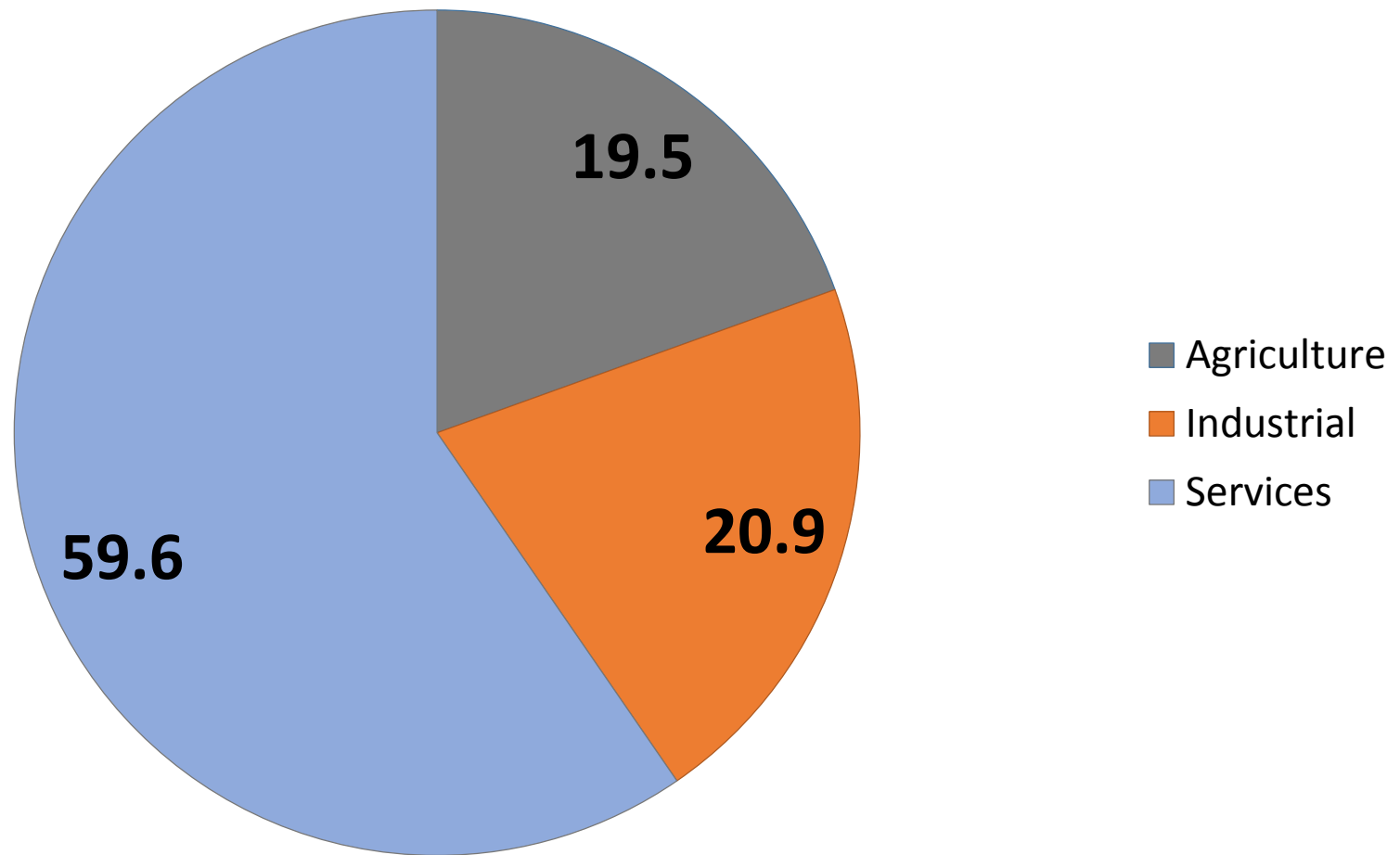




Technology Adaptation and Diffusion Challenges in Pakistan Agriculture Sector

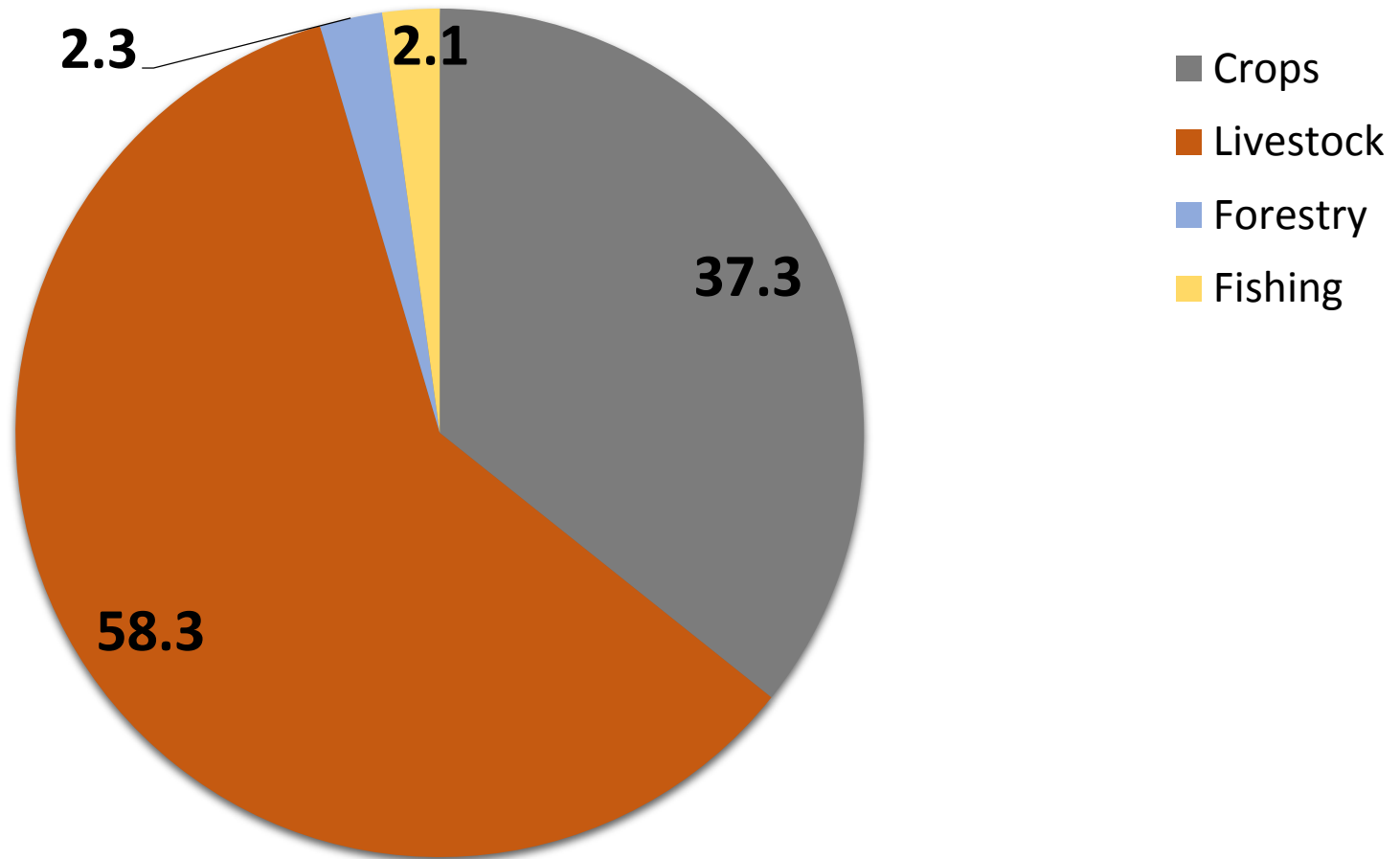
**Dr Muhammad Anjum Ali
Member (Plant Sciences Division)
Pakistan Agricultural Research Council
(PARC)**





Composition of Gross Domestic Product (2016-17)

- Economy passing through evolutionary stages
- Manufacturing and services sectors beneficial & grew at fast track
- Agricultural sector volatile & inconsistent – declined from ~34% share in FY 1975



✓ **Share in Agricultural Contribution to GDP**

Agriculture – Sectoral Analysis

- ✓ Dominant sector
- ✓ Economy revolves around this sector
- ✓ Stimulates other sectors
- ✓ Supplies raw material
- ✓ Consists of four sub-sectors
- ✓ Job absorption ability (~42%)

PRODUCTION OF IMPORTANT CROPS

Year	Cotton (million bales)	Sugarcane	Rice <i>(in million of tons)</i>	Maize	Wheat
2012-13	13.0	63.8	5.5	4.2	24.2
2013-14	12.8	67.5	6.8	4.9	25.9
2014-15	13.9	62.8	7.0	4.9	25.1
2015-16	9.9	65.5	6.8	5.3	25.6
2016-17	10.7	73.6	6.9	6.1	25.8

REGISTERED AND RELEASED VARIETIES IN PAKISTAN

CROP	No. of Registered and Released Varieties						
	Punjab	Sindh	K. Pakhtunkhwa	Baluchistan	Islamabad	PVT	Pakistan
Wheat	61	24	44	08	04	--	141
Barley	03	-	03	04	---		10
Maize	14	-	12	--	---	02	28
Rice	20	14	07	---	---	--	41
Cotton	85	23	02	---	---	18	128
Sugarcane	15	10	16	---	--	01	42
Pulses	46	04	21	01	05	--	77
Oilseeds	22	05	23	--	08	05	63
Fodders	29	---	07	01	---	02	<u>39</u>
Vegetables	40	01	13	08	---	--	62
Fruits	10	--	36	--	--	--	46
Flowers	03	-	-	-	-	-	03
Total	348	81	184	22	17	28	680

The number is increasing every year but pace of diffusion is variant

RECENT INNOVATIONS AND ADOPTIONS

- Laser Land Leveler
- Wheat Combine
- Poly-tunnels
- Hybrid Inoculation
- High Efficiency Irrigation System
- Improved and efficient Technologies
- Traditional to mechanized (Partially or fully)
- IPM, IPNP, ICM
- Extension approaches (T&V to Crop Clinics)

REAPER-WINDROWER

Field capacity	:	0.5 ha/h
Units in operation	:	> 52,000
No. of manufacturers	:	25
Operating Cost	:	Rs 7,150/ha (Rs 2,900/ac)



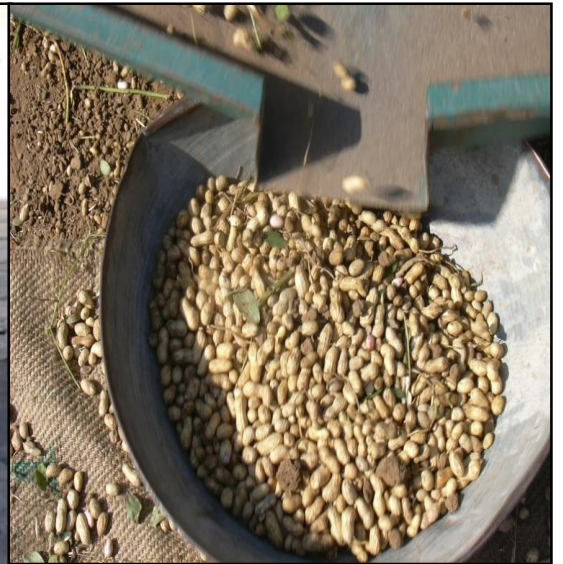
GROUNDNUT DIGGER

Field capacity	:	0.3 ha/h
Units in operation	:	2500
No. of manufacturers	:	5
Operating cost	:	Rs. 5,640/ha (Rs 2,250/ac)



GROUNDNUT THRESHER

Output capacity	:	430 kg/h
Units in operation	:	2500
No. of manufacturers	:	9
Operating cost	:	Rs 6.4/kg (Rs 6,400/ton)



PNEUMATIC PLANTER

Field capacity	:	0.3 ha/h
Units in operation	:	350
No. of manufacturers	:	5
Operating cost	:	Rs 2,980/ha (Rs 1,190/ac)



ZERO-TILL DRILL

Field capacity	:	0.4 ha/h
Units in operation	:	8,000
No. of manufacturers	:	15
Operating cost	:	Rs 3,550/ha (Rs 1,420/ac)



SUNFLOWER THRESHER

Output capacity	:	800 - 1000 kg/h
Units in operation	:	400
No. of manufacturers	:	4
Operating cost	:	Rs 3.90/kg (Rs 3,870/ton)



WHEAT STRAW CHOPPER

Field Capacity	:	0.3 ha/h
Units in operation	:	6,000
Manufacturers	:	15
Operating cost + trolley	:	Rs 8,230/ha (Rs 3,290/ac)



FASTEST ADOPTION IN LAST TWO YEARS

FERTILIZER BAND PLACEMENT DRILL

Field capacity	:	0.54 ha/h
Units in operation	:	7,500
Manufacturers	:	10
Operating cost 1,140/ac)	:	Rs. 2,840/ha(Rs.



SEED PROCESSING UNIT

Processing capacity	:	1 – 2 t/h
Units in operation	:	25
Manufacturers	:	1
Operating cost	:	Rs 1,290/ton (Rs 1.30/kg)



RECENT INTRODUCTIONS FROM PARC

- Post-harvest Management and Value Addition of Fruits in Production Catchments
 - Solar-Cum-Gas Fired Dates Dryer (Installed Nos. 8 in Sukkur/Khairpur)
 - Solar Tunnel Dates Dryer (Installed Nos. 17 in Sukkur/Khairpur)
- Sugarcane Crusher (Improved Version)
- Development of Ispaghul Processing Technology
- Mobile Olive Oil Extractor
- Pak Seeder for Wheat Sowing in Heavy Rice Residue
- Wood Chipper Shredder
- Onion Seed Thresher

CHALLENGES IN TECHNOLOGY ADOPTION

Small land holdings and awareness

Availability and accessibility

Less profitability

High cost of technologies

Scale neutral technologies

Indigenization issues

Cost benefit issues

Less support from public sector

Thank You

Pakistan Agriculture - SWOT analysis

STRENGTHS

- Rich Bio-diversity**
- Arable land**
- Variable Ecologies**
- Canal Irrigation System**
- Natural resources**

WEAKNESS

- Fragmentation of land**
- Low Technology Inputs**
- Inefficient Water Management**
- Poor Infrastructure**
- Low value addition**

OPPORTUNITIES

- Urbanization**
- Bridgeable yields (crops)**
- High value agriculture**
- Range and Livestock**
- Value addition**
- Agro-based Industry**
- Youth**

THREATS

- Urbanization**
- Climate change**
- Unsustainable Resource Use**
- High cost of inputs**
- Paradigm shifts in policies**
- Imports**