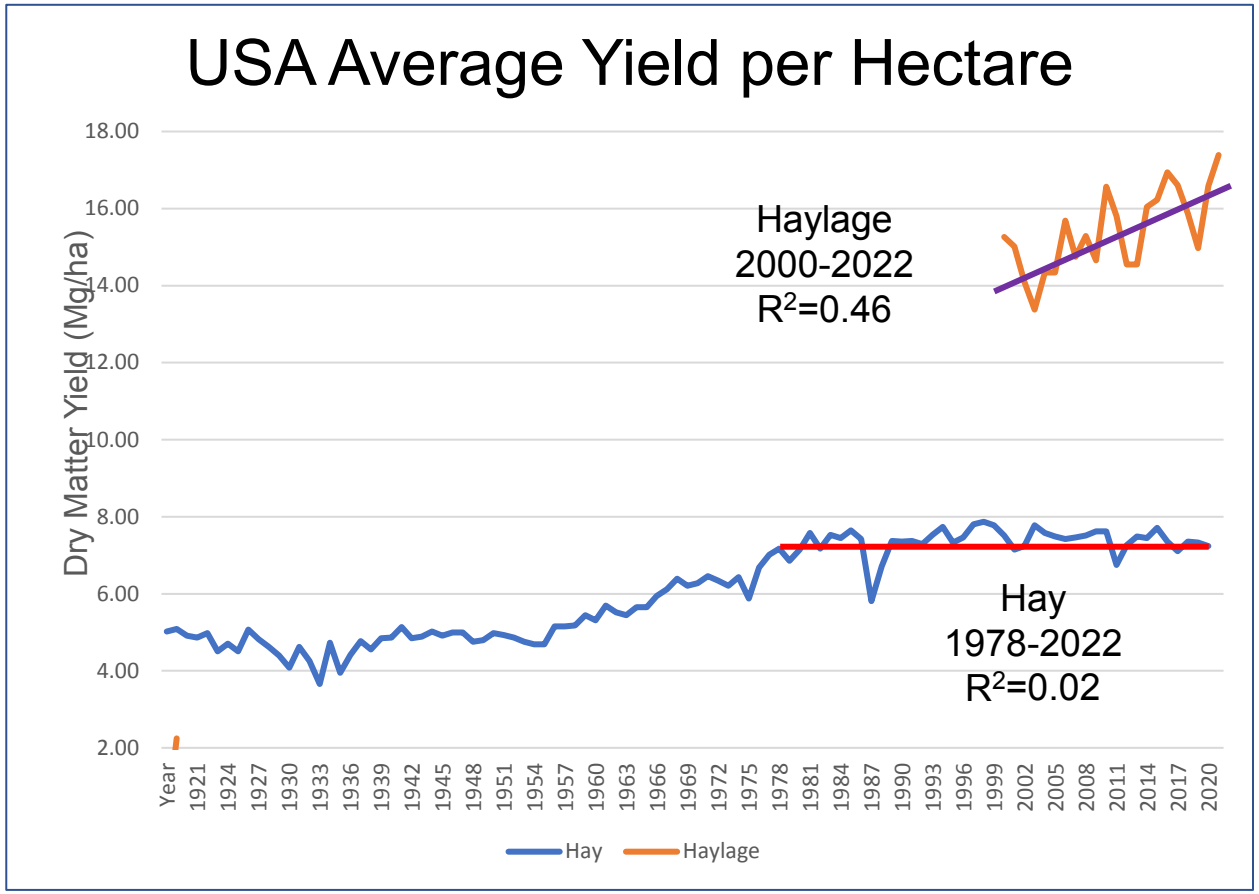
# NEW HORIZONS IN ALFALFA IMPROVEMENT

E. Charles Brummer, University of California, Davis

# THE CURRENT ALFALFA HORIZON



# WHAT DO WE NEED?

INCREASE YIELD
IMPROVE PERSISTENCE
DECREASE HARVESTS PER YEAR
MAINTAIN PROTEIN CONCENTRATION
IMPROVE FIBER DIGESTIBILITY

# ADVANCES IN GENOMICS

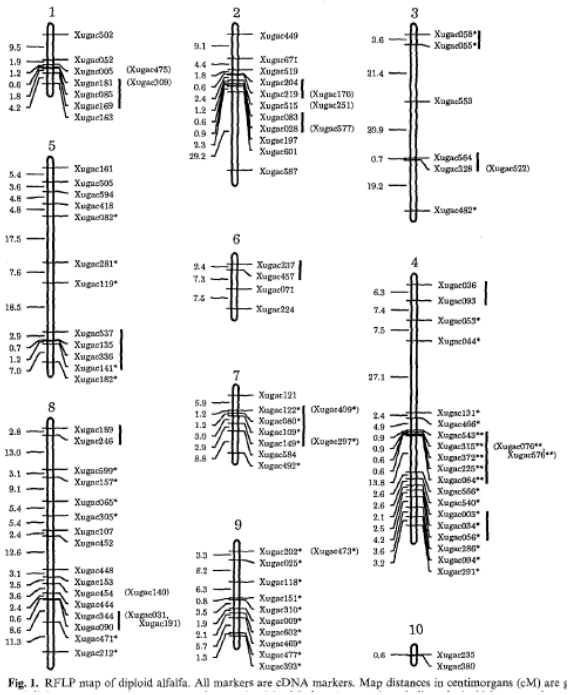
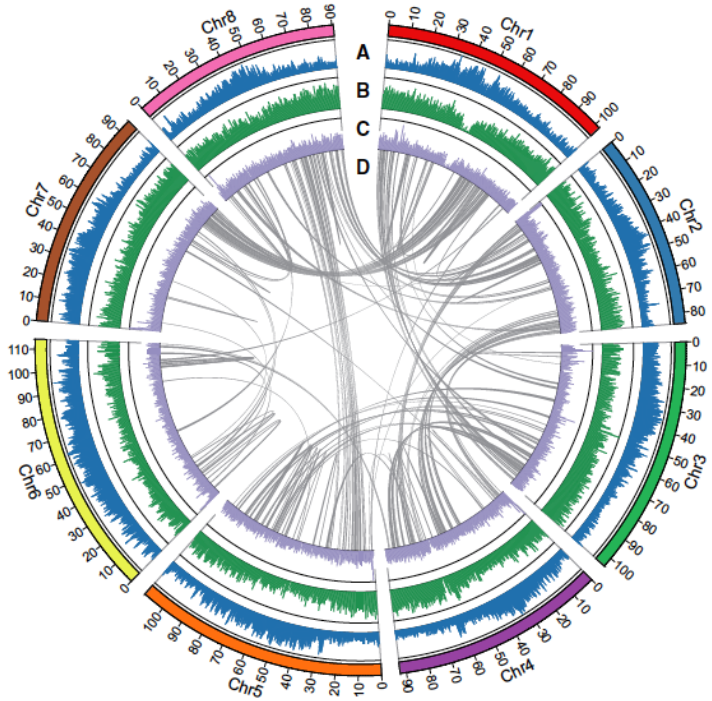


Fig. 1. RFLP map of diploid alfalfa. All markers are cDNA markers. Map distances in centimorgans (cM) are




Published: April 1993

## Development of an RFLP map in diploid alfalfa

E. Charles Brummer, Joseph H. Bouton & Gary Kochert

*Theoretical and Applied Genetics* **86**, 329–332 (1993) | Cite this article

Original Articles | Published: April 1993

## Construction of a basic genetic map for alfalfa using RFLP, RAPD, isozyme and morphological markers

György B. Kiss, Gyula Csanádi, Katalin Kálmán, Péter Kaló & László Ökrész

*Molecular and General Genetics MGG* **238**, 129–137 (1993) | Cite this article

The Chromosome-Level Genome Sequence of the Autotetraploid Alfalfa and Resequencing of Core Germplasms Provide Genomic Resources for Alfalfa Research

Chen Shen [1, 4], Huilong Du [2, 3, 4], Zhuo Chen [2, 3, 4], Hongwei Lu [2, 3, 4], Fugui Zhu [1], Hong Chen [1], Xiangzhao Meng [1], Qianwen Liu [1], Peng Liu [1], Lihua Zheng [1], Xiuxiu Li [2, 3], Jiangli Dong [1], Chengzhi Liang [2, 3], Tao Wang [1]

**Molecular Plant**
Volume 13, Issue 9, 7 September 2020, Pages 1250-1261

## A chromosome-scale genome assembly of a diploid alfalfa, the progenitor of autotetraploid alfalfa

Ao Li, Ai Liu, Xin Du, Jin-Yuan Chen, Mou Yin, Hong-Yin Hu, Nawal Shrestha, Sheng-Dan Wu, Hai-Qing Wang, Quan-Wen Dou ... Show more
Author Notes

*Horticulture Research*, Volume 7, 2020, 194, https://doi.org/10.1038/s41438-020-00417-7

Article | Open Access | Published: 19 May 2020

## Allele-aware chromosome-level genome assembly and efficient transgene-free genome editing for the autotetraploid cultivated alfalfa

Haitao Chen, Yan Zeng, Yongzhi Yang, Lingli Huang, Bolin Tang, He Zhang, Fei Hao, Wei Liu, Youhan Li, Yanbin Liu, Xiaoshuang Zhang, Ru Zhang, Yesheng Zhang, Yongxin Li, Kun Wang, Hua He, Zhongkai Wang, Guangyi Fan, Hui Yang, Aike Bao, Zhanhuan Shang, Jianghua Chen, Wen Wang & Qiang Qiu

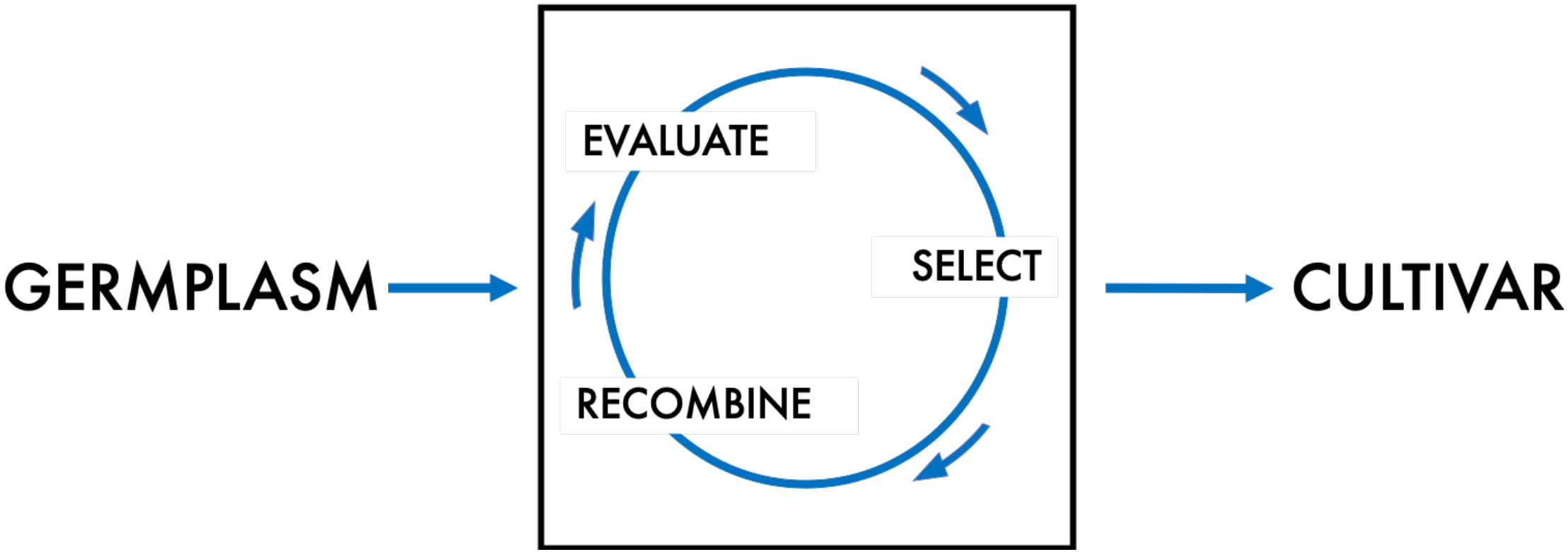
*Nature Communications* **11**, Article number: 2494 (2020) | Cite this article

Genome Assembly of Alfalfa Cultivar Zhongmu-4 and Identification of SNPs Associated with Agronomic Traits

Ruicai Long [1, #], Fan Zhang [1, 2, #], Zhiwu Zhang [2], Mingna Li [1], Lin Chen [1], Xue Wang [1], Wenwen Liu [1], Tiejun Zhang [3], Long-Xi Yu [4], Fei He [1], Xueqian Jiang [1], Xijiang Yang [1], Changfu Yang [1], Zhen Wang [1], Junmei Kang [1], Qingchuan Yang [1]

Genomics, Proteomics & Bioinformatics
Volume 20, Issue 1, February 2022, Pages 14-28

# ACCELERATING BREEDING CYCLES



# CAN GENOMIC PREDICTION DRIVE YIELD GAIN?

GERMPLASM →  → CULTIVAR

# REIMAGINING THE ALFALFA PLANT

WHICH GENES
WHERE
WHEN
HOW

GENOMICS AND BIOTECHNOLOGY
+
CROP MODELING
+
CROP PHYSIOLOGY
+
CROP MANAGEMENT

# SHOULD WE BE THINKING ABOUT DIPLOID ALFALFA?

## Reinventing Potato as a Diploid Inbred Line–Based Crop

Shelley H. Jansky,* Amy O. Charkowski, David S. Douches, Gabe Gusmini, Craig Richael, Paul C. Bethke, David M. Spooner, Richard G. Novy, Hielke De Jong, Walter S. De Jong, John B. Bamberg, A. L. Thompson, Benoit Bizimungu, David G. Holm, Chuck R. Brown, Kathleen G. Haynes, Vidyasagar R. Sathuvalli, Richard E. Veilleux, J. Creighton Miller, Jr., Jim M. Bradeen, and Jiming Jiang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LET’S GET TO WORK.

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