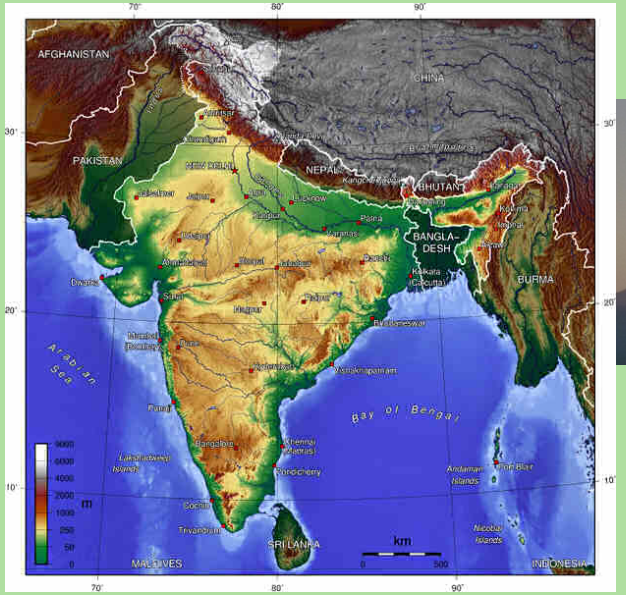
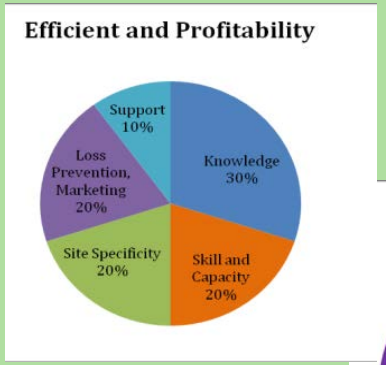
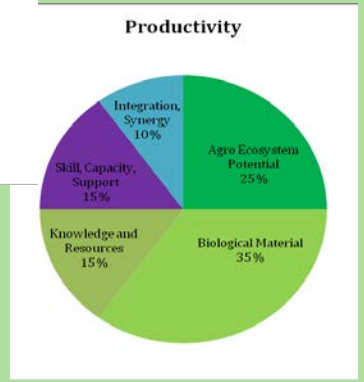
Challenges of Agribusiness- Reorienting Research and Technology Development







10th Global
Agriculture Leadership Summit
New Delhi, India
Sept 05-06th, 2017

Dr. Anil Kumar Srivastva

Director, Centre for Agrculture & Rural Development
Emeritus Scientist and Ex Director(VPKAS)
ICAR-NAIP Consultant on Farming Systems
Res: 108-B Sailok Phase-II, GMS Road, Kanwali, Dehradun-248001
Mb: 91-9411134656, -9761173498
e-mail: aksrivastva4@yahoo.com; aksrivastva2@gmail.com

Transform to Change
Challenges of Agribusiness- Reorienting Research and Technology Development

1.0 Transforming Agriculture to Agribusiness

2.0 Research Programme

3.0 Development of Farm Technology and Education:

4.0 Efforts inclusive of entire community, resources and possibilities.

5.0 Adoption Path way:

Hard Decisions:

A.K.SRIVASTVA, Director-Projects, CARD Em. Scientist & Ex-Director,ICAR- VPKAS, at Dehradun India. Ph:0135- 2729809; + 91-9411134656; 9761173498, aksrivastva4@yahoo.com ; aksrivastva2@gmail.com

Transform to Change
Challenges of Agribusiness- Reorienting Research and Technology Development

1.0 Context:

Economically Viable, Risk Resilient, Demand Based Agriculture

Intelligent Farm Planning

Base-Line values

Efficient Farming Systems Aligned to

Agro-eco systems, Natural Resources and Complementing Applied Resources

Appropriate Knowledge, Skilled Farming Community

Market, Price Regime and Commodity Trading Reforms

A.K.SRIVASTVA, Director-Projects, CARD Em. Scientist & Ex-Director,ICAR- VPKAS, at Dehradun India. Ph:0135- 2729809; + 91-9411134656; 9761173498, aksrivastva4@yahoo.com ; aksrivastva2@gmail.com

Hence the Agenda is:

Lead the Change rather

Chasing the Change

Transforming the ways of Farming:

- Research, Education, Technology development and Technology transfer- Implementation Mechanism

Production and Commodity centric To:

Market Demand based production systems, Client, Farmer and his farming centric,

- Agro-ecosystem and Site Specific Farming as a

Viable Livelihood- End result based

A.K.SRIVASTVA, Director-Projects, CARD Em. Scientist & Ex-Director,ICAR- VPKAS, at Dehradun India. Ph:0135- 2729809; + 91-9411134656; 9761173498, aksrivastva4@yahoo.com ; aksrivastva2@gmail.com

2.0 Research Programme:

Need and Demand Scenario:

Integrated Systems Research with cause and effect analysis

Characterising and quantifying the production support systems

Emphasis on Site specific, Long term, On farm research, with

Suitable Reward and Recognition Mechanism.

Intelligent farm planning - Market analysis,

Ecosystems and Natural Resource potential; Climate resilience

Resource use with Vulnerability and Sustainability Tag.

cntd.....

A.K.SRIVASTVA, Director-Projects, CARD Em. Scientist & Ex-Director,ICAR- VPKAS, at Dehradun India. Ph:0135- 2729809; + 91-9411134656; 9761173498, aksrivastva4@yahoo.com ; aksrivastva2@gmail.com

2.0 Research Programme-Strategy:

Agro-ecosystems and Natural Resources:

Hydrologic cycle, Nutrient Cycle Management research.

Climate Change, Organic Farming and Contingency Alternatives.

Components and Components Integration leading to

Integrated Farming Systems addressing Needs and Demands.

Inclusive of Farm Families, Agri- entrepreneurs and Rural Community

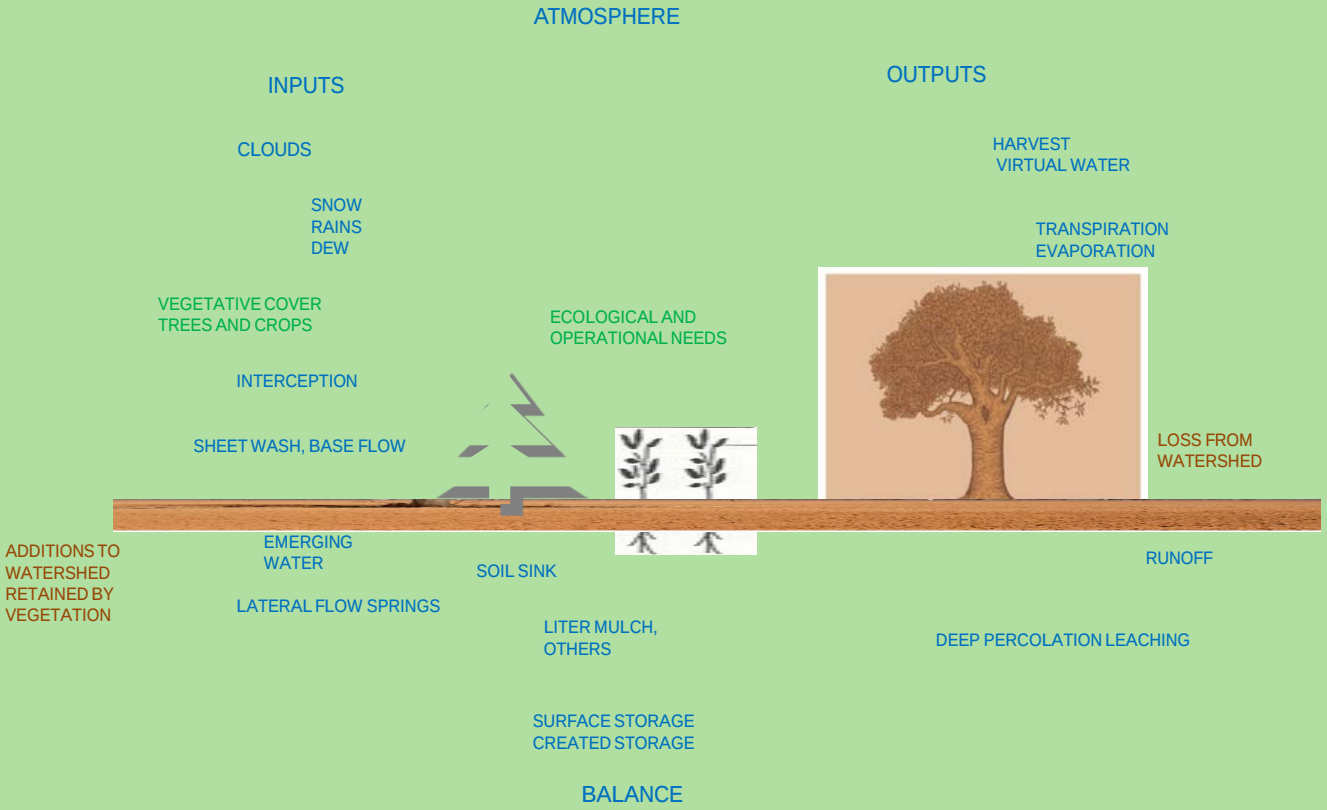
Phases:

Inclusive of Pre-production, Production and Post- Production

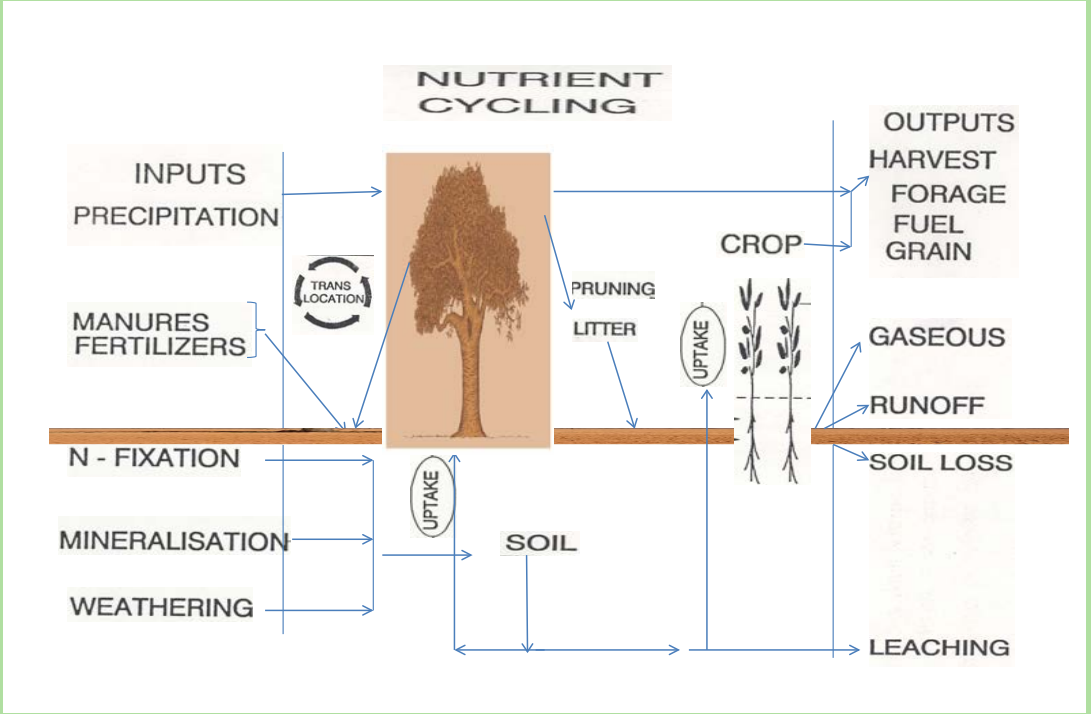
Components of Scaling up and Replicability

A.K.SRIVASTVA, Director-Projects, CARD Em. Scientist & Ex-Director,ICAR- VPKAS, at Dehradun India. Ph:0135- 2729809; + 91-9411134656; 9761173498, aksrivastva4@yahoo.com ; aksrivastva2@gmail.com

Transform to Change
Challenges of Agribusiness- Reorienting Research and Technology Development



Hydrologic Cycle in I F S



Nutrient Cycling in I F S

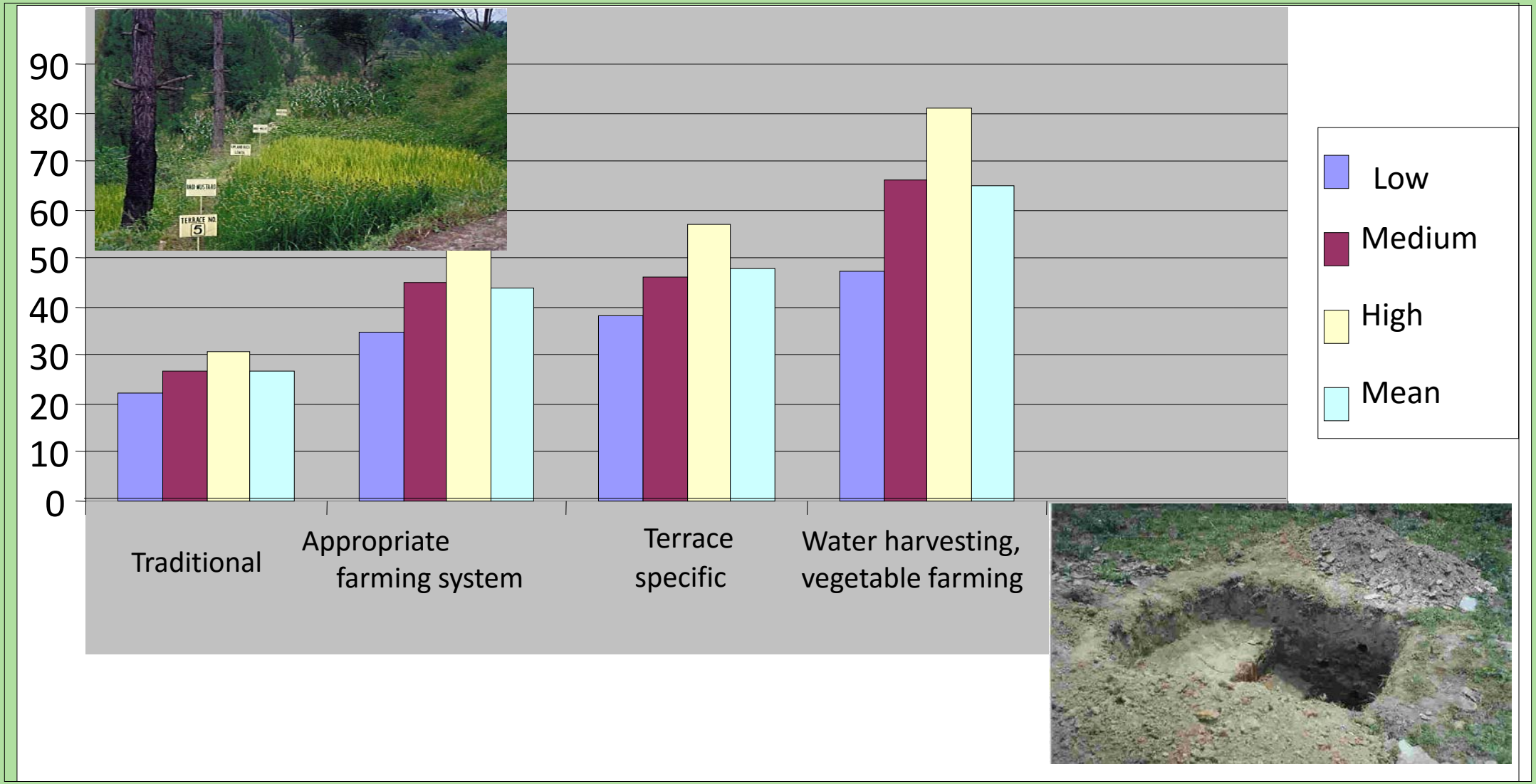
Transform to Change

Challenges of Agribusiness- Reorienting Research and Technology Development

Farm Holding Water Budget for NWHR

Factors	Water Budget		
a. Precipitation	1,200 mm		
b. Effective rainfall	1,000 mm		
Growing conditions	Favourable	Moderate	Poor
c. Runoff (% of rainfall)	23%	30%	37%
d. Runoff (in mm)	230 mm	300 mm	370 mm
e. Balance water (b-d)	770 mm	700 mm	630 mm
f. Contribution from upstream runoff	45 mm	56 mm	65 mm
g. Balance water (e+f)	815 mm	756 mm	695 mm
h. Deep percolation losses (%)	10 %	15 %	20 %
I. Balance water (g-h)	734 mm	643 mm	556 mm
j. Water available for crop cultivation (at 80%)	585 mm	515 mm	445 mm

Site Specific Integrated Farming (q/ha) at 0.4 ha holding



Productivity Grouping in Hill Eco-Systems

Factors	High	Medium	Low	Quantification
Slope	Moderate steep		Moderate steep	<15%
		Steep	Steep	15-33%
			Very steep	>33%
Soil Depth	Moderate deep	Moderate deep	Moderate deep	22.5-45cm
		Shallow	Shallow	7.5-22.5 cm
			Very Shallow	<7.5 cm
Gravel Content	Low	Low	Low	10-30%
		Moderate	Moderate	33-50%
			Heavy	>50%
Landscape Siting	Lower Slope, Valley	Lower Slope, Valley	Lower Slope, Valley	1/ 5 - 1/ 3rd
	Middle Slope	Middle Slope	Middle Slope	1/3-1/2
			Upper Slope	Upper 1/2

3.0 Technology:

Research Results automatically doesn't become a Technology.

Phasing: Pre- Programme Implementation Stage Technologies
Programme Implementation Stage Technologies
Post-Programme Implementation Stage Technologies

On farm research leading to Robust, Resilient and Dynamic Farm Technology.
Laboratories and Research Farms to provide Basis and unit values.

Quantification and Standardisation.

A.K.SRIVASTVA, Director-Projects, CARD Em. Scientist & Ex-Director,ICAR- VPKAS, at Dehradun India. Ph:0135- 2729809; + 91-9411134656; 9761173498, aksrivastva4@yahoo.com ; aksrivastva2@gmail.com

4.0 The Research Results and Farm Technology:

Specific to-

- -Market Demand, Spectrum and Pattern
- -Agro eco systems and Natural Resources,
- -Farm Families, their skill and capacity up-gradation.
- - Policies and Quality Compliance
- -Efficiency, Profitability Resilience and Processing enabled

Collating the Success stories and Indigenous Knowledge and Technologies.

cntd….

A.K.SRIVASTVA, Director-Projects, CARD Em. Scientist & Ex-Director,ICAR- VPKAS, at Dehradun India. Ph:0135- 2729809; + 91-9411134656; 9761173498, aksrivastva4@yahoo.com ; aksrivastva2@gmail.com

4.0 The Research Results and Farm Technology……:

The Farming System technology should be Tagged and Ranked based on

- -Productivity
- -Efficiency
- -Profitability
- -Resilience and
- -Special Skill, Technology and Investment Needed

Technological Quantification and Management Standardisation.

Components of Scaling up, Replicability and

Implementation Mechanism

Reorientation to Major Eco-Regions.

A.K.SRIVASTVA, Director-Projects, CARD Em. Scientist & Ex-Director,ICAR- VPKAS, at Dehradun India. Ph:0135- 2729809; + 91-9411134656; 9761173498, aksrivastva4@yahoo.com ; aksrivastva2@gmail.com

Characterization of high, medium and low productivity conditions in mid altitude hill agro ecosystems.

Productivity conditions	Characterization
High productivity	High coverage of sunshine at 08.00 hrs: 80 %. Soil Volume: 0.5m³, (depth X gravel). Organic carbon: 2.4 kg/m³ , soil N: 0.207 kg N/m³. Soil erosion: Runoff: 23 %, soil loss:< 12 t/ha/yr.
Medium productivity	Sunshine cover at 08.00 hrs: 68 % Soil Volume: 0.4 m (depth X gravel) Organic Carbon: 2.1 kg/m³. Soil N: 0.185 kg N/m³ Soil erosion: Runoff: 31 %, Soil loss: 17 t/ha/yr.
Low productivity	Sunshine cover at 0.8.00 hrs; 28 % Soil volume: 0.3 m (depth X gravel) Soil erosion; Runoff 37%, Soil loss 23 t/ha/hr.

A.K.SRIVASTVA, Em. Scientist & Ex-Director,ICAR- VPKAS, Almora, at Dehradun India. Ph: 0135- 2729809; + 91-9411134656; 9456593440, aksrivastva4@yahoo.com ; aksrivastva2@gmail.com

Path to Sustainable and Viable Farm Income

Research and Technology Matrix:

Market Demand
- Nature and Pattern

Production Systems

Eco Systems and Natural Resources

Farm Support and Service providing Systems

Quantification and Standardisation

Recognition and Reward of Long term Integrated and On- Farm Research

A.K.SRIVASTVA, Director-Projects, CARD Em. Scientist & Ex-Director,ICAR- VPKAS, at Dehradun India. Ph:0135- 2729809; + 91-9411134656; 9761173498, aksrivastva4@yahoo.com ; aksrivastva2@gmail.com

Conclusion:

Farm schools, Exclusive universities of Farm Learning

Demand, Need and Resource based Intelligent Farm planning.
IT- making available and integrating them with intelligent applications.
Components of Scaling up, Replicability and Implementation Mechanism

Farm holding scale to Village to Watershed to Region.
India is spread from 8th parallel to >37th parallel
Agro eco region specific farm research and development Knowledge servicing
Collating Research And Technology Results and Experience.

Hard Decisions:

What, Where and Why to Produce ??????????????

A.K.SRIVASTVA, Director-Projects, CARD Em. Scientist & Ex-Director,ICAR- VPKAS, at Dehradun India. Ph:0135- 2729809; + 91-9411134656; 9761173498, aksrivastva4@yahoo.com ; aksrivastva2@gmail.com

Conclusion:

Transforming the

- ways of Farming as a Viable Livelihood- End result based

-ways of Research, Education, Technology development and Technology transfer-

-Programme Implementation Mechanism

Adoption of this path way:

Need to have Appropriate human Resources, Institutional Resources, Legislative and Governance

Aiming at Climate Resilience and Doubling the Income

Imparting viability to Agriculture in India and similar Ecosystems of the World

These facts have potential to turn farming in India into one of the Most preferred livelihood option.

A.K.SRIVASTVA, Em. Scientist & Ex-Director,ICAR- VPKAS, Almora, at Dehradun India. Ph: 0135- 2729809; + 91-9411134656; 9456593440, aksrivastva4@yahoo.com ; aksrivastva2@gmail.com

Thank You

Grit of Farm Families;
Dedication of Scientists;
Commitment of
Development Departments

Integrated Farming Systems - Business model : A Canvass

Agro-ecosystem and Resource Productivity:

Natural resources:

Soil- Sink, Gravelliness, Depth, Texture

Water: Rainfall X Soil sink, Moisture regime

Terrain: Slope, Landscape features

Runoff and soil erosion

Farm productivity-Aquatic and Terrestrial

Farm productivity X Agro ecosystem X Farming systems X Farm Family:

Sunshine X Altitude X Market and Domestic Needs

Farm Productivity X Agro ecosystem productivity X Integrated farming system and Allied Activities- Intelligent Farm Planning:

Energy, skill, operational management and infrastructure support

Farm productivity X Loss prevention X Marketing X Policy :

Productivity, profitability, employment and livelihood enhancement

A.K.SRIVASTVA, Em. Scientist & Ex-Director,ICAR- VPKAS, Almora, at Dehradun India. Ph: 0135- 2729809; + 91-9411134656; 9456593440, aksrivastva4@yahoo.com ; aksrivastva2@gmail.com

Climate Resilient Agriculture for Doubling the Farm Income - by 2022

Natural Resource Management-Non Arable Land










Resource Conservation Farming Systems leading to Rural Livelihood Security

Climate Resilient Agriculture for Doubling the Farm Income - by 2022

Protected Cultivation of High Value Crops

Climate Resilient Agriculture for Doubling the Farm Income - by 2022

Agro-Ecosystems and N R M








The National Commitment

"To all we give assurance that

-It will be our endeavour

-To end poverty and squalor; and

- its companions hunger and diseases

-To abolish distinction and exploitation and

-Ensure decent condition of living"

Dr Rajendra Prasad, Constituent Assembly, India, 1949.

Transform to Change
Challenges of Agribusiness- Reorienting Research and Technology Development

Inclusive management of production systems,

resources and the community.

Synergy with the integrated farming, secondary agriculture and allied activities, including processing, marketing and service providers.

Economic Development of the country has to be Vibrant, Resilient and Sustainable Farm Sector

May be by Sept 2018-The 11th Summit my book

concerning these topics will be available.

A.K.SRIVASTVA, ICAR Consultant-Integrated Farming System, Em. Scientist & Director (Retd) (ICAR), VPKAS, Almora, India. Ph: 91-5962-210202, 91-9411134656 aksrivastva4@yahoo.com

Integrated Farming Systems -
Business model for north-west mountain and hill ecosystems

The Integrated Farming Systems Models

The Frame Work:

1. **The system and component:**
   The eco system and Resources
2. **Technology and Management:**
   Knowledge, Skills, Operational, Energy; Intensification and Diversification
3. **Environment, Social And Livelihood aspects:**
   Climate Resilience, Environment Impact and Women Empowerment.
4. **Productivity, Support, Product servicing, Policy, Market, Infrastructure and Credit.**
5. **System rating and Extrapolation Domain:**
   Production, Environment, Profit, Employment, Application Contour.

The Integrated Farming Systems Code:

Eco region / Resource Conditions / Support/ Applicability

Production Systems/Allied Activities/ Domestic and Market needs/ Processing / Client specific

A.K.SRIVASTVA, Em. Scientist & Ex-Director,ICAR- VPKAS, Almora, at Dehradun India. Ph: 0135- 2729809; + 91-9411134656; 9456593440, aksrivastva4@yahoo.com ; aksrivastva2@gmail.com

Resource Conservation Farming Systems leading to Rural Livelihood Security: Integrated Farming Systems Models.

Major Impact

-Inclusive resource management and utilisation including the entire community

-Diversification has brought in resilience

-Inclusion of secondary agriculture-

Apiary, Mushrooms, Back yard poultry,

Farm machinery Skill and livelihood

Protected cultivation skill and livelihood

Non arable land, Community Forests

Climate resilience and contingency

-Transformation of rural livelihood from

subsistence to economically viable addressing to both Domestic and Market needs incorporating

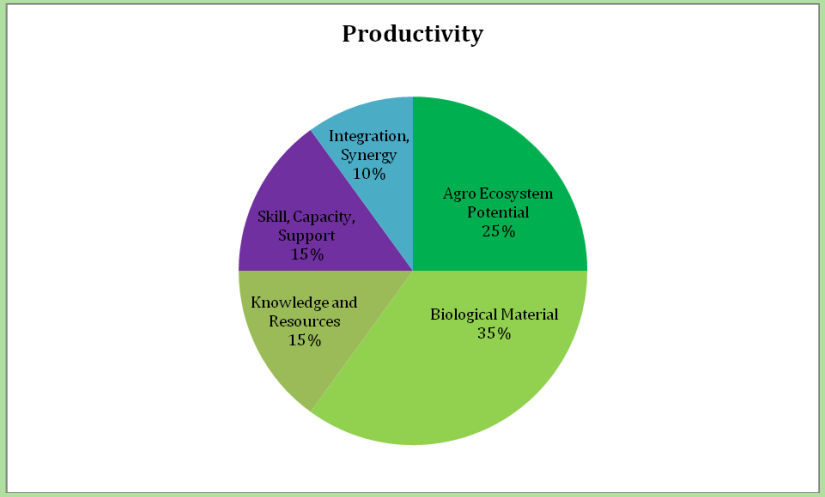
The resource conservation approach

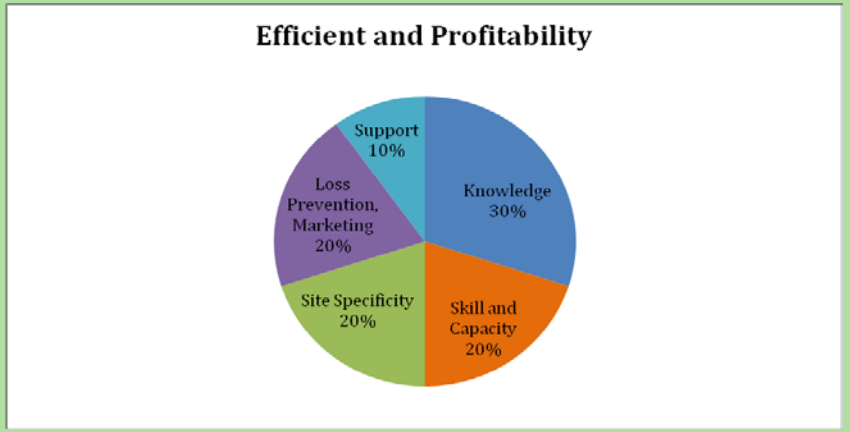
-Women empowerment by SHG's value additions ,

Drudgery reduction by farm mechanisation,

Development of water and fodder sources

Transform to Change
Challenges of Agribusiness- Reorienting Research and Technology Development





A.K.SRIVASTVA, Director-Projects, CARD Em. Scientist & Ex-Director,ICAR- VPKAS, at Dehradun India. Ph:0135- 2729809; + 91-9411134656; 9761173498, aksrivastva4@yahoo.com ; aksrivastva2@gmail.com