

USEFUL TECHNICAL INFORMATION

This information has been compiled primarily from the USAid Video Toolkit, the full toolkit can be found at : <http://www.ictforag.org/video/>

There are a number of technical choices that need to be made before you can begin filming or disseminating any video. The information here provides an overview of the different types of low-cost video recording devices, their strengths, weaknesses, and suggestions of situations for which they may be most appropriate. It also covers peripheral devices, editing software, and other possible technical choices.

Once you have decided you want to incorporate video into your project, you will need to determine which devices are most appropriate to achieving your objectives. Since the right combination will vary based on each situation, and video and audio equipment is constantly changing, it is not possible to suggest exactly which choices you should make. These options have been divided into four core sections:

1. **Video Devices**
2. **Dissemination Devices**
3. **Peripheral Devices and Accessories**
4. **Software**

All of the information included was accurate at the time of compilation, but it is important to remember that video technology, like most other digital technologies, continues to develop at a rapid rate. Before you make any final decision, you are encouraged to do your own independent research into other consumers' opinions and whether there have been any advances in technology that might better serve your technical needs.

CNET (<http://reviews.cnet.com>) is a great resource for both expert and consumer reviews.

★ CRITICAL SUCCESS FACTORS

- Items purchased are based on what is most likely to help you meet your objectives.
- Items are appropriate for the capacity of your staff.
- Total cost (including necessary support and training) is reasonable within your budget.
- Items purchased are suitable to the local context, including environmental conditions, technical compatibility, availability of local repair, etc.

1. VIDEO DEVICES

This section will consider the strengths and weaknesses of the four different types of video devices that are currently most commonly available on the market: pocket (or mini) camcorders, standard camcorders, prosumer (or professional consumer) camcorders, and multifunction video devices.

POCKET CAMCORDERS



OVERVIEW	Pocket camcorders are small, point-and-shoot devices that have become popular because of their ease of use, size, and cost. Most models are limited to buttons for on/off, recording, volume, and playback, making them easy to use for even a complete novice.
STRENGTHS	The biggest strengths of these devices are their ease of use, compact size, and affordable cost. They often also come pre-loaded with basic editing software that can be used for quick and easy video editing. An increasing number of these devices are available in high definition (HD), although their limited chip and lens capacity may inhibit true HD quality.
WEAKNESSES	Internal microphones are often of limited quality, picking up most background noise. HD video quality may not be as high quality as video produced on standard or professional models. Most only have low quality digital zoom and limited or no ability to make manual adjustments (focus, white balance, etc.).
WHEN MOST APPROPRIATE	Their low cost and functionality make them ideal for use by individuals with no or limited experience, such as farmers, field workers, etc.
THINGS TO CONSIDER	Before settling on a specific model, check for the following specifications: Audio input (microphone) socket: Given the limitation of their internal microphones, an audio input socket is crucial. This will enable you to use an external microphone to improve audio quality. Expandable memory: The internal memory of most pocket camcorders is only enough for about two hours of filming. Models with expandable memory slots will enable you to use extra SD memory to increase the amount of filming you can do during one shoot. Battery type: Most models use lithium ion batteries, although some run on AA batteries. Whatever the case, make sure that the batteries are removable and that they can be charged separately from the device. Charging batteries directly on the device increases the risk of damaging the camcorder in the event of power surges, especially once power is restored after a blackout. Battery life averages about 90 minutes in most pocket camcorders, so having at least two removable batteries and a way to charge the one not currently in use while recording is crucial.

Availability: Two of the most popular brands (Flip and Kodak) have announced recently that they will be discontinuing production of their pocket camcorders. This will eventually impact technical support available for their models. Keep this in mind when purchasing either of these brands or even when purchasing from other brands. This is also important to consider if you are purchasing models that are not locally available, as you may need to return them to the country of origin in the event of any technical difficulties.

**ESTIMATED
PRICE RANGE**

Most standard models cost between \$100 and \$150. Fuller-featured compacts reach around \$200. Sony, Creative, RCA, Sanyo, Aiptek, and Zoom are all well-known pocket camcorder brands on the market.

STANDARD CAMCORDERS



OVERVIEW

Standard camcorders are generally about two to three times the size of pocket camcorders. They tend to have much more robust features than the pocket camcorders, including higher-quality video and audio, optical zoom capability, larger screens, and more robust on-board features.

STRENGTHS

Generally speaking, most standard camcorder models will enable you to produce videos that are of a higher technical quality than pocket camcorders.

WEAKNESSES

Although prices vary, they are all more expensive than pocket camcorders. Audio input jacks may not be available on all models. Their additional features may be intimidating to novice users and could actually lead to lower video quality from improper usage.

**WHEN MOST
APPROPRIATE**

Standard camcorders are probably best for use by individuals with at least a moderate level of experience creating video. They are likely not appropriate for use directly by farmers or field officers without in-depth training.

**THINGS TO
CONSIDER**

The diversity of options and features of standard camcorders is expansive. Make sure that you research which model is most appropriate to your specific needs.

Audio input (microphone) socket: Given the limitation of their internal microphones, an audio input socket is crucial. This will enable you to use an external microphone to improve audio quality. Not all camcorders have separate audio sockets.

Lanc socket: Some camcorders have another socket called a Lanc. This can be used to attach remote zoom controllers which enable the optical zoom facility on the camera to be used easily.

**ESTIMATED
PRICE RANGE**

Prices for standard camcorders range roughly between \$200 and \$1,000 depending on features and quality.

PRO-SUMER CAMCORDERS



OVERVIEW	Prosumer camcorders come with all of the features that a videographer could possibly ask for, including wide-angle lenses, full-HD capability, and many on-board features.
STRENGTHS	In terms of video and audio quality, these camcorders are the best you will be able to find short of a full professional camera.
WEAKNESSES	The primary weakness from the perspective of most agriculture projects is the price and finding someone skilled enough to operate this type of camcorder.
WHEN MOST APPROPRIATE	Prosumer camcorders are most appropriate for use by or under the supervision of a trained videographer.
THINGS TO CONSIDER	<p>To get the most value from a prosumer camcorder you should make sure that you have an expert videographer on staff, or at least have access to one to provide your staff with thorough training. This individual should also be able to advise you on the best model for your needs.</p> <p>Audio input (microphone) socket: Although internal microphones on these cameras are of good quality, an audio input socket is crucial. This will enable you to use an external microphone to improve audio quality, particularly for interviews.</p> <p>Lanc socket: These camcorders should all have another socket called a Lanc. This can be used to attach remote zoom controllers which enable the zoom facility on the camera to be used easily.</p>
ESTIMATED PRICE RANGE	Prices generally range from \$1,000 to \$6,000 depending on the features and quality.

MULTIFUNCTIONAL DEVICES



OVERVIEW	Currently there are two primary types of devices that are capable of recording video in addition to their other functions: mobile phones and digital still cameras (or digicams).
STRENGTHS	The primary strengths of these devices lie in their growing availability. They may present projects with cost savings if they are already being used locally by beneficiaries and/or staff.
WEAKNESSES	<p>The video and audio quality of these devices is generally lower than any of the other types of camcorders mentioned above. The one exception is digital SLR cameras, which can record high-quality video, although the price and complexity of these will present problems without suitable training.</p> <p>These devices are usually not easy to hold steady whilst filming, and do need additional support devices.</p>
WHEN MOST APPROPRIATE	At the moment, these devices are most appropriate in situations where the project, its partners, or beneficiaries are already using them for other purposes. In terms of mobile phones, most video quality is well below the minimum that will be useful for dissemination. This is certain to change as consumer demand for smartphones with high-quality video functionality continues to grow.
THINGS TO CONSIDER	<p>Dedicated camcorders are still the best for overall quality. However, if you decide to use a mobile phone or digital still camera for your video activity, you will want to consider the following:</p> <p>Video resolution: The resolution should be at least 720p, if not 1080p. Also, look for at least 24 frames per second (fps).</p> <p>Audio quality: Internal microphones on these devices are likely to be poor. As with pocket camcorders, make sure that they have an audio input jack for use with a microphone.</p>
ESTIMATED PRICE RANGE	Depends on the device and local availability.

For more information on technical specifications associated with video camcorders, visit CNET for reviews and comparisons. Their camcorder buying guide <http://reviews.cnet.com/camcorder-buying-guide> and camcorder reviews section <http://reviews.cnet.com/camcorders> are particularly worth visiting before making any final decisions.

2. DISSEMINATION DEVICES

There are a number of different ways to disseminate your videos, each with different hardware needs. Here the focus is on only the four methods that require specific hardware to implement.

Computer centres or telecentres are not being included based on the assumption that if you do use this method, you will be working with an established computer centre and not purchasing your own equipment.

If you are working with a computer centre, the Computer System Sustainability Toolkit that was originally developed by AED (now FHI 360) is a worthwhile read. It can be found online at:

<http://itac.fhi360.org/resources/computer-system-sustainability-toolkit/>

VIDEO PROJECTORS

OVERVIEW	<p>Video projectors can be attached to various devices including computers, DVD players, tablets and even mobile phones. Many have USB ports so media on USB sticks can be plugged in directly.</p> <p>They can be used effectively when showing videos to large audiences. Whilst it is most usual to have a screen to project on to (roll-up portable ones are now available), it is perfectly possible to use blank walls (preferably white) or even white sheets.</p>
STRENGTHS	<p>When power can be provided, projectors can be used in many locations, including outdoors. The large screen size makes it very useful for showing videos to large audiences.</p>
WEAKNESSES	<p>Transporting and powering video projectors can be logistically challenging and not cost effective. May not easily be available in rural locations.</p>
WHEN MOST APPROPRIATE	<p>Where videos need to be screened to large audiences, often used as part of mobile video vans.</p>
THINGS TO CONSIDER	<p>The size and weight of new projectors has dropped considerably, making them more portable than previously.</p> <p>However it is essential that mains electricity is available or a dependable local power source such as a generator.</p> <p>To get the best out of your projector, you should find out about the lighting conditions where you are going to be using it. Ambient light will influence how visible the image is on the screen. This is when the brightness of your projector, expressed in lumens, really starts to matter.</p> <p>If the room is fairly bright, you should look for a projector with a brightness of at least 2,000 lumens.</p> <p>Whilst the quality of the picture has improved, often there can still be issues with projecting sound, so it is sensible to have separate speakers powerful enough for the size of audience expected.</p> <p>Always make sure that you have the correct cables to connect between the projector and the equipment you are playing the video from.</p>
ESTIMATED PRICE RANGE	<p>Portable video projectors are reducing in price all the time, and are available from \$300. Price generally increases with lumen output and projection size.</p>

POCKET and PICO PROJECTORS



PHOTO CREDIT: AAXA

OVERVIEW	Pocket and pico projectors are small projectors roughly the size of a pocket camcorder or slightly larger. Pico projectors generally use lithium ion batteries, have a navigable, internal memory system, and can project an image of up to 50 inches in ideal circumstances. Pocket projectors mostly use mains electricity.
STRENGTHS	Due to their size, pocket and pico projectors are extremely easy to transport in the field. They are also cheaper than many other hardware considerations.
WEAKNESSES	Most models have relatively low ANSI lumens rating, meaning that the ambient light level in the room you are using will need to be fairly dim to show a good picture. Pocket projectors have higher lumen ratings than pico projectors, but usually require mains electricity.
WHEN MOST APPROPRIATE	Pico projectors are best used for small group viewings in areas without dependable access to electricity, television, and DVD/VCD players, or computers. Pocket projectors are suitable for slightly large groups.
THINGS TO CONSIDER	<p>To get the best usage from pocket and pico projectors, you will want to consider the following:</p> <p>Data input: Look for models with micro-SD and micro-USB ports. This will enable you to load videos onto the projector without connecting it to a computer or the internet. A device with internal memory is also preferable, as it will allow you to pre-load videos directly onto the projector.</p> <p>Power type: Since you will likely be using these projectors in areas without dependable access to electricity, you should look for a device with at least 1-2 hours of battery life. Removable batteries that can be charged separately from the projector are ideal for the same reasons explained above under the pocket camcorder section. Additional external batteries are available for some models, whilst others can take power from a USB port.</p> <p>Audio out: The internal speakers on pocket and pico projectors typically have a maximum volume that is, for all intents and purposes, useless in a group setting. The only way to avoid this is to use external speakers. If the projector does not have an audio out jack, avoid it.</p> <p>Light strength: Make sure that the projector has at least 10 lumens. Anything less than this will make it almost impossible to use in most locations. Ideally look for a projector with 30 lumens or more. This will ensure that there is enough light to use the projector even with modest levels of ambient light. Pocket projectors generally have higher lumen outputs.</p> <p>File extension compatibility: Not all projectors support all file formats. Do not worry too much about this because you can always convert your videos into a compatible format (see software section for more information).</p> <p>Remote control: Some models include remote controls, which you may find easier to use for navigating and pausing videos during viewings.</p>
ESTIMATED PRICE RANGE	Prices range from about \$150 for pico projectors and \$250 for pocket projectors. One Media Player per Teacher has assessed many of these devices. More information can be found online at: www.ompt.org/content/video

TELEVISIONS AND VIDEO PLAYERS



OVERVIEW	Televisions and video players (either DVD or VCD) are well-known video dissemination devices. Some newer televisions may also have SD card or USB ports, which would allow you to play videos directly without the need for a video player.
STRENGTHS	Televisions and video players are more common than projectors or computers around the world. Local availability of, and access to, these devices would reduce the need for the project to purchase its own dissemination equipment.
WEAKNESSES	If not immediately available, transporting and powering televisions and video players can be logistically challenging and not cost effective.
WHEN MOST APPROPRIATE	Televisions and video players are most appropriate in circumstances where they already exist within the community you are working in.
THINGS TO CONSIDER	<p>If these devices are already locally available, you will want to consider their location before deciding to use them. You will also want to be mindful of any local power dynamics. For instance, some farmers might be hesitant to watch videos in the house of a wealthy family or politician from an opposing political party. Location neutrality and physical convenience should be your top priority. If you notice that farmers are failing to show up once you have selected a location, you might want to reconsider your options.</p> <p>If these devices are not already locally available and you decide to procure them, you will want to consider a number of logistical factors as follows:</p> <ul style="list-style-type: none">• Do you have a secure location to store the equipment?• Do you plan to keep the equipment in one location? If so, is it convenient and accessible to farmers? If not, how do you plan to transport it?• Is the local power source dependable enough?• If not, do you have the resources to purchase and power a generator?
ESTIMATED PRICE RANGE	<p>You can purchase a 26-inch LCD television with a USB port for between \$220 and \$400.</p> <p>If you already have access to a television, you can purchase an inexpensive DVD player for between \$30 and \$50.</p> <p>Generator prices vary based on local availability, but in general you should expect to pay at least \$200 for a basic generator in addition to on-going fuel costs.</p> <p>An effective alternative is to power the television from a car battery.</p>

PORTABLE VIDEO PLAYERS



OVERVIEW Portable video players (PVPs) are compact devices that generally have a three-to ten inch screen with a built-in DVD player. Some models also include USB and SD-card memory input slots. Almost every model will have the facility to output the video to a projector for use with large groups.

STRENGTHS PVPs are compact and relatively light, so they can be easily transported. Models with an SD card input may be more cost effective since you will not need to burn DVDs to disseminate your videos.

WEAKNESSES On their own they have limited screen size. With the increasing popularity of tablets and smart phones, these sole-purpose devices may be needed less.

WHEN MOST APPROPRIATE Used by themselves, PVPs are best used when showing videos to only a few viewers at a time. However, when used with a projector and audio speakers, or with a television set, they can be very effective for showing programmes to large groups.

THINGS TO CONSIDER The two main things to consider when purchasing a PVP are its screen size, and its input and output slots. At a minimum you should try to use a device with at least a seven inch screen — although nine inches is preferable, and USB and SD memory input slots. Look for outputs that can connect to a projector and television. There may be separate video and audio outputs, although frequently now they are incorporated into one cable.

ESTIMATED PRICE RANGE Decent-quality PVPs with its own screen between seven and nine inches can be found from \$80 per unit.

TABLET COMPUTERS



OVERVIEW	Tablet computers are mobile devices with touch-screen navigation and screen sizes that generally range from seven to ten inches.
STRENGTHS	The touch-screen navigation can be more intuitive to some users than traditional computer navigation. Tablets are also light, easy to travel with, and typically have a longer battery life than laptop computers.
WEAKNESSES	Tablets are extremely popular and portable, so the risk of theft may be higher than it is with other devices. There is a higher risk of screen damage from repeated use than is the case with other display devices, such as computer monitors or television.
WHEN MOST APPROPRIATE	Given their limited screen size, tablets cannot be viewed by more than two or three people at a time. They are best used in circumstances where it is not possible or necessary to gather more than a few farmers together at a time.
THINGS TO CONSIDER	If you are using a tablet solely for video dissemination, it is probably not a good option given its cost and limited screen size. If you do use a tablet for dissemination to small groups, however, it is recommended that you have a tablet with a screen size of nine inches.
ESTIMATED PRICE RANGE	Most tablets with at least a nine-inch screen cost between \$300 and \$600. The much-talked-about Aakash tablet (or Ubislate 7) from India will supposedly be available commercially for about \$60. Although it will only be available in India, it may be a sign of more affordable tablets on the way.

MOBILE PHONES



OVERVIEW	<p>Mobile phones present a few opportunities for dissemination. They can be used to play videos directly on the mobile phone screen or you can connect some mobile phones to a television or computer monitor.</p> <p>A more recent opportunity involves using the phone as a projector. Although only a small number of phones currently have this feature, the number is likely to grow in the coming years</p>
STRENGTHS	<p>Mobile phones are becoming increasingly ubiquitous, even in some of the most-remote villages of the world.</p>
WEAKNESSES	<p>Screen sizes are small and current on-board projectors are of limited strength.</p>
WHEN MOST APPROPRIATE	<p>If mobile phone access is common among your beneficiaries, mobile versions of videos may be useful to help reinforce messages. Given their limited screen size, they are not very useful as the primary way of dissemination. That said, as penetration rates continue to grow, video-enabled mobile phones represent a great opportunity to reinforce messages with individual farmers through mobile video. Mobile phones with built-in pico projectors could be worth considering for field staff if you provide them with mobile phones anyway.</p>
THINGS TO CONSIDER	<p>Before deciding to use mobile phones for dissemination, you will want to consider the following:</p> <p>File format: If you plan to disseminate videos via mobile phone, you will want to make sure that your videos are in a format that is compatible with your beneficiaries' phones. The most common format is 3GPP (*.3gp file extension). There is free software to convert your videos into this and other formats.</p> <p>Screen resolution: The most common screen resolution of phones being used by your beneficiaries is likely to be 240 x 320. Videos played in this resolution, especially those teaching agronomic practices, are likely to be of limited value as the sole point of dissemination. If you are already disseminating your videos on a larger screen using another method, providing farmers access to mobile versions of these videos may be useful for reinforcing messages or to summarise key points.</p> <p>Projector brightness: Many of the built-in projectors are only six lumens, which is not powerful enough to screen videos to a group. As the technology improves and chipsets become smaller, this is certain to change. A few phones, such as the Samsung Beam, have already exceeded 10 lumens. Make sure to check on this before making any purchase.</p> <p>Total cost: Before you purchase mobile phones with built-in pico projectors, you should do a quick total cost comparison. Is the price of the device less expensive than buying a mobile phone and a pico projector separately? Is the quality of the projector as high as a stand-alone unit? What is the battery life?</p>
ESTIMATED PRICE RANGE	<p>Prices for mobile phones with built-in pico projectors currently range between \$150 and \$600 depending on the overall quality and features of the phone.</p>

3. PERIPHERAL DEVICES AND ACCESSORIES

In addition to video and dissemination devices, you will need to consider a number of peripheral devices and accessories that can be used to help enhance your ability to create and share a quality product.

EXTERNAL MICROPHONES

External microphones will allow you to capture better quality audio than an internal camcorder microphone. The most common types of microphones are omnidirectional and directional.



When recording your video, make sure that you turn off any mobile phones in the immediate vicinity. This will reduce your chances of recording any electrical interference with your audio.

Omnidirectional microphones record sound from all directions. They are most commonly found in lavalier microphones, also known as lapel microphones. These are clipped directly onto the lapel of the person you want to record. The benefit of these microphones is that you do not have to worry about pointing them in the right direction. However, they are can be more likely to record background and other ambient noise present when recording. You can minimize this by recording your video in locations without large amounts of background noise (i.e. away from roads, crowds, etc.).



Since the microphone is clipped directly onto an individual, if you are recording more than one person, you may need to move the microphone between speakers for each shot depending on whose audio you want to record. You may find it easier to use a wireless lavalier for these purposes, so that your “actors” can easily hand the lavalier back and forth. If you are using more than one microphone then you should purchase use a **small portable sound mixer** so that the level of each microphone can be adjusted individually.

You can find low-end lavalier microphones for around \$30 to \$50, although a better quality wireless lavalier costs closer to \$100. Small sound mixers can be found from around \$80.

Directional microphones record sound primarily in the direction they are pointing.

There are two main types of directional microphones:

Cardioid - meaning they pick up sound in a heart-shaped pattern in front of the microphone, and

Shotgun - meaning they pick up sound almost entirely straight ahead.

Since most directional microphones are not clipped directly on the subject, they will require that your videographer (or preferably an assistant) is constantly pointing them in the direction from which they want to record audio.

They are best used in environments with high background noise, since they are less likely to pick up ambient noise outside of the direction of the microphone than an omnidirectional microphone. For situations when you will be recording in windy conditions, you will want to make sure that the microphone you purchase comes with a windshield to reduce wind noise.



You can find low-end directional microphones with windshields for between \$50 and \$100.

A **boom pole** costing from \$50 also makes it easier for the microphone to be placed nearer the person talking.

Headphones

If the sound being recorded is important to your work then headphones are **ESSENTIAL**.

Good quality, comfortable headphones are a worthwhile investment, prices start from \$20, but it is certainly worth getting the best you can afford – and ones that will stand the rigours of working in the field.

Listening to sound during recording is the **ONLY** way to be certain that you have recorded good quality sound.

TRIPODS

Tripods are an essential accessory for video production. Although there are techniques that you can use to stabilize your shot without a tripod, there is no replacement for the stability you will get from a tripod.

Decent quality 50 to 60 inch tripods can be found for as little as \$20, although it is well worth spending slightly more to get a tripod with a 'fluid head', this makes it much easier to adjust the camera so that it is level. Tripods should always have a 'bubble' so that you can tell when the camera is level.

You can also find mini tripods for as little as \$5, although these are only recommended for indoor shooting when you will have something stable to place them on.



LANC Remote zoom controllers

For those cameras that have a LANC socket, a remote zoom controller is a very useful investment. Although virtually all videocameras have a zoom control on them, they are often difficult to use smoothly.

Remote zoom controllers attach to the handle of the tripod and therefore allow the zoom function to be easily and smoothly controlled. You can also start and stop recording from the buttons on the remote zoom. Prices start from around \$30.



SD MEMORY CARDS

If you have purchased a camcorder that has an expandable memory slot, you will want to purchase SD memory cards. Most pocket camcorders have between 32 and 64 gigabytes of expandable memory.

Prices of SD memory cards have dropped significantly over the past few years, and you can currently find a 32GB card for about \$30-\$40 and a 64GB card for \$80. Prices will certainly drop in the next few years.



PORTABLE AUDIO SPEAKERS

If you decide to use some kind of projector or a tablet for dissemination, you will probably need to purchase portable audio speakers to amplify the sound, otherwise there is a strong chance that the internal speakers will not be loud enough for everyone to hear. Portable speakers can be found for about \$20 to \$40 a set. When purchasing speakers, make sure to check what their power source is. If you are somewhere with limited electricity, you will want to purchase speakers with rechargeable and removable batteries so you can replace them with a fresh set if they stop working while you are using them.

Some newer style speakers can be powered from a USB slot in a computer. Always check that the speakers are suitable for the size of audience and the location where you will be using them.



OFF-THE-GRID CHARGERS

Ideally, you should base all of your video production and dissemination activities in an office with access to dependable electricity. That way, even if you are recording or showing videos in villages off the electrical grid, you will still be able to make sure that your batteries and replacements are fully charged before going out. In the event that you expect extended periods of filming or dissemination in locations that are completely off-the-grid, you may want to consider off-the-grid chargers to recharge your devices. The most likely solution is a solar-powered charger, although you need to be somewhere that receives at least six hours



of sunlight a day to benefit from them. A solar charger with enough electrical output to power most of the devices mentioned will cost you about \$100 to \$150. Do your research before purchasing any off-the-grid chargers, since not all chargers will give you the same actual level of output even in the same price range. Other options are in-car chargers, which are particularly suitable if you are driving long distances.

RECHARGEABLE BATTERIES

Rechargeable batteries are a must, especially if you are working in the field away from electrical outlets. Consider purchasing rechargeable batteries and chargers for any of the devices you plan to purchase for your video activity. Prices vary based on type of battery and manufacturer.



USB EXTENSION CABLE

Some of the pocket camcorders have short USB plugs that are used to connect them to your computer's USB port. The short length of these plugs can make them difficult to plug in and often puts stress on the camera itself. For about \$5 you can purchase a male-to-female USB extension cable to connect your camcorder to your computer without having to 'hang' the camcorder directly off of the computer.



PROTECTIVE CASE

While some devices come with protective cases, many do not. Make sure to invest in a protective case — even if only a basic padded cloth one. It will protect your equipment from dust and rain, and reduce the risk of physical damage when you are transporting them. For tablet computers and smart phones, it is sensible to purchase transparent screen protectors.



WIDE-ANGLE LENS

Although not a necessity, you may find that wide angle lenses are useful for establishing a wider field of view when recording your videos. Not all wide-angle lenses work with every camcorder, so you must check compatibility before you buy. You can find a basic wide-angle lens for many of the pocket camcorders from between \$25 and \$50.



4. SOFTWARE

To create and disseminate videos, you will need a variety of software programs, including applications for video editing, audio editing, image editing, subtitling, and file conversion. Some programmes do a combination of these.

Since the primary focus here is low-cost video production, this section includes information on free software examples. Each of these programmes meets a minimum threshold for quality and is easier or, at least, as easy to use as its commercial counterparts.

Commercial software programs often offer more robust features than free options. For the most part, however, the difference is only noticed by more advanced users. If there are any features that you cannot find from freely available software, you can consider purchasing a commercial programme to address those needs. Since computers using the Windows operating system are most common, this section will only highlight programs that are Windows compatible.

If you are new to using these types of programmes, search the specific programme websites for video tutorials that you can watch. If nothing is available on their websites, try searching for user-created tutorials on YouTube or Vimeo.

Structured software training videos can be found at a number of websites including:

www.creativecow.net

www.lynda.com

www.larryjordan.biz

Access is normally based on subscriptions, although some training is usually available for free. Creative Cow also provides a large resource of information and forums on specific aspects of video production, software and hardware.

Remember to always check the technical requirements for any programme you are considering using so you can be sure it will run properly on your computer. Some of these programmes - especially video editing software - can be demanding, so you make sure that you have a computer powerful enough to run it. If not, you will need to purchase a computer that at very least meets the minimum requirements for the software programme in question.

VIDEO EDITING

If you are using a pocket camcorder, many of them already come pre-loaded with some video editing software. They are generally extremely basic and allow for simple clip editing and limited transitions. For more robust features, consider using Windows Movie Maker. It is free, easy to use, comes pre-installed on all computers running Windows XP service pack 2, and has a number of useful features. If you are using Windows Vista or 7, you can download a newer version called Windows Live Movie Maker online at <http://explore.live.com/windows-live-essentials-movie-maker-get-started>.

However, Movie Maker is not without its problems. It is known to 'freeze' on occasion and it is unable to use some video formats. The tell-tale sign that you are using a video format or codec¹ incompatible with Movie Maker is when you go to save your final product, the time remaining just keeps counting upwards. This can be extremely frustrating if you have finished editing your video only to find out that Movie Maker is unable to create a master. A good way to avoid this is to place one of your clips into the Movie Maker timeline and then select 'Save Movie File.' If it is able to successfully process your request and save a new movie, then you know that the file format of your videos clips is compatible.

More advanced users may be interested in experimenting with more professional programmes such as **Lightworks**, a fully featured video editor. It is free to use, although access to the professional version with more features is available for \$60 per year. Specific software support can also be purchased. More information on Lightworks can found be on their website at <http://www.lwks.com>

One of the most commonly used professional video editing programmes is Adobe's **PremierePro**. It has a fairly high technical specification for the computer, so it is essential to check that your computer is suitable to run the software.

Further information can be found at www.adobe.com/products/premiere

One reason why this software is so popular is its close integration with other Adobe products, including Photoshop. PremierePro comes complete with advanced software for creating DVD's called **Encore**. This programme is very powerful and can be used to create multi-programme, multi-language DVDs. Programmes for creating simple DVDs are often included with software for cameras or other editing programmes.

If your computers are not powerful enough to run a full-feature video editor, but you have a fast internet connection there are other options such as:

WeVideo: an online video editing platform - www.wevideo.com

As long as your internet connection is stable and fast enough to upload your video clips, you can use WeVideo to edit your videos in the cloud—meaning you can also collaborate on editing videos with staff in other locations. The basic user package is free to use, so you can try it out first before deciding if you want to subscribe to a monthly or annual plan for more frequent use.

To learn more about other potential options, a useful website for video editing software comparisons and ratings is FindTheBest:

<http://video-editing.findthebest.com>

It currently has information on more than 65 video editing programmes

¹ A codec is software that enables video players to encode/decode digital videos.

AUDIO EDITING

If you choose to use Windows Movie Maker or another basic-feature video editing program, your options for audio editing within those programs will be limited. Should you want to do any substantial audio editing or recording to add to your video for voiceovers or dubbing, you will need to use an audio editing program. One of the most robust and user-friendly free versions currently available is called **Audacity**.

It can be downloaded online at: www.audacity.sourceforge.net

You can also create your own podcasts using Audacity, which can be distributed to local radio stations or community centres. Radio programming can be used to complement and reinforce messages that you are disseminating via video.

You can either create new content related to your video content, or you can use the audio of your video programme on radio. Export the audio as WAV or mp3 files.

IMAGE EDITING

Image editing software can be an optional part of the video production process. You will need image-editing software if you want to create graphics or manipulate photographs to use in your video. Most PC computers come with free software called Paint, it is a simple but very useful tool for manipulating visual images.

Another robust and free programme is called GIMP (the GNU Image Manipulation Program).

It can be downloaded online at www.gimp.org

There are a number of professional software programmes for image editing. The most commonly used one is Adobe's Photoshop.

DUBBING and SUBTITLING

Subtitling, where the translation of a programme is placed on the screen in a written format has the major disadvantage of presuming that your audience can read. For this reason most language versions of agricultural programmes are **dubbed** into another language so that the voice over (and any interviewees talking) are replaced with the new language. This is most easily achieved using video editing software. Accurate translation and timing of the new voice is essential.

Subtitling videos can be a time-consuming process, since it requires someone entering the dialogue (or a translation of the dialogue) manually. There are programmes that make this process easier.

Aegisub is one example of a free subtitle editor. It can be downloaded online at www.aegisub.org

The type of subtitling used by Aegisub is called **softsubbing** as the subtitle files are separate from the video. The disadvantage of softsubbing is that it relies on the playback device to play the subtitles. Subtitle files from Aegisub are compatible with YouTube, once you upload your video onto YouTube, you upload the subtitle file under the Captions section.

The process of **hardsubbing**, or encoding the subtitles directly onto your video film, is more complicated, you can find resources on how to do hardsubbing online.

FILE CONVERSION

As there is unfortunately no uniform file format for video files, you may find that your camcorder's output is in a file type that you cannot use with your video editing software, or that your video editing software's output is not compatible with your projector.

There are a large number of free programs that can convert files from one format to another.

One programme that works well is called Format Factory.

It can be downloaded online at: www.formatoz.com