Bringing Hope to Rural Kansas and Globally One Grain at a Time - Grains for Hope

Sajid Alavi  
Kansas State University

Follow this and additional works at: https://newprairiepress.org/cecd

Part of the Food Processing Commons

This work is licensed under a Creative Commons Attribution-Noncommercial-No Derivative Works 4.0 License.


This Event is brought to you for free and open access by the Conferences at New Prairie Press. It has been accepted for inclusion in Center for Engagement and Community Development by an authorized administrator of New Prairie Press. For more information, please contact cads@k-state.edu.
Bringing Hope To Rural Kansas and Globally One Grain at a Time - Grains for Hope

Dr. Sajid Alavi
Department of Grain Science & Industry
Sabetha High School and Wenger Manufacturing, Inc.

#foodinsecurity
#foodinsecurity  Dr. Sajid Alavi
## Country Profile - Mozambique

<table>
<thead>
<tr>
<th>Category</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>0.31 million sq mi</td>
</tr>
<tr>
<td>Population</td>
<td>22.9 million</td>
</tr>
<tr>
<td>GDP</td>
<td>$19.8 billion (PPP); 9.8 billion (nominal)</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>$933 (PPP)</td>
</tr>
<tr>
<td>Ag GDP</td>
<td>21% (only 12% of 90 million acres of arable land cultivated)</td>
</tr>
<tr>
<td>Ag labor force</td>
<td>75%</td>
</tr>
<tr>
<td>Population below poverty line</td>
<td>70%*</td>
</tr>
<tr>
<td>Unemployment</td>
<td>21%*</td>
</tr>
</tbody>
</table>


#foodinsecurity

Dr. Sajid Alavi
Partnership for Science Education, Global Outreach and Food Security

#foodinsecurity

Dr. Sajid Alavi
Feeding Villages in Mozambique and Haiti

#foodinsecurity

Dr. Sajid Alavi
International Experiences

#foodinsecurity

Dr. Sajid Alavi
KSU – Grains for HopeSTEM Initiative

Dr. Jackie Spears, Professor and Director Center for Science Education
Sara Heiman, Coordinator, GROW and EXCITE
Dr. Hulya Dogan, Professor, Grain Science & Industry

- Solar drying applications in Africa (Dr. Alavi, Professor, Grain Science & Industry)
- Unmanned aircraft systems (Dr. Ajay Sharda, Professor, Biological & Agricultural Engineering)
- 3-D printing technology (David Schall and Jacob Slous-President, Electronic Design Club)

#foodinsecurity
Dr. Sajid Alavi
Solar Drying of Bean Analog - Front View of Dryer Design

#foodinsecurity

Dr. Sajid Alavi
DRIYING CHARACTERISTICS OF BEAN ANALOG – A SORGHUM BASED EXTRUDED PRODUCT

AKINBODE A. ADEDEJI, 1,2 ELSIE SUHR, 1 SUBRAMANYAM BHADRIRAJU1 and S AJD ALAVI1,3

1Department of Grain Science and Industry, Kansas State University, Manhattan, KS
2Department of Biosystems and Agricultural Engineering, University of Kentucky, Lexington, KY

ABSTRACT

Bean analog is a novel bean-like re-formed product made from the extrusion of three flour combinations (sorghum, wheat and soy). This product was evaluated under three drying conditions, namely oven, infrared and solar drying, and were fitted to empirical and semi-empirical models. Infrared drying produced the highest drying rate of all methods. Effective moisture diffusivity (EMD), which is an indication of drying rate, ranged from $6.8 \times 10^{-10}$ to $1.74 \times 10^{-9}$, 2.05 to $9.22 \times 10^{-9}$ and $8.70 \times 10^{-10}$ to $6.10 \times 10^{-9}$ m$^2$/s for the oven, infrared and solar dried bean analog, respectively. Low EMD for oven drying, against expectation, is attributed to low heat transfer due to limited air circulation. Page equation fitted the drying data better than Lewis, and Henderson and Pabis, with higher $R^2$ values. Oven dried samples rehydrate better compared with others, which can be attributed to slower drying impact on structural changes.

#foodinsecurity Dr. Sajid Alavi
Thanks!

"Helping the world one grain at a time"