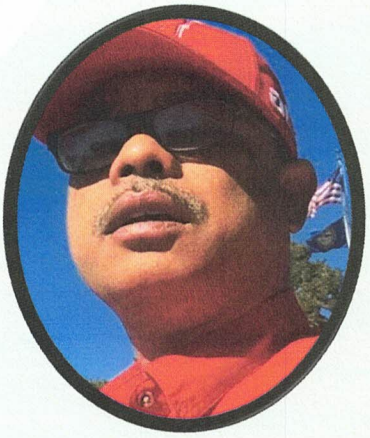

PROFILE

Dr. Santra joined the Panhandle Research and Extension Center in 2008. Research focus is to develop and identify genetically improved alternative (i.e. new & existing) crops varieties and germplasm for semi-arid High Plains of the USA. The program focusses on multiple groups of crops such as ancient grains (proso millet*, buckwheat, amaranth, tef, and einkorn wheat), pulses or beans (field pea*, cowpea, mung bean, fenugreek, and lentil), oil-seeds (sunflower*, canola, and mustard, and camelina), and others (hemp and mint). *Major emphasis. Extension emphasis is on providing information on varieties and production practices of various alternative crops mentioned above especially proso millet, pea, and sunflower for promoting their commercial production in semi-arid High Plains of the USA. Dr. Santra works closely with farmers

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DR. DIPAK SANTRA

ALTERNATIVE CROPS BREEDING SPECIALIST

Proso Millet Breeding

Proso millet the most common alternative (rotational) crop under dryland production system in western Nebraska and neighboring regions in CO and SD. Primary use is as birdfeed. More millet is being used for human food recently because its health benefits. Major objectives are to (1) develop high yielding proso millet varieties suitable for diverse uses (birdfeed and human food) and (2) develop modern breeding (molecular) tools. 'Plateau', specialty proso millet variety for export marker in Japan and Korea, was developed a few years ago. Its acreage is steadily increasing. Two new varieties look promising and will be released next year. Limited molecular tools were developed in the past. Proso millet genome sequence is available and now DNA sequence-based molecular markers are being developed to improve the breeding efficiency. The country's only proso millet breeding program is not supported by any steady funds because of lack of any check-off system. This is a major limitation for its productivity. It is expected that new collaborative partnership with private seed company (Dryland Genetics, IA, USA) and international proso millet researchers in Italy and China will provide greater support to the millet industry in Nebraska and neighboring states.

Field Pea Varieties and Breeding

Yellow/field pea is the newest alternative crop in western Nebraska. Significant commercial production (~20,000 acres) started in 2013 with only 2-3 varieties and no certified seed sources in the state. Objective is to identify more pea varieties of diverse genetics to reduce production risk and expand the industry. Today, pea acreage is 60,000 – 80,000 acres, there are 6-8 different varieties with 5-6 in-state certified seed sources for the farmers. It is expected that recent pea check-off bill will help Santra's program for initiating breeding high yielding and heat tolerant pea varieties for Nebraska.

Oil-seed and Other Crops:

Objective is to identify sunflower hybrids suitable for western Nebraska testing commercial hybrids through partnership with the seed industries. Santra's program is providing the information to the stakeholders. Sunflower acreage is steady during last 10 years. Local oil pressing industry will promote its production further. Identified mint variety with high yield and oil for Nebraska. Initiated working on hemp to support local hemp industry in partnership with Western Farm Seeds of Scottsbluff, NE).